AUGMENTING THE VALUE CHAIN: IDENTIFYING COMPETITIVE ADVANTAGE VIA THE INTERNET

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ABSTRACT

With the growth and importance of electronic commerce, research concerning the Internet has intensified. Organizations are increasingly seeking to maximize competitive advantage by exploiting the opportunities afforded by the World Wide Web. Although the search for strategies that foster competitive advantage are frequently based on Porter’s (1985) value chain model, this paper conceptualizes an augmented value chain that identifies the Internet as a new business channel. This extension is founded upon the literature demonstrating that the Internet is sophisticated enough to warrant specific inclusion in a holistic ‘Business Activity Model’. The work of Rayport and Sviokla (1996), Bickerton, Bickerton and Simpson-Holley (1998), and Sethi and King (1994) can provide conceptual additions to the value chain in order to sufficiently encompass the impact of the Internet. A synthesis of this work has been employed to construct a speculative, augmented value chain – the Business Activity Model. This paper argues that the Internet needs to be considered as more than a collection of constituent applications and that it is not adequately represented in the value chain. It also identifies a potential instrument to augment the value chain and shows how their integration can create a useful tool for considering competitive advantage.
INTRODUCTION

The application of the World Wide Web as a commerce medium is something of an anomaly. Seemingly limitless in potential and relatively untapped as a resource, it has proven to be an international communication and information revolution. Academic interest in the Internet has been fanned by the speed with which it has been assimilated into consumer psychology. In management literature, and the popular press, debate over the impact of Internet applications on competitive advantage and business strategy has been intense. The process of creating opportunity for a firm by examining its value chain in search of competitive advantages is hardly new. However, the Internet is typically viewed in terms of its applications, rather than as a new business channel. The term business channel here implies that the Internet, like the firm itself, is more than the sum of its parts. As a result, we define the term business channel as a mechanism through which commerce can be exclusively undertaken at each step in the value chain. The term is used here to help consider whether the Internet is a new business channel. If this is true, as we later consider, it is not enough to look at the Internet as a cluster of email and other communication opportunities that can enhance value. Each might be applicable to every value chain step, but no single application is sufficient. The model presented in Figure 1, the Business Activity Model (BAM), demonstrates how such a view of the Internet – as a business channel – can help practitioners identify opportunities for value. In a competitive environment, any tool that better equips managers to understand organizational processes, and subsequently extract competitive advantage from them, is significant (Corbitt 2000).

Literature demonstrates that attention has been given to the impact of information technologies on areas such as competitive advantage (Bharadwaj, Varadarajan and Fahy 1993; Mata, Fuerst and Barney 1995), business value and performance (Barua, Kriebel and Mukhopadhyay 1995; Bharadwaj 2000), and supply (Barua, Ravindran and Whinston 1997; Frohlich 2002; Grover, Teng and Fiedler 2002). However, consideration of the impact of the Internet itself on the value chain is less advanced, and is to some extent controversial. This is, of course, understandable. It has only been with time that a fuller appreciation of Internet’s impact has emerged. With the benefit of hindsight, this paper attempts to synthesize and integrate relevant literature to shed light on the role of the Internet in the ongoing veracity of value chain.

This paper reviews existing literature and research in order to resolve four issues.

CONTRIBUTION

This paper attempts to synthesize literature surrounding Internet competitive advantage and its relationship to the value chain, and develop a model that encapsulates the importance of the Internet as a business channel. It demonstrates that the Internet is a sufficiently important new business channel to require a philosophical augmentation to the value chain. Several incomplete theoretical attempts have been made at this augmentation, but this paper ventures beyond previous conceptualizations by showing how the tested and credible Competitive Advantage Provided by an Information Technology Application (CAPITA) construct of Sethi and King (1994) can provide the practical basis for improvement.

The intention of this paper is to bring existing theoretical resources together in order to provide a new perspective on the evaluation of the competitive advantages that accompany the Internet. This is encapsulated in the Business Activity Model. It seeks to expose the limitations of the value chain for elucidating opportunities for competitive advantages created by the Internet, evaluate the potential theoretical ingredients, show how an existing concept can be integrated to fill the gap, and construct an augmented model for further theoretical and practical exploration.

This paper conflates and integrates a range of theoretical literature associated with the foundations of competitive advantage and the application of the Internet as a business channel. Given the explosion of interest in the Internet as a tool for competitive advantage, or at least competitive parity, this paper should be a useful resource for managers.
First, it explores whether there is sufficient justification to warrant the view that the Internet is a new business channel, and should therefore be considered more important than the sum of its constituent applications. This is undertaken in the first section of this paper: ‘The Internet as an E-Commerce Nexus’. The second section of this paper, ‘The Value Chain and Competitive Advantage’, describes the value chain as a tool for identifying potential business opportunities and defines the concept of competitive advantage. The third section, ‘Augmenting the Virtual Value Chain’, attempts to clarify whether the Internet is adequately contained in the value chain. We subsequently speculate on the possible augmentation of the value chain using an existing instrument known as Competitive Advantage Provided by an Information Technology Application (CAPITA), which helps to conceptualize ‘virtual’ activities in the value chain. The final section of this paper, ‘Business Activity Model’, explores the potential of integrating the value chain and CAPITA to produce a model which has greater utility than the application of the two independently. This BAM is reproduced in Figure 1, and is explained briefly next. Subsequent sections of the paper explain the logic behind its construction.

