

A CONCEPTUAL MODEL FOR SUSTAINING COMPETITATIVE ADVANTAGE IN DIGITAL ECONOMY

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Keywords: Business Model, Competitive Advantage, Connected Organizations, Digital Economy, Governance, Internet, Web Technology, Sustainability.

Abstract: As high speed Internet is connecting citizens and businesses around the world, social and economic mode of interactions among citizens, governments, customers and businesses are changing rapidly. Governments and businesses are using web information systems to provide highest quality services at affordable cost to their citizens and customers. Citizens and customers are becoming more demanding. Businesses are experiencing intense pressure of global competitors, and are in constant search for strategies and models for better governance and sustaining growth. This paper examines the impacts of Internet and web-technology on the functions, processes, structure and behaviour of connected-business organizations, and their effects on the competitive landscape and sustainability of eBusiness organizations. As a final point, it provides a conceptual model for sustaining competitive advantage in digital economy.

1 INTRODUCTION

Internet has revolutionized the ways and means of connecting, inter-operating and exchanging messages, goods, services and money. The emerging new media and the channels of communication is so powerful, convenient, cost-effective and far-reaching that they are consistently attracting millions people of all class, hundreds of businesses of all kinds, from all over the world every day. This revolution of communication has created an evolution that is transforming business, society and the economy. It has transformed the economy into digital economy, society into eSociety and the businesses into eBusiness. The size of digital economy is growing in leaps and bounds. In digital economy citizens, customers, governments and businesses, use Internet and Web technology tools as the enablers of business.

The boom, bust and return (Johnson, 2002, US Census Bureau 2005, European eBusiness Market Watch 2005) of ePhenomenon might be confusing at its manifestation. In fact, these are symptoms of evolutionary characteristics of digital business ecosystems (Peltoniemi 2004). The eEvolution reminds us the stories of automobiles and aviation industries. In the early days of automobile industry,

there were more than 2000 carmakers, but now there are only three car companies left in the United States. Likewise, hundreds of aircraft manufacturers have gone bust, some very recently. The eSociety is a fully connected society. Its members use technology and the digital network for communication, intermediation, evaluation and completion of business transactions. The processes are automated, ubiquitous and access able from anywhere by anyone at any time and by many devices. This being scope and scale operation of connected-business (eBusiness) the success of a networked company—depends on — how one uses the emerging technology to create competitive advantage for their companies and how renewable are those advantages. The core intents of eBusiness are similar to any other business, but the mode and rules of operations and competition are very different (Porter 2001).

The competitive advantage of digital business entity does not come from having computers and connectivity with the global network, but by using them to create, deliver and realize superior value. The challenge is how to create superior value for customers and remain closer to the customers, who are also members of the same connected society and have many options. The Internet provides equal opportunity to all to customers and competitors,

suppliers and distributors. Customers of connected economy are well aware of their options, and demand excellence. Everyone (customers and competitors) sees everything from everywhere. The web-based digital economy provides global visibility.

The biggest challenge of eBusiness is how to maintain differentiation and remain competitive in fully connected and transparent society. Protecting uniqueness in open, transparent and borderless economy requires in-depth analysis of contributors of differentiation. What resources, actions and behaviours of firms will lead to sustainable competitive advantage? A competitive advantage can result either from implementing a unique value-creating process or through superior execution of the same strategy as competitors (Bharadwaj, Varadarajan, and Fahy 1993). The competitive advantage is *sustained* when other firms are unable to duplicate the strategy (Barney 1991). Sustainability means durability and durability of competitive advantage is like the competitive survivability of the firm.

Success brings rewards as well as competitors, who try hard to develop new technologies and new business processes that can upset the initial competitive status quo. Only those competitive advantages lead to extraordinary growth and profitability, which can create big barriers around a business to fend off the competitors. The best long-term investments are those companies whose walls are not only high, but also getting higher and thicker over time.

