
The first decade of e-commerce

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Abstract: Executives remain hopeful, despite recent turmoil in the e-commerce business environment, that the internet will fulfil their expectations and become a source of competitive advantage. The authors of this article provide a historical review of the first decade of e-commerce and its business models. The authors provide a historical foundation so that future research will not duplicate what has already been done by documenting the evolution of e-commerce models developed by researchers during the initial decade of e-commerce. In addition, strategic challenges facing executives who seek to use the internet as part of their global business strategy are offered.

Keywords: e-commerce; e-commerce growth; e-commerce business models.

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1 Introduction

The birth of the internet as a mass communications medium is attributed to two events driven by Marc Andreessen: the February 1993 birth of Mosaic and the March 1994 birth of Netscape as easy-to-use Graphic User Interfaces (GUIs), making the internet in general and more specifically the World Wide Web accessible to those less technically astute (Connolly, 2000). The rampant diffusion and success of the internet (the broader colloquial term used in this article subsuming the World Wide Web) from 1994 through 2001, and the apparent payoff from the large amount of corporate investment in information technology in the USA and other parts of the world from the mid-1980s to the mid-1990s, led many optimists to pronounce the traditional business cycle dead. Commercial activity, according to Gilbert (2004), was technically forbidden on the internet until spring 1995, although the first secure online retail transaction occurred in August 1994, because of the regulations of the National Science Foundation in the USA. While this documentation of 'first transaction' is open for debate, the August 1994 date provides a starting point for the birth of marketing via the internet. Afterwards, conducting business transactions using this relatively new medium, known as e-commerce, has emerged as the fastest growing sector of the US marketplace over the past decade (Willis, 2004). Esch Jr. (2002) goes so far as to predict that the 1996–2001 dot.com boom era will be remembered as "...the most dramatic communications growth period in history".

The euphoria surrounding this new medium and the business opportunities that it generated was not long lived. In the wake of the 2001–2002 dot.com implosion, upper management is demanding that information systems executives justify their capital expenditures for online business efforts and are being asked to provide measurable results indicative of online success – or in other words to operate "...in a much more realistic atmosphere" (UCLA, 2003). The end result? A decade after its emergence as a major global communications tool, the internet now faces the same accountability and fiscal scrutiny as other business decisions. Initial evidence suggests that the implosion may have been a blessing in disguise. Forty percent of the surviving dot.coms and 70% of online retailers in the USA were reporting profits at the end of 2002 (UNCTAD, 2003).

By any measure, the dollar volume of total e-commerce in the USA is large. One estimate for 2005 places the figure at over \$US4.5 trillion (eMarketer, 2003). The breakdown of e-commerce activity and the percentage of totals for the \$US4.5 trillion estimate are presented in Table 1.

Table 1 Projected US economic activity by channel in 2005 (\$US billions and percent of e-commerce activity)

<i>Economic activity by channel in 2005</i>	<i>E-commerce activity</i>	
	<i>In \$US billion</i>	<i>In percentage (%)</i>
Self-service websites	2452.39	52
Private trading exchanges	771.81	16
Electronic Data Interchange (EDI)	707.81	15
Other e-channels	497.78	11
Public trading exchanges	269.58	6
Total	4599.37	100

Source: eMarketer (2003)

The same report (eMarketer, 2003) identifies the main business uses of the internet, namely e-marketing (74%), customer support/sales (73%), e-commerce (50%), procurement/MRO (33%), human resources (32%), finance and accounting (30%), sales force automation (28%) and supply chain management (26%). (The total exceeds 100% because responding firms were able to indicate multiple uses.)

Without question, over the past decade the internet has changed our global culture, communications, interactions, and methods of conducting business. The internet's influence on the global business environment is bound to evolve and increase, with its technology and access being diffused from developed to developing countries over the next decade. The purpose of this paper is to provide a historic review of global e-commerce and to update the initial review of e-commerce business models conducted by White and Lee (2001).

2 Contextual review

Berghel (2001) identified three key infrastructure developments that contributed to the rapid diffusion of the internet and e-commerce:

- 1 diffuse, digital networking infrastructure (the internet)
- 2 means for delivering and rendering cyber media content (the World Wide Web)
- 3 mechanism for making an offer to complete a transaction in a secure environment (for example, secure HTTP).