The central argument of this paper may be reduced to the following: The veracity of both the CAPITA model and the value chain are well established, however when integrated into a single model a series of additional synergistic properties are apparent. The Business Activity model format illustrates the way that the Internet and the primary and support activities of an organization, while distinct, often overlap. Porter (1985) highlights the importance of understanding the linkages and associated value-adding opportunities between primary and support activities through the use of dotted lines. Were the primary and support activities of the value chain separated into two distinct models, this element of the value chain’s power would be lost. Similarly, to provide maximum benefit to practitioners, the Business Activity Model includes all three elements of contemporary business activity – primary, support and Internet - in a single model, with dotted lines linking all three. Dimensions of CAPITA are located at the base of the value chain in vertical segments. Primary Activity Efficiency and Support Activity Efficiency find logical positions relevant to their counterparts within the value chain while the five additional aspects of Internet competitive advantage reinforce all firm activities. Thus, Synergy, Resource Management Functionality, Preemptiveness, Resource Acquisition Functionality, and Threat-based competitive advantages may be found in primary activities or support activities. The critical issue expressed through the BAM is that the Internet, as a potential business channel, provides opportunities that are more concealed than the conventional value chain illustrates. As a result, the combination of the value chain and the CAPITA dimensions might provide a useful heuristic model for managers seeking to uncover any opportunities for competitive advantage the Internet can provide. Section 1 presents the first argument underpinning the BAM.

THE INTERNET AS AN E-COMMERCE NEXUS

A number of Internet applications have been scrutinized in the literature in terms of their capacity to produce competitive advantage. However, these applications should not be confused with the Internet itself. As a result, at this point the important distinction between the Internet – the nexus of virtual communication – and information technology (IT) applications needs to be established. Johnson and Busbin (2000) describe virtual consumer communication as being direct, having storage and retrieval capacity, providing the capacity to reply, and often being interactive. According to the authors all virtual communications employ an electronic intermediary, with the Internet as their nexus. Those intermediaries include PCs, lap-tops, palm-top communicators and certain telephone systems (Johnson and Busbin 2000).
The Internet is therefore not merely an information technology. Rather, it is a new business channel that facilitates information technology applications, and creates a contemporary competitive space. With its remarkable reach and low cost the Internet has had a dramatic effect on the way businesses operate and evaluate their competitive advantage. While the Internet is maintained by a technology – the telephone line – what constitutes its status as a new business channel is its impact on competitive strategy. Indeed, Johnson and Busbin (2000) distinguish the Internet from the telephone observing that whilst telephone technology has advanced, its impact on competitive advantage has been diminished by its steady assimilation into company operations. Conversely, they argue that the Internet has “emerged rapidly, grown exponentially, and (is) having a profound impact on competitive strategy” (Johnson and Busbin 2000:155).

The Internet provides access to an inter-connected, virtual world that facilitates relationships in a way previously unknown and unlikely to be replicated. This view is supported by Rayport and Sviokla (1996:21) who state “every business today competes in two worlds: a physical world of resources that managers can see and touch and a virtual world made of information”. Tapscott (1996) observed that while the value chain was conceived in an era where organizations exchanged funds, information, and knowledge through physical means, new technology means these exchanges are now often virtual. Tapscott (1996) develops this concept further, suggesting that this change and its subsequent effect of enabling new kinds of relationships between organizations and people, transforms the value chain into the value network. Further, he concurs with Ware, Gebauer, Hartman and Rolden (1998), as do Hsiao and Ormerod (1998), suggesting that the provision of value is not chained in a static, or linear way, but is generated through an ever-changing open network. Tapscott also adds that new technology enables organizations to develop from value-added, to value-generative, emphasizing the impact of the digital economy on the evolution of value theory.

As the impact of the Internet as a new business channel is greater than its derivative applications, it is prudent to reconsider the composition of the value chain itself. The following section provides the conceptual background that is necessary to explain the role of the Internet in the value chain, and why this role might be more prominent than shown in the value chain.

**THE VALUE CHAIN AND COMPETITIVE ADVANTAGE**

The value chain is a widely used and accepted tool for assessing business activities and identifying competitive advantage (Armstrong and Sambamurthy 1999; Bickerton, Bickerton and Simpson-Holley
1998; Boynton, Zmud, and Jacobs 1994; Brynjolfsson and Hitt 1996; Cooper and Zmud 1990; Trice and Treacy 1986). Porter (1985), who introduced the concept of the value chain, emphasized its role in strategic planning. He stated that “given the pivotal role of competitive advantage in superior performance, the centerpiece of a firm’s strategic plan should be its generic strategy” (1985:25). According to Porter (1985) there are a number of strategically important activities within an organization that can be systematically reviewed to assist in the search for competitive advantage. The value chain, he suggests, acts as a tool to undertake this review, with the process being underpinned by the premise that “competitive advantage cannot be understood by looking at a firm as a whole” (1985:33).

The value chain is shown in Figure 2. It comprises two broad categories known as primary and support activities. Collectively the nine value activities contained in these two categories are described by Porter as the “building blocks of competitive advantage” (1985:38), with an organization’s performance in each determining its success against adversaries. This analysis can provide an organization with invaluable information in the strategy formulation process.

As a means for understanding competitive advantage, the value chain identifies all of the activities an organization performs and which “contribute to a firm’s relative cost position and create a basis for differentiation” (Porter 1985:33). According to Porter (1985), the value chain disaggregates a firm into its strategically relevant activities. The improved performance of these activities leads to competitive advantage.

Although the value chain itself is an accepted model of organizational activity, research into the concept of competitive advantage, and how to gain it, has evolved and become more complex as competitors and consumers have become more sophisticated, consumers have become more mobile, distribution has intensified, and product and market information flows have evolved (Johnson and Busbin 2000). In light of the amount of money being invested by organizations in information systems and technology, even before the advent of the Internet, measuring the effectiveness of information systems became a critical issue (Ball and Harris 1982; Dickson, Leitheiser, Wetherbe and Nechis 1984). A number of perspectives arose in an effort to fulfill this need, and to help identify the multiple ways in which competitive advantages can emanate.

![Value Chain Model Illustrating Support and Primary Activities](Adapted from Porter 1985)
from technology. For example, the resource-based view of the firm (see Barney 1991) has evolved as an established view in strategic management theory. This view posits that “firms compete on the basis of ‘unique’ corporate resources that are valuable, rare, difficult to imitate, and non-substitutable by other resources” (Bharadwaj 2000:170). A “process-oriented view” has also been developed and used empirically to measure business value from IT (Barua, Kriebel, and Mukhopadhyay 1995). In addition, Porter (1985) suggested a “value-added analysis” as a means to identify competitive advantages throughout the gamut of organizational activities – the value chain. Since we are principally interested in the possibility of locating opportunities amongst existing or prospective business activities, we have concentrated on the value chain as the key model.

For the purposes of this paper, a source of competitive advantage is defined as a unique skill or asset possessed by a firm that enables them to outperform their rivals (Bharadwaj, Varadarajan, and Fahy 1993). Competitive advantage can result from either implementing a value-added strategy not simultaneously being employed by competitors (Barney 1991) or through the superior execution of the same strategy as competitors (Bharadwaj, Varadarajan, and Fahy 1993). Further, a competitive advantage needs to be sustainable. Sustainability is achieved when the advantages resist imitation in the wider market (Barney 1991; Porter 1985).

While the durability of Internet-based competitive advantage is often considered limited, there is evidence that innovative firms can exploit its strengths in sustainable ways. For example, Bharadwaj, Varadarajan and Fahy (1993) provide case histories of numerous organizations including the Internal Revenue Service (IRS), American Express and Federal Express Corporation, who have successfully leveraged Internet-enabled IT and achieved a sustainable competitive advantage. Further, although the ability of the Internet to provide sustainable competitive advantage is contentious, according to Porter (2001:64) “the key question is not whether to deploy Internet technology – companies have no choice if they want to stay competitive – but how to deploy it”. Whether an organization derives a sustainable competitive advantage, a temporary competitive advantage or simply competitive parity from a particular Internet application, managers are compelled to scrutinize their overall use of the Internet as a channel. Having considered the role of the value chain and the concept of competitive advantage, the next section reviews the increasing volume of literature considering the impact of the Internet on the value chain.

**Augmenting the Value Chain**

A number of authors have contemplated the impact of the Internet on the value chain including Bickerton, Bickerton, and Simpson-Holley (1998), Johnston and Mak (2000), Tapscott (1996), Ware, Gebauer, Hartman and Roldan (1998) and Westland and Clark (2000). The central theme proposed by these authors is that the Internet impacts upon the value chain to such an extent that a modification or expansion of Porter’s model is justified. The following section focuses in particular on the work of Rayport and Sviokla (1996) and Bickerton, Bickerton, and Simpson-Holley (1998). It also reviews Porter’s (2001) commentary on the impact of the Internet on organizational strategy.

Porter (1985:166) noted that “technology is embodied in every value activity in a firm, and technological change can affect competition through its impact on virtually any activity”. Porter (1985:168) further reminds us that “information systems technology is particularly pervasive in the value chain, since every value activity creates and uses information”. Whilst Porter would presumably point to these statements as evidence that no expansion is necessary, the way the Internet has been employed by business implies otherwise. The Internet is not merely a new technology. The implications of this, along with the understanding that the Internet’s technological applications far exceed the information exchanges that were available at the time the value chain was developed, are pivotal to the argument in this paper. For example, the Internet can be used as the core of a business’ strategic positioning, such as in a company like Amazon, but it can also be used to facilitate strategic applications.
such as home banking. It is reasonable to assume that Porter did anticipate significant improvements in business technology which are compatible with the value chain, but no one could have predicted the way that the Internet has been employed as the ‘bricks and mortar’ of some businesses.

Given that the Internet itself is not a technology application, but a ‘physical’ facilitator of electronic commerce, it represents, in the language of the value chain, a conceptual channel. However, to understand the competitive advantage opportunities of the Internet as a whole, the technological applications that it facilitates need to be examined. Although such examination has led to a thorough understanding of the traditional elements of the value chain, the scope of competitive advantage via the Internet is not as well understood.

Rayport and Sviokla (1996) argue that every business now competes in both the traditional physical worlds – the ‘marketplace’ – and the new virtual world – the ‘marketspace’ – where, according to them, many of the old business axioms no longer apply. They dispute the ability of the conventional value chain to adequately represent business change based on its treatment of information as a supporting element, not a source of value of itself. Although they recognize that the value chain of the ‘space’ can mirror that of the ‘place’, Rayport and Sviokla reason that because the value-adding processes that companies must employ to generate competitive advantage from raw information are unique to the information world, a virtual value chain exists alongside its physical counterpart. They do not however, go so far as to systematically specify the dimensions of the virtual value chain that will lead to competitive advantage.