The latter, providing secure transaction environments, is still a work in progress although great strides have been made in this area over the past five years. The combination of Berghel's (2001) three components provides the foundation for the diffusion of e-commerce.

E-commerce, according to Javalgi and Ramsey (2001), is all about speed, connectivity, and sharing and exchanging goods, services and information. But what *is* e-commerce? Amusingly, even after its first decade of existence, no agreed-upon definition of e-commerce exists. This review will use the Barnes-Vieyra and Claycomb (2001,p.13) review, which states that e-commerce is the use of the internet “for exchanging information of value between firms and their trading partners, employees, and customers with the absence of geographical and time restrictions”.

Within that framework, Chang and Ling (2003) identify the two main segments of e-commerce as Business-to-Business (B2B) and Business-to-Consumer (B2C) interactions. Other perspectives of e-commerce are not as limited in scope. For instance, Canzer (2003) proposes three basic types of e-commerce business models: B2B, B2C, and Consumer-to-Consumer (C2C). Kinder (2002) goes further by listing six possible forms: B2B, B2C, Business to Public Administration (B2PA), Public Administration to Public Administration (PA2PA), Public Administration to Customers/Citizens (PA2C), and C2C. Just as the global reach of the internet is expanding, so are the types of potential e-commerce transactions. The focus of this review, however, is limited to B2B and B2C e-commerce, consistent with Chang and Ling’s (2003) classification scheme.

Regardless of the form of e-commerce, Foster and Lin (2004) list ten challenges for those developing e-commerce websites to consider: market/business sector, products/services, value chain, innovation and technology, customer focus, role of government, managerial issues, administrative/hierarchical structure, cost/performance and risk/reward. Only after addressing the issues and concerns related to each of these challenges should one establish an e-commerce presence on the internet. However, the question remains of how to actually conduct business via the internet and what business model to use to guide online business operations.

One of the first reviews of competing e-commerce business models was developed by White and Lee (2001). Their analysis reviewed e-commerce business models proposed by Phillips (1997), Timmers (1998), Hanrott (1999), Viehland (1999), Hanson (2000), Rappa (2001), Afuah and Tucci (2001), and Cohan (2001). Hedman and Kalling (2003), in their seminal article articulating the importance of the business model concept in e-commerce, added e-commerce models developed by Applegate (2001), Cherian (2001) and Weill and Vitale (2001).

The business model concept is becoming increasingly popular within information systems, management and strategy literature (Hedman and Kalling, 2003). Foster and Lin (2004) contend that many e-commerce ventures failed during the dot-com boom because of a lack of planning and a proper grounding in traditional business planning techniques. Two streams of research exist in the following:

- 1 The first describes and defines the components of an e-business model.
- 2 The second describes specific e-business models (Hedman and Kalling, 2003).

A business model is defined from an e-commerce perspective as:

- An architecture for the product, service and information flows, including a description of the various business actors and their roles.
- A description of the potential benefits for the various business actors and their roles.
- A description of the sources of revenue (Timmers, 1998; Lechner and Schmid, 2001).

Why do we need a business model? A popular management axiom holds that if you fail to plan, then you should plan to fail. A business model defines your purpose for being on the internet and influences the website's format and content. Venkatraman (2000) indicates that a business strategy that fails to recognise the importance of the internet is destined to fail. And ultimately, all business strategy will become synonymous with e-commerce strategy (Venkatraman, 2000). Those seeking justification on the importance of studying e-commerce business models are directed to Hedman and Kalling (2003). Their thorough analysis regarding the importance of studying and developing e-commerce business models provides a solid foundation on which to build future research.

We review the two largest segments of e-commerce, B2B and B2C before addressing the e-commerce business models that have emerged over the past decade.

3 Business-to-business e-commerce

Business-to-Business (B2B) e-commerce is by far the largest segment of all e-commerce activity. It accounts for around 93% of all electronic commerce globally (UNCTAD, 2004). Willis (2004) attributes this to the fact that all Electronic Data Interchange (EDI) among businesses is included in the total.