According to Rayport and Sviokla (1996:25) the Internet necessitates the conceptualization of a discrete virtual value chain, which “must be managed distinctly but also in concert” with the physical value chain. Rayport and Sviokla (1996) refer to their study of ‘scores’ of companies in a variety of industries that attempt to do business in both the ‘place’ and the ’space’, and their findings that the most profitable organizations were those that successfully exploited both of their value chains. Crucially, Rayport and Sviokla argue that the economic logic of the two chains is different, and that a conventional understanding of the economies of scale and scope is inapplicable to the virtual value chain.

This line of argument is critical to this paper. Firstly, Rayport and Sviokla argue that a virtual value chain exists. Secondly, because there are differences in the chains, a simple replication of the physical value chain would not be appropriate for the virtual chain. This notion supports the work of Sethi and King (1994) that is considered later, who have sought to identify those distinctions. Finally, because the chains need to be managed distinctly and in concert, the components of the two chains would fall short if contained in separate models. The synergistic benefits of a single model are elaborated further in section four of this paper. The original augmentation proposed by Rayport and Sviokla (1996) is shown in Figure 3.

Figure 3 presents the virtual value chain as a distinct business underlay that enables managers to visualize the additional opportunities facilitated by the Internet. Rayport and Sviokla (1996) emphasize that to create value, managers must look at both the marketplace and the marketspace, as the Internet is not adequately contained in the traditional value chain model.

Bickerton, Bickerton, and Simpson-Holley (1998) also provide a critical link between the increasing ‘post-Internet’ literature examining the value chain, and the need for its augmentation. They propose an expanded version of the generic model that adds the Internet to the identified activities, rather than as a constituent technology. This conceptual relationship is shown in Figure 4.

Figure 4 shows a broad band representing the Internet surrounding Porter’s value chain. Bickerton, Bickerton, and Simpson-Holley (1998) justify the addition of the Internet as “an external tool that can support all internal activities and increase the overall margin and competitive advantage” (1998:39). Although they recommend the use of a value chain analysis, the authors argue that the Internet needs to be added to the activities identified by Porter, and with their
preliminary visual expansion of the generic value chain they provide key support for the line of thought continued here.

At this point, two assumptions critical to the development of this conceptual model should be acknowledged. Firstly, Porter’s (1985) value chain is an appropriate base for such a model, and secondly, some adaptation of the value chain is required to adequately reflect the impact of the Internet on business activities. Whilst this position has been determined in regards to this paper, some recognition of Porter’s view on these and related issues is prudent, prior to an examination of the specific adaptations that were made to his model.

An argument might be made that Porter’s model provides room to adequately incorporate the Internet within the generic model. Porter, as noted earlier, does indeed emphasize the impact of technology throughout his description of the value chain. He notes its power and its pervasive impact on the value chain, and indicates that support activities (technology included), can be associated with specific primary activities, as well as support the entire chain. Porter (1985:176) however, specifically advises that
“technology strategy is only one element of overall competitive strategy, and must be consistent with and reinforced by choices in other value activities”. As suggested by Tapscott (1996) and Ware, Gebauer, Hartman and Roldan (1998), it is this statement that is flawed, albeit by a medium that has grown to a level of importance that could not have been foreseen in 1985.

Porter’s recent contributions to Internet strategy literature are perhaps more relevant. While evaluating the impact of the Internet on organizational strategy, Porter (2001) presents mixed feelings about its impact. Despite acknowledging its importance as a new technology and emphasizing the role of strategy in its utilization, Porter provides a sometimes dour view of the medium in terms of its impact on organizational competitive advantage, particularly its impact on industry structure. He also reviews the impact of the Internet on the value chain, and addresses the position of the Internet within it. For example, Porter recognizes the enormous impact of the Internet as a new technology and highlights the importance of distinct Internet strategies. He does, however, stress the view that the time has come to take a clearer view of the Internet without rhetoric about a “new economy”, (perhaps as a message to “new value chain” theorists.)

Although Porter (2001:73) acknowledges that the Internet “will replace certain elements of industry value chains”, he maintains that the complementary nature of the Internet does not warrant any adaptation to the original value chain. He argues that the power of the Internet in the value chain should be kept in perspective, without neglecting the importance of conventional factors. More recently he has described the Internet as “not particularly transformational” (Argyres and McGahan 2002:48). In Porter’s view, therefore, the value chain requires no modification for the new millennium.

A major thrust of Porter’s recent commentary is his view that the Internet has a primarily negative impact on industry structure. Utilizing his five forces analysis, Porter concludes that the deployment of the Internet has paradoxically led to greater profit potential while simultaneously making that profit more elusive. The Internet-expanded marketplace is also open to more competition. Regardless of the effect of the Internet on industry structure, Porter’s own observation that companies have no choice but to deploy the Internet if they want to stay competitive softens the significance of this position. Porter emphasizes that strategy is even more important for differentiation and competitive advantage in the Internet era.