What activities are included in the definition of B2B e-commerce? According to the *E-Commerce and Development Report* published annually by the United Nations Conference on Trade and Development (UNCTAD), there are several. B2B business applications and activities listed by UNCTAD are presented in Table 2.

Table 2 B2B business applications and activities 2003 and 2004

<i>2003 B2B applications</i>	<i>2004 B2B activities</i>
Customer Relationship Management (CRM)	Customer acquisition/retention
Procurement	E-commerce
Supply chain management	Order fulfilment and tracking
Electronic payment/settlement	Logistics and inventory control
Enterprise application integration	Finance/budgeting/accounting management
	Human resource management
	Product service support
	Research and development
	Knowledge management

Source: UNCTAD (2003; 2004)

As identified above, one of the major benefits derived from B2B e-commerce results from using the internet to better manage value chains (Ghosh, 1998), especially on the supply chain side (Gibson and Edwards, 2004). The current trends of business decentralisation and B2B e-commerce collaboration allow firms to outsource, manage supply chains, and form new global strategic partnerships more efficiently (Miller, 2001).

Barnes-Vieyra and Claycomb (2001) highlight four possible sources of competitive advantage that may be accrued through of B2B e-commerce:

- 1 lower wholesale and intermediation costs
- 2 lower purchasing costs due to realised supply and logistic efficiencies
- 3 improved information access, gathering, and processing associated with supply chain management
- 4 improved market share or development of new markets resulting from lower marketing information costs.

Thus, B2B e-commerce efficiencies, in their view, lead to potentially higher profits through cost savings.

It is apparent that businesses regard their investment in e-commerce as an investment in efficiency. eMarketer (2003) lists cost savings and productivity and revenue increase as the main drivers of B2B e-commerce. Similarly, Willis (2004) identifies reduced transaction costs, reduced delivery costs, better management of supply chains, lower advertising costs and better information exchange as the efficiencies sought by B2B participants.

How big is B2B e-commerce and how has it grown over the past decade? Unfortunately, reliable data for the initial period from 1994 to 1997 is difficult, if not impossible, to find. Estimates of B2B e-commerce volume, from 1998 to present, vary widely. Total global B2B revenues for 2001, according to UNCTAD (2003), were \$US6676 billion with B2B e-commerce accounting for \$US995 billion of the total or 14.9% of all B2B transactions worldwide. This grew to 16.28% of all B2B transactions worldwide in 2002 (UNCTAD, 2004). Forrester's estimates the value at around \$US6335.4 billion worldwide by the end of 2004 (Sanders, 2000).

Zank and Vokurka (2003) report that B2B trade within the US market grew from \$US43 billion in 1998 to \$US1.3 trillion in 2003. Projections include one of \$US2.7 trillion by the end of 2004. Table 3 summarises the estimates of B2B e-commerce within the USA for selected years.

Table 3 US B2B figures and sources in \$US billions

<i>Source/year</i>	<i>Sanders (2000)</i>	<i>Khan (2002)</i>	<i>eMarketer (2003)</i>	<i>Zank and Vokurka (2003)</i>	<i>Hansen (2003)</i>	<i>Average estimate</i>
1998	43.1	43		43		43.03
1999	176.8	109				142.90
2000	406.2	251				328.60
2001	716.6	499	306.12			507.24
2002	1166.9	843	481.98			830.63
2003	1823.4	1331	720.97	1300	1410	1317.07
2004	2695.5		1011.17	2700	2370	2194.17
2005 (est.)			1333.02			–

It is clear, regardless of the estimate, that B2B growth shows no signs of slowing down over the next couple of years. Willis (2004) projects B2B growth of at least 45% annually by the end of 2006. eMarketer (2003) reports that worldwide B2B growth rate estimates, depending on the source, vary from 57.4% to 110%.

Yurman (1996) identifies four requirements for successful B2B e-commerce: clearly identify the customer, the business, the product/service, and the financial means of exchange; provide access to network technologies which will handle all aspects of the sale; integrate internet-based information with other information used by the customer and the business, and; link delivery of the product/service with requirements one through three.

4 Business-to-consumer e-commerce

By all indications, business-to-consumer (B2C) e-commerce's success pales in comparison to B2B e-commerce success (Barnes-Vieyra and Claycomb, 2001) even though this is what most people identify as e-commerce. Even though B2C e-commerce only accounts for seven percent of the total of all e-commerce (US Census Bureau, 2004; UNCTAD, 2004), it is growing at a rate nearly seven times faster than traditional business to consumer channels (Willis, 2004).

Thrust upon the scene in August 1994 with the purchase of a music CD from Netmarket (Gilbert, 2004), B2C e-commerce has been appealing to retailers and consumers alike. Who can forget the first Pizza Hut pizza they ordered via the internet in 1994? Pizza Hut was one of the B2C e-commerce pioneers. Retailers were thus one of the first in the B2C segment to ride the internet wave. Griffith and Krampf (1998) stress the similarities between retail and online business in a B2C environment: online sales are just another retail outlet or venue; communications encompasses advertising, promotion and corporate brand image management/building; and customer service is expanded across time and space. Golden *et al.* (2003) in another study identify the main reasons for getting involved in B2C e-commerce as focusing mostly on the sales mechanism aspect of e-commerce. Their findings are presented in Table 4.

Table 4 Reasons to pursue B2C e-commerce

<i>Reasons</i>	<i>Percentage of total respondents (%)</i>
To acquire new customers	93
To gain international exposure	90
To advertise	79
To overcome location disadvantage	60
To provide online customer support	59
To gain cost savings	41
To gather customer information	31

Source: Golden *et al.* (2003)

In an effort to better capture the activities of consumers on the internet, the Online Publishers Association launched the internet Activity Index in partnership with AC Nielsen/Netratings in August of 2004 (Newcomb, 2004). This index breaks down consumer activities online into four broad categories: content (news, information, entertainment), communications (facilitate the exchange of thought, messages or information including e-mail and instant messaging), commerce (shopping online), and

search (Online Publishers Association, 2005). The index excludes .gov, .edu and pornographic domains. Since its inception, the index indicates that consumers spend a majority of their time online for communications, followed by content, commerce, and search. Finally, they contend that each of these activities has its own unique business model that creates unique market segments online.

Similar to research on B2B e-commerce, research on the total volume of B2C e-commerce from 1994 to present is difficult to find. Regardless of the estimate, continued growth in B2C e-commerce is apparent. Willis (2004) projects an annual growth of at least 19% until 2008. Estimates of US B2C e-commerce volumes are presented in Table 5.

Table 5 US B2C figures and sources in \$US billions

Source/year	Sanders (2000)	Schehr (2001)	Khan (2002)	Hansen (2003)	Average estimate
1998	8		3		5.5
1999	20.2		18		19.1
2000	38.8	43.9	33		38.57
2001	64.2	61.8	52		59.33
2002	101.1	91.9	76	72	85.25
2003	143.8	125.3	106	96	117.78
2004	184.5	168.8			176.65
2005 (est.)		227.7			–

5 Chronology of e-commerce business models

As expected for any new medium, many new business models for e-commerce have been proposed over the past decade. The competing business models are presented below in chronological order.

In the first overview of e-commerce models found in the literature, Hoffman *et al.* (1995) identified five e-commerce models: online storefront model, content model, mall model, incentive site model and search agent model. Two years later, Phillips (1997) identified six internet business models used by Australian organisations: distribution of information, branding products or services, customer satisfaction, sales via the internet, advertising, and subscription.

Timmers (1998) differentiated business models from marketing models. Marketing models contain:

- a business model
- the marketing strategy of the business actor under consideration.

He then identified ten types of internet business models: e-shop, e-procurement, e-auction, e-mall, 3rd party marketplace, virtual communities, value chain service provider, value chain integrator, collaboration platforms, and information brokers.

Hanrott (1999) proposed two broad categories of internet business models: models ported from the 'real world', and models developed for the internet. In the former, the model types are the advertising-based model, the electronic shop model, the subscription model, the direct marketing model, the resource management model, the business-to-business trading model, the licensing model and the library model. The latter category contains the free trial model, the freeware model, the information barter model, the internet product model, the access provision model and the website hosting and other internet services model. In the same year, Viehland (1999) described three 'new' e-commerce business models: virtual retailing, distributed storefronts, and buyer-led pricing.