That the Internet heightens the importance of strategy is not disputed. An augmentation of the value chain enables organizations to more accurately consider the strategies required in the changed business environment described by Porter. The concession that the Internet will replace certain elements of industry value chains is also pivotal. If the Internet enables an organization or an industry to bypass or substitute an element of the value chain, and the Internet is to be considered complementary rather than cannibalistic, that complementarity may warrant a specific addition to the generic model.

Porter (2001:78) recognizes that the Internet is capable of enabling companies to “deploy Internet technology to reconfigure traditional activities”. Critically, he also makes the distinction between the Internet and its specific applications. Porter (2001) cites examples of prominent applications of the Internet in each of the value chain’s nine activities, including electronic employee time and expense reporting, real-time transaction of orders and customer self-service via Web sites. Further, Porter provides a list of some prominent applications of the Internet that influence both primary and support activities within the value chain. He indicates the existence of linkages between value activities and the systems nature of an organization with dotted lines on illustrations of the value chain. This visual element of the generic chain and the description of linkages between various activities however, do not adequately represent the ability of the Internet to permeate and alter the chain. The conventional factors continue to play a prominent role in value creation and many traditional sources of competitive advantage remain intact. We do, however, believe that an addition to the value chain is justified given that the Internet is, in Porter’s
words, “transformational in some respects” (2001:75).

In short, even though Internet technologies are no different to other technologies in their impact on the traditional value chain, the Internet itself should not be considered a new technology. The Internet is a new and previously unanticipated entity that facilitates technological linkages throughout the entire value chain. As such, it warrants greater, specific recognition in the model. Given Porter’s reference to the Internet’s ability to alter organizational systems and traditional activities, and growing arguments for non-linear models that recognize relationship constellations, a model that finds a middle ground between the rhetoric of Internet espousers and traditional value chain approaches is preferred here.

The use of the Internet needs to be consistent with strategy in other value activities, but is a more powerful tool when considered as not just a single element of the chain, but as an all-encompassing medium. Porter’s value chain does recognize technology as a support activity, appropriate for many of the specific tools created by the Internet, such as online payments. However it does not fully conceptualize the ability of the Internet to become integral to each aspect of the value chain. Therefore, defining technology as a single element of the value chain is appropriate, but containing the Internet within this element is not. The crux of this argument is not that any element of Porter’s model is incorrect, but that the Internet has provided a new strategic tool that, due to its ubiquitous nature, does not fit exclusively into any of its activities.

This is not to suggest that Porter ignores opportunities that arise from reviewing activities such as synergy or preemptiveness. He does implicitly consider these possibilities within the value chain. However, the utility of a diagnostic or analytical management tool is also related to its performance in the contemporary business environment. As the authors mentioned in this section have addressed, the existing value chain is a more useful model when it encourages managers to consider the advantages of the Internet across all stages of the value chain. For this reason, the combination of Internet specific dimensions for optimizing competitive advantage and the standard value chain elements is advantageous. In other words, the value chain highlights functions where opportunities can be found, and the Internet can be both a new function as well as a support activity.

In summary, there are two themes that commonly appear in discussions considering the impact of the Internet on Porter’s value chain. The first is an endorsement of the use of Porter’s value chain for assessing organizational Internet strategies. The second is the growing view that the impact of the Internet is, or will be, significant enough to warrant specific adaptations to the generic model. From this platform, elucidating approaches to competitive advantage in IT is essential to the further development of a conceptual bridge between the Internet and the value chain. Sethi and King (1994) developed and tested a construct which can be employed to this end and is discussed next.

**COMPETITIVE ADVANTAGE PROVIDED BY AN INFORMATION TECHNOLOGY APPLICATION (CAPITA)**

Just as Porter (1985) disaggregates primary and support activities into strategically relevant dimensions, the Internet should be broadly disaggregated in order to assist managers identify opportunities. The model proposed by Sethi and King (1994) – the CAPITA construct - provides the appropriate dimensions for this disaggregation of Internet activities. The CAPITA construct “Competitive Advantage Provided by an Information Technology” and its appropriateness for a generic and holistic model of business activity is discussed fully later. However, just as primary and support activities are differentiated into nine associated generic activities, a confirmatory analysis of the CAPITA construct conducted by Sethi and King (1994) revealed seven distinct dimensions of competitive advantage that according to the authors can be used for evaluating applications and competitive assessment. This evaluative function
complements the underlying purpose of the original value chain.

Although research into IT evaluation measures is growing, the need to assess the strategic role of technology and its impact on competitive advantage is critical (King, Grover and Hufnagel 1986; Sethi and King 1994). Sethi and King (1994) identify the importance of this research to senior management who face increasing scrutiny in all investment areas, a position supported by Ball and Harris (1982), Brancheau and Wetherbe (1987), and Dickson, Leitheiser, Wetherbe and Nechis (1984).

Sethi and King (1994) build on their earlier work (1991) to identify and operationalize seven dimensions for the measurement of key traits that characterize competitive advantage in their CAPITA construct. Designed to evaluate IT applications, these dimensions are applicable to the Internet itself as the application’s channel. Sethi and King devised a conceptual construct that disaggregates the benefits of IT applications into the seven dimensions of competitive advantage described later. The use of these dimensions demonstrates where value chain activities are influenced by Internet opportunities for competitive advantage.