As e-commerce momentum grew, Hofacker (2000) summed up e-commerce models as possessing four basic functions: communicating, selling, providing content and providing a network function. In contrast, Hanson (2000) breaks business models down into two broad levels: improvement-based and revenue-based models. Improvement-based models may take the form of enhancement models (brand building, quality, *etc.*), efficiency models (cost reduction, free trial, *etc.*) and effectiveness models (dealer support, supplier support, *etc.*). Revenue-based models may take the form of provider-pays models (sponsorship, alliances, spot advertising, *etc.*) or user-pays models (product sales, pay per use, subscriptions, *etc.*). So the motive to enter the e-commerce arena is either to enhance your current methods of doing business or to establish a revenue-generating site based on traffic.

Without question, the halcyon year in terms of e-commerce business model theory was 2001 when five researchers addressed the topic. Rappa (2001) and Afuah and Tucci (2001) identified nine different e-commerce business models: brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription, and utility. Cohan (2001) argued that online business models are extensions of traditional content business models (print, radio, television, *etc.*). He posited that there are four potential revenue sources: access, content, advertising, and commerce.

Weill and Vitale (2001) proposed eight e-business models: direct customer, full-service provider, intermediary, whole of enterprise, shared infrastructure, virtual community, value net integrator, and content provider. Applegate (2001) came up with an impressive total of 23 different e-business models in five broad categories:

- 1 Focused distributor – retailer, marketplace, aggregator, infomediary, exchange
- 2 Portals – horizontal portal, vertical portal, affinity portal
- 3 Producers – manufacturers, service providers, educators, advisors, information and news, infrastructure distributors, infrastructure retailers, infrastructure marketplaces, infrastructure exchanges
- 4 Infrastructure portals – horizontal infrastructure, vertical infrastructure
- 5 Infrastructure producers – equipment or component manufacturers, software, custom software integration, infrastructure providers.

Dubosson-Torbay *et al.* (2002), after studying the existing competing e-commerce business models, propose a method for classifying, developing, and measuring e-business models. They suggest using:

- product innovation (target customer, value proposition, and capabilities)
- customer relationship (serving, branding)
- infrastructure management (resource/assets, activities/process and partner networks)
- financial aspects (revenue, cost and profit) as dimensions on which to evaluate your e-commerce efforts depending on your online goals.

Most recently, Canzer (2003) identified the emerging e-business models as brokerage, advertising, subscription, pay-per-view, distribution channel, affiliation, community, infomediary and portals. This most recent treatment of e-commerce business models was contained in a book as the topic has seemingly fallen out of favour on information systems journals. These models are all listed in Table 6.

Table 6 Historic presentation of e-commerce business models

<i>Year</i>	<i>Models</i>
1995	Hoffman <i>et al.</i> Online storefront; content model; mall model; incentive site model; search agent model
1997	Phillips Distribution of information; branding; customer satisfaction; sales; advertising; subscription
1998	Timmers E-shop; e-procurement; e-auction; e-mail; 3rd party marketplace; virtual communities; value chain services; value chain integrators; collaboration platforms; information brokers
1999	Hanrott Real world Advertising; e-shop; subscription; direct marketing; resource management; B2B trading; licensing; library Internet Free trial; freeware; information barter; internet product; access provision; website hosting and other services
	Viehland Virtual retailing; distributed storefronts; buyer-led pricing
2000	Hofacker Communicating; selling; providing content; providing network functions
	Hanson Improvement-based Enhancement model; efficiency model; effectiveness model Revenue-based Provider pays; user pays

Table 6 Historic presentation of e-commerce business models (continued)