An IT application, according to Sethi and King (1994), includes the use of hardware and software that collects, transmits, processes, and disseminates information. They endeavor to develop a set of measures that capture all the benefits that accrue to a firm through those applications, including the strategic role of technology, and the impact of IT on competitive advantage. While the Internet can be more than an IT application, the important issue is the nature of Sethi and King’s dimensions as instruments for revealing competitive advantage. The dimensions apply equally well to a business channel as they do to the IT applications that it facilitates. For example, the dimensions examine the competitive advantages that emerge from the Internet-based IT applications, such as supply chain tracking or on-line merchandising. CAPITA is similarly useful when viewing the Internet as more than an application. The difference is only in the boundaries of the examination. The Internet as a business channel can provide, for example, synergistic opportunities just as an IT application like email can. In the case of the former, more synergies are possible because the channel presents opportunities greater than the sum of its parts. In other words, looking at each Internet-based IT application in isolation would not yield the full benefits of employing the Internet for competitive advantage. To that end, the BAM encourages a more holistic view of Internet opportunities across a firm’s value chain. Just as the traditional elements of the value chain can be divided in order to elucidate opportunities, the Internet can be divided into distinct avenues for competitive advantage.

Sethi and King (1994:1604) provide a broad constitutive definition of the construct acronym CAPITA, stating that it refers to “benefits accruing to a firm, in terms of changes in the firm’s competitive position that are caused by a single IT application”. The importance of Porter’s work and other competitive advantage concepts to CAPITA is evident in Table 1.

Table 1 outlines eight competitive advantage concepts drawn on to develop the seven dimensions of CAPITA, including ‘competitive forces’ and ‘value activities’ where Porter has been prominent. Thus, the dimensions of CAPITA have been derived directly from fundamental competitive advantage concepts. This validates the merger of the value chain and CAPITA into the Business Activity Model described in section four of this paper.

The research stream identified in Table 1 led to the formulation of seven specific dimensions of CAPITA representing the possible avenues for competitive advantage associated with the Internet as a new business channel. These dimensions, along with Sethi and King’s (1994) descriptions, are now provided.

**CAPITA Dimensions**

**Primary Activity Efficiency**

Primary Activity Efficiency consists of the effect of the IT application on the cost of inbound logistics, operations, outbound logistics, and service. All four are primary
value chain activities (thus the label for the factor provided by Sethi and King, and its position in the Business Activity Model). In general, primary activities are those that involve the “physical creation of the product and its sale and transfer to the buyer as well as after sale service” (Porter, 1985:18).

Support Activity Efficiency

Support Activity Efficiency comprises the impact of the IT application on the cost of human resource management, firm infrastructure and coordination of different activities. Since all three pertain to support value chain activities, which help sustain primary activities, the factor was called ‘Support Activity Efficiency’ by the authors, and has been positioned accordingly in the Business Activity Model. Sethi and King (1994) argue that the relationship of the above items to competitive advantage may be attributed to the fact that few firms understand their significance. Lowering their costs may provide a cost advantage relative to competitors who are unaware of this potential.

Resource Management Functionality

Resource Management Functionality measures how well the IT application assists its primary users in meeting the needs related to a resource including monitoring utilization, upgrading, transferring or disposing, and accounting for the resource. These activities correspond to the end stages of the resource life cycle (Ives and Learmonth 1984). Since these stages are concerned with the post-acquisition management of the resource, Sethi and King call the factor ‘Resource Management Functionality’.

Resource Acquisition Functionality

Resource Acquisition Functionality consists of the IT application’s impact on the acquisition phase of the resource life cycle. Specifically, this dimension measures the impact of the IT application on users’ ability to order a resource, acquire it, and verify its acceptability. Applications that support these user needs, unlike those for post-acquisition management, are perhaps the best known examples of strategic IT applications. The popularity and significance of resource acquisition support as a source of competitive advantage is reflected by this dimension.

Threat

Threat consists of the impact of the IT application on the following six items: (1) the firm’s ability to evaluate and choose from alternative suppliers (supplier selection); (2) its switching costs; (3) its ability to threaten vertical integration (both forward and backward); (4) its ability to evaluate and choose alternate customers (customer selection); (5) customers’ cost of locating alternative suppliers; (6) customers’ switching costs.

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<tr>
<th>CONCEPT</th>
<th>DESCRIPTION</th>
<th>SEMINAL AUTHORS</th>
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<tbody>
<tr>
<td>Competitive efficiency</td>
<td>The impact of an IT application on enterprise level performance</td>
<td>Bakos and Treacy, 1986</td>
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<tr>
<td>Business value</td>
<td>The impact on profitability, market share, and market size</td>
<td>Berger, Kobelius, and Sutherland, 1988</td>
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<td>Operational efficiency</td>
<td>The impact on intermediate operating costs</td>
<td>Banker and Kauffman, 1988</td>
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<td>Management productivity</td>
<td>The impact on return-on-management</td>
<td>Strassman, 1988</td>
</tr>
<tr>
<td>Competitive forces</td>
<td>The impact on buyers, suppliers, substitute products, new entrants, and rivalry</td>
<td>Porter, 1985</td>
</tr>
<tr>
<td>Strategic thrusts</td>
<td>The impact on differentiation, cost, innovation, growth, and alliance</td>
<td>Wiseman and MacMillan, 1984</td>
</tr>
<tr>
<td>Value activities</td>
<td>The impact on technology and economically distinct organizational activities</td>
<td>Porter and Millar, 1985</td>
</tr>
<tr>
<td>Customer resource life cycle</td>
<td>The impact on activities undertaken by customers to acquire a resource</td>
<td>Ives and Learmonth, 1984</td>
</tr>
</tbody>
</table>
Preemptiveness

Preemptiveness consists of four items: the extent to which the IT application (1) provides unique access to channels (brokers, distributors, and retailers), (2) forces competitors to adopt less favorable market postures, (3) influences the development of industry standards and practices, and (4) offers barriers against imitation such as patents, copyrights, and trade secrets. Through providing favorable access to channels and market position, setting industry standards, and erecting institutional barriers, the IT application translates its technological lead into first-mover advantages that persist even if the technology gap closes (Porter 1985).

Synergy

Synergy is a function of (1) the application’s alignment with the firm’s business strategy, (2) marketing policies and practices, (3) the ability to continuously innovate and enhance the application, (4) technical expertise, and (5) top management support for the application. These items are salient in that while alignment makes it difficult for competitors to benefit from copying the application (Clemons and Row 1987), continual innovation makes copying less effective. However, enhancements require technical expertise and, more importantly, top management support to guarantee the commitment of adequate financial and organizational resources for the IT application (Information Week 1986).

Implications and Extensions of the CAPITA Construct

Describing CAPITA as “the basis of a preliminary multidimensional measure or index of CA” (1994:1616), Sethi and King (1994) identify the benefits of the tool, including its ability to obtain organizational profiles along the seven dimensions that would be useful to practitioners for “demonstrating, or at least elucidating the benefits of an existing IT” (1994:1617).

Sethi and King’s (1994) research is utilized in the BAM model, forming its base. The seven dimensions of CAPITA, which are effectively the elements of competitive advantage provided through IT and facilitated by the Internet, are added to the value chain. This augmented value chain is termed the BAM. Thus, the BAM includes the value chain at its core, and, as proposed by authors such as Rayport and Sviokla (1996) and Bickerton, Bickerton and Simpson-Holley (1998), expands to incorporate Sethi and King’s (1994) dimensions of CAPITA as the specific competitive advantage activities related to the Internet. The final section of this paper explores the potential of integrating the value chain and CAPITA to produce a model which has greater utility than the application of the two independently.

THE BUSINESS ACTIVITY MODEL

The BAM is composed of the value chain and CAPITA, melded into a single model. As illustrated in Figure 1, the primary and support activity efficiency dimensions of CAPITA take logical positions within the outer band, while the other five dimensions provide a platform that underpins the entire value chain. As can be seen in the diagram, aspects of Internet competitive advantage surround the conventional value chain activities. Visually, this is an attempt to reinforce the relationship between a firm’s activities and the potential opportunities for acquiring competitive advantages that the Internet can afford each area of operations. While Primary Activity Efficiency and Support Activity Efficiency find logical positions relevant to their counterparts within the value chain, the five additional aspects of Internet competitive advantage reinforce all firm activities. In other words, Synergy, Resource Management Functionality, Preemptiveness, Resource Acquisition Functionality, and Threat-based competitive advantages may be found in primary activities or support activities. The essential point is that the Internet, as a new business channel, provides opportunities through its various applications that are less overt in the conventional value chain.

Like the value chain, dotted lines play an important part in the Business Activity Model. The dotted lines between support activity efficiency and the value chain’s support activities reflect the fact that this dimension of Internet competitive advantage relates directly to those traditional activities. The dotted lines between primary activity
efficiency and the value chain’s primary activities serve the same function. Dotted lines also separate the remaining competitive advantage dimensions of the Internet from the original value chain, illustrating the fact that although distinct, they can impact upon any of the traditional business activities.

CAPITA is a well-tested and robust instrument. However, as a tool for strategic analysis, it does not encourage the user to consider competitive advantages throughout all firm activities. For example, the synergy dimension focuses on the competitive advantages associated with the match between strategy and a particular IT application, or as we have argued, a business channel, that can facilitate the realization of this strategy. CAPITA does not necessarily identify the location of competitive advantages within the value chain. This in itself is not necessary for an organization to capitalize upon the discovery of an opportunity, but conceptually the link to the value chain is useful because it means that managers can pursue CAPITA-stimulated competitive advantages across all business activities without actually deploying the instrument.

The integration of the Internet and its seven dimensions of competitive advantage with the value chain to create the Business Activity Model do not specifically help managers create value. As with the traditional value chain, it simply assists them in the initial identification of competitive advantage possibilities. At this point managers are confronted with divisive issues such as the sustainability of Internet based competitive advantage, and how best to extract value from the identified opportunity. In this area recommendations are abundant. For example, Mata, Fuerst and Barney (1995) use a resource-based analysis to build a model for assessing sustainable IT based competitive advantage. Similarly, Frohlich (2002) considers a number of ways managers can use the Internet to improve their supply chain performance, whilst and Rayport and Sviokla (1996), and Porter (2001) provide various models, recommendations and insights for the strategic use of the Internet. Naturally this research is critical to business, and has facilitated debate.