<i>Year</i>	<i>Models</i>
2001	<p>Afuah and Tucci; Rappa Brokerage; advertising; infomediary; merchant; manufacturer; affiliate; community; subscription; utility</p> <p>Cohan Access; content; advertising; commerce</p> <p>Weill and Vitale Direct to customer; full service provider; intermediary; whole of enterprise; shared infrastructure; virtual community; value net integrator; content provider</p> <p>Applegate Focused distribution Retailer; marketplace; aggregator; infomediary; exchange</p> <p>Portals Horizontal; vertical; affinity</p> <p>Producers Manufacturers; services; education; advisors; information and news; infrastructure distribution; infrastructure retailer; infrastructure marketplace; infrastructure exchanges</p> <p>Information portals Horizontal; vertical</p>
2002	<p>Dubosson-Torbay <i>et al.</i> Product innovation Target customer; value proposition; capabilities</p> <p>Infrastructure management Resources/assets; activities/process; partner networks</p> <p>Customer relationship Serving; branding</p> <p>Financial aspects Revenue; cost; profits</p>
2003	<p>Canzer Brokerage; advertising; subscription; pay per view; distribution; affiliation; community; infomediary; portals</p>

6 Evolution of e-commerce business models

It is interesting to view the progression of e-commerce business models from 1995 to 2003. The evolution parallels the evolution of e-commerce on the internet, as illustrated in Table 6.

The initial model (Hoffman *et al.*, 1995) highlights the thinking of the time that most e-commerce models were nothing more than extensions of traditional business models applied to the new communications medium. Most of the identified initial models reflected e-commerce from a B2C perspective.

It is also interesting to note the changes in e-commerce models over time. The concept of an 'On-line Mall' from 1995 to 1999 reflected the opinion that those savvy in the new technology could make money by setting up and hosting online retail sites for

clients. This knowledge or technological advantage disappeared once newer generations of internet browsers emerged with comparatively more user-friendly features and the concurrent increase of more people with programming skills, although some authors contend that it has morphed into something identified as the e-marketplace.

The online auction model was first described by Timmers (1998) and is still in use today (identified by Canzer (2003) as the brokerage model). However, the model has evolved over time to incorporate aspects of both the advertising model and the search agent model. Timmers (1998) was the first to incorporate B2B models in his description of viable e-commerce models.

The advertising model was first proposed by Phillips (1997) and continues to remain in vogue today, although it is limited in growth by the lack of accurate measurable media statistics similar to those used in other mass communications media (radio, television, and print advertising). Online advertising revenue growth will remain lower than its potential level until advertisers, with some degree of accuracy, can identify the audience of a particular website. Companies such as AC Nielsen are attempting to solve this problem, but have had limited success to date.

Hanrott (1999) did an excellent job of delineating between traditional business models and internet-only models. Hanrott's (1999) 'real world' models provide the foundation for the e-commerce models that follow. His description of internet-only e-commerce models remains relevant today.

The number of e-commerce business models proposed during the dot.com boom and prior to the bust grew rapidly. Many describe the purpose for establishing a web presence rather than providing e-commerce business models (c.f., Applegate, 2001; Cohan, 2001). Dubosson-Torbay *et al.* (2002) proposed a method for classifying e-commerce models to make sense of all of the competing models. Again, they succeed in concisely describing reasons and/or motivations for establishing and maintaining a web presence, but not for using the internet for commercial purposes. Finally, Canzer's (2003) model is similar to earlier models proposed by Hanrott's (1999) real world model, Afuah and Tucci (2001), Rappa (2001) and Weill and Vitale (2001). Canzer's (2003) models reflect the current philosophies of making money via e-commerce and are broad enough to subsume both B2B and B2C activities.

One only needs to follow the evolution of the online storefront from 1995 to the distribution model of 2003 to see similar examples of models over time. The changes over time are presented in Table 7.

Table 7 Evolution of online storefront e-commerce model from 1995 to 2003

<i>Model evolution</i>
Online storefront (Hoffman <i>et al.</i> , 1995)
Sales (Phillips, 1997)
E-shop (Timmers, 1998; Hanrott, 1999)
Virtual retailing (Viehland, 1999)
Merchant (Afuah and Tucci, 2001; Rappa, 2001)
Retailer/direct to customer (Applegate, 2001; Weill and Vitale, 2001)
Distribution (Canzer, 2003)

Can companies protect their internet business models? Yes, according to Brown (1999), with the caveat that it meet the legal test of 'un-obviousness'. That is, the new model must be unobvious in view of what had previously been done. By introducing and protecting new business models that take advantage of the interactive capabilities of the internet, companies can establish a competitive advantage on a global basis (Ghosh, 1998).

However, the debate on which is the best business model to use is not without its critics. Aufreiter *et al.* (2001) report that the internet's top performers – based on financial and non-financial criteria – get their edge not from superior business models but from superior marketing! Rayport (1999) offers a more cynical view of the value of e-commerce business models:

“Each new internet business model seems viable for only a few minutes or hours, not weeks or months or years. Moreover, each successive iteration seems to invalidate much of what had come before.”

“There is irony intrinsic to the mad rush to ‘discover’ the dominant internet business model. What awaits us is the perhaps deflating realisation that, Internet company valuations aside, e-commerce is just, when all is said and done, another kind of business.”

So which internet business model should you pursue for your global marketing efforts? It depends on your industry, company, goals, resources (both capital and human), and objectives. There is no single correct model for every business. Each must blaze its own online path. The genius of nearly every successful corporate strategy lies in its implementation, not its business model, as Rayport (1999) succinctly states.

7 Strategic implications

The majority of corporate internet sites exists as an extension of the promotion function of marketing (*i.e.*, sales promotion, advertising, personal selling and public relations). This incorporates using the internet as a vehicle for mass communications (providing company information, investor relations, frequently asked questions, *etc.*) and interpersonal communications (customer service, customer contact, customer relationship management, *etc.*). Sites that exist for e-commerce may be adequately explained by the models identified by Canzer (2003).

It is clear that both segments will continue to grow for many years to come as more companies and consumers gain access to the internet globally regardless of the lack of accurate data for determining the growth rate of B2B and B2C e-commerce. It is just as clear that the most successful e-commerce enterprises exist as a combination of what has been called the 'brick-to-click' evolution: existing businesses using e-commerce as a method of expanding sales and distribution scope and scale.

The future growth of e-commerce will be driven by the diffusion of the internet from developed to developing countries, and from large corporations to Small to Medium Enterprises (SMEs). E-commerce revenues will grow and the internet will truly become the *world wide* web as more countries, SMEs, and consumers gain access to reliable internet connections through services such as broadband cable and DSL technologies. Concurrent with this growth, e-commerce models will evolve.

While it is clear that e-commerce growth is inevitable, not all are embracing the growth of the status quo. The valuation of e-commerce sales, from a public policy perspective, presents a challenge for local, regional, national and international governments. Estimates of gross e-commerce sales, as presented in the article, vary widely. The lack of accurate e-commerce sales projections makes estimation of tax liability nearly impossible. As more business is transacted via e-commerce, it will be in the best interest of taxing authorities to determine how to collect their share of revenues earned online. This issue of tax liability may prove to be the largest challenge for the e-commerce community to overcome during the ensuing decade.

8 Summary

It is difficult to depend solely on existing e-commerce business models for guidance in developing a business strategy (Kao and Decou, 2003). However, the value of the internet as a business strategy tool is immeasurable. It offers access to suppliers, world markets, and the consumers who live in those markets. It provides a communications link with stakeholders 24 hours a day, seven days a week, 52 weeks a year.

The final question executives must answer is: How will I measure the success or failure of my e-commerce efforts? Again, the answer depends on the selected business model. Different models have different measures of success ranging from online sales to number of visitors to number of registered viewers. Garbi (2002) compared traditional and non-traditional performance indicators for measuring e-commerce businesses. The key, she found, is to use measures that are consistent with what one is attempting to accomplish.

Given the importance of the internet as a global business tool, more research needs to be conducted regarding e-commerce in general and e-commerce business models in particular. Other limitations of this project are evident. The biggest is the lack of reliable estimates of B2B and B2C e-commerce sales volume. There is a lack of reliable non-proprietary data for the initial four years of e-commerce sales volume (1994–1997), given the nature of this article as a review of the initial decade of e-commerce. Without a solid estimate of the foundation of e-commerce, any estimates of e-commerce growth are unreliable at best. This lack of reliable sales estimates is problematic for those seeking to assert tax authority over e-commerce activity, as alluded to in the section on strategic implications.

At the end of its first decade, it is clear that a solid foundation for e-commerce has been established. What will e-commerce look like by end of the next decade?

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