In practical terms, the BAM provides managers several advantages that are not as apparent with the independent use of either the value chain or CAPITA. First, while they are different constructs, CAPITA has emerged from competitive advantage concepts, which means that both take a consistent view of the notion. To illustrate, the traditional value chain highlights procurement as an independent support activity with the potential for creating value in itself, whilst impacting primary activities. The value chain, however, does not propose specific procurement strategies, or evaluate the likely success of management initiatives in creating sustained procurement-based competitive advantage. These are secondary considerations. The BAM identifies resource management functionality as a generic category of competition in the virtual world that can be scrutinized for unique value-adding opportunities, and can also impact upon traditional primary and support activities. In this way, the two constructs add a new dimension of depth to the analysis of competitive advantage. Moreover, the BAM emphasizes the importance of viewing the Internet as a mode of business activity, which is not implicit in either CAPITA or the value chain. Managers applying the BAM to their organizations will subsequently see the Internet as something more than the sum of its IT applications.

The most salient question is whether managers, when faced with the imperative of locating new opportunities for competitive advantage, are aided in their decision making by the BAM. We believe this is the case because the model reminds managers to think about opportunities for creating competitive advantage via the Internet throughout the value chain. Some of these potential opportunities demand a kind of synergistic thinking that is bolstered by a model where the Internet’s dimensions of competitive advantage are represented concomitant to a firm’s other activities. For example, in order to fully exploit the competitive advantage power of the Internet, managers should undertake a comprehensive review of potential Internet related assimilation practices. Assimilation theory is based on the concept of assimilating the Internet across the entire operations of a business. Most practically undertaken by a
project team, this review should consider the entire organization, and seek to identify every opportunity to incorporate the Internet operations.

Similarly, managers can consider the ability of the Internet to enhance each of their primary activities as identified in the value chain. In such an evaluation of the importance of primary activity efficiencies, managers should note that reducing the cost of activities concerned with the physical creation, distribution, and service of the product is a source of competitive advantage. This must be achieved, however, without reducing the cost of marketing and sales, the remaining primary activity, to an extent that it affects the quality of the offering provided to customers, thus compromising any benefits or competitive advantage resulting from reduced costs. Thus, an opportunity lies in finding possibilities for cost reductions and in enhancements to marketing and service delivery through the Internet. An example is found in the increasing uptake of Microsoft’s .Net Internet platform in business. The platform may be used to integrate logistics and internal inventory and accounting processes. In this way, the Internet can also facilitate relationship marketing efforts and provide a range of post-purchase service features.

**CONCLUSION**

The purpose of this paper was to synthesize and assess the growing literature articulating the importance of the Internet as a new business channel, and propose a model that is helpful to managers in identifying subsequent competitive advantages. It supports the ideas of Rayport and Sviokla (1996) and Bickerton, Bickerton and Simpson-Holley (1998) in arguing the necessity for an augmentation to the value chain in the form of a virtual chain with distinct characteristics. This review also introduces the CAPITA construct devised by Sethi and King (1994), which was developed using competitive advantage concepts. The paper culminates in the combination of the conventional value chain and CAPITA in the form of a Business Activity Model, thus identifying hitherto unrealized synergistic benefits. Ultimately this model may be tested and subsequently used to provide managers with a contemporary business model that expands upon the proven value chain by incorporating the growing recognition that a marketspace – a third, distinct category of firm activity – now exists.

Porter’s (1985) observation that competitive advantage cannot be understood by looking at a firm as a whole is not in dispute. Nor is the judgment that a systematic way of examining all the activities a firm performs and how they interact, is necessary for analyzing sources of competitive advantage. Equally important, however, is the recognition that not only is the Internet inadequately contained in the 1985, pre-Internet value chain, it is not merely a technology in itself, but a new business channel that is sophisticated enough to demand further attention. The Internet is more powerful and more pervasive than a single technology. It represents a radical departure from conventional value chain activities for some organizations such as those for which the Internet is the core business channel. To that end, the value chain must be able to specify how the Internet can bolster or obstruct opportunities for competitive advantage found across all business activities, irrespective of their place in the stream.

In order to fulfill Porter’s call for a systematic examination of all business activities, the Internet and its dimensions are included in an augmented value chain, or Business Activity Model. Porter advises that “identifying value activities requires the isolation of activities that are technologically and strategically distinct” (1985:39). Since the Internet is a new and distinct business channel, the utilization of the conceptual additions provided by Sethi and King (1994) were essential in order to specify the nature of the impact of the Internet upon value chain activities.

A number of authors (Johnston and Mak 2000; Tapscott 1996; Ware, Gebauer, Hartman, and Roldan 1998; Westland and Clark 2000) support the augmentation of the value chain. Bickerton, Bickerton and Simpson-Holley (1998) go so far as to visually present the Internet encompassing the value chain. This literature supports the work of Sethi and King (1994), which provides the seven dimensions of competitive advantage
facilitated by the Internet. Sethi and King (1994) have developed a comprehensive conceptual tool for assessing IT competitive advantage. It can be used to show how the Internet as a new business channel can permeate the entire value chain and affect all business activities. It therefore underpins the value chain and augments and informs strategic decision making.

The Business Activity Model comprises a first stage, albeit speculative, of developing a more accurate tool for assessing competitive advantage that takes into account every element of potential business value. Such a tool would be valuable for organizations in assessing their Internet strategies. Future discussion and research is essential, of course. Further investigation into both the dimensions and measures of competitive advantage through the Internet would be a worthy next step. The Business Activity Model provides both a possible platform for such research, and a framework for organizations to harness the potential of the Internet to achieve competitive advantage. Managers could use the Business Activity Model as a tool for the detection and understanding of potential elements of competitive advantage that incorporates all activities critical to business in the new digital economy.

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