The innovative character of ICT, ubiquity of Web, and speed of digital network has changed sustainability into nightmare of survivability. Customers and competitors instantly receive the same information, thereby provide impetus to the competitors and challengers to learn and readjust their competitive strategy, and have made eBusiness as hyper-challenging. Who will equal or outperform whom and when, depends on who learn and readjust their business processes, organizational structure and their work culture to the requirement of the competitive landscape of digital economy fast?

This raises many questions about the impact of the Internet technology on functions and processes of business, structure of organizations, and work culture of organizations and competitive landscape of the business. What framework or eBusiness model (Majumdar 2005), will help eBusiness firms to retain their competitive advantage in this hypercompetitive business environment of digital economy.

2 FEATURES OF DIGITAL ECONOMY

The potential of digital connectivity to boost productivity, convenience and lowering the costs of operation and transaction is compelling developed and developing countries to focus on the e-potentials for growth and modernization of the public and private services. Industries and organization across the world operate like a massively interconnected network of organizations, technologies, consumers and products. The success of a business is no longer dependent on the size of its internal and external operations, but on the associations and relationships established among the participants in the digital Business Ecosystem.

The questions are, how can we predict, which organization will survive for how long and which organization will perish over time and why. What are the rules of the emerging digital business ecosystems? Creating sustainable business models seems unworkable without knowing the unique features of digital economy and the keystones of eBusiness model.

Firms and individuals of digital economy use Internet and web to transact business. Technology converts all information, processes and transactions into digital forms and allows business transactions with minimum human intervention. Internet and web are the backbone of digital economy and together they provide the technological platforms that allow business and entrepreneurs to communicate with their stakeholders in ways not previously possible. The ease with which information can be exchanged over these channels fundamentally changes the relationships with an organization's stakeholders.

Seven unique features of eBusiness technology (Laudon 2004) are:

- Ubiquity - Internet/web technology is available everywhere: at work, at home, and elsewhere via mobile devices, anytime. Digital goods and services are visible and accessible from "marketspace". Anyone from anywhere at anytime can access and conduct business using Internet.
- Global Reach – The technology reaches across national boundaries, around the earth. Business is enabled across cultural and national boundaries seamlessly. Information can reach all connected customers or business partners through the Internet without sacrificing the richness of the contents.

- **Interoperability** – Internet provides an open and nonproprietary platform for communication and collaboration and allows enterprises to integrate and interoperate ubiquitously. There is one set of technical media standards across the globe, Internet standard.
- **Interactivity** – Instant messaging capability of eBusiness technology enables close connections, online dialog, with customers and among supply chain or business ecosystem partners' information systems. The benefits include real-time pricing and negotiation, and online flexible customer servicing.
- **Information Density** – Technology reduces information costs and raises quality. Information processing, storage and communication costs drop dramatically, while currency, accuracy and timeliness improve greatly. Information becomes, plentiful, cheap and accurate.
- **Speed - Change** is fast and frequent in the digital economy. Digital firms must learn to learn and adapt quickly to changing business and economic environments. Adaptation is sensing the shape of next wave, and positioning the company to take advantage of it (Arthur, 1996).
- **Personalization** – Technology allows personalized messages to be delivered to individuals as well as groups. A firm or business ecosystem (Gossain and Kandiah, 1998) can provide unique (and customized) "solutions" (as opposed to single product or service) to individual customers.

In digital economy, ICT is the enabler of business. The design of "business models" of digital economy is articulation of firms' strategy to create and deliver of unique value to its customers and shareholders in a given segment of the business ecosystem by using the right technology and resources, aligning people and the processes for achieving the desired level of performance.

The goodness of a business model depends on the power of the value proposition, correctness of execution and governance processes (Majumdar, 2005). To thrive in global marketplace, an organization have to study the impact of Internet and web technology on connected organizations before developing a framework to construct a resilient business model for the organization.

3 IMPACT OF INTERNET & WEB TECHNOLOGY ON BUSINESS

Sustainability of "business entities in digital economy" depends on how effectively firms formulate strategies to blend the technology and other corporate resources, to design business processes, develop organizational structure and work culture not only to combat the competition, but also to maintain the competitive edge. To develop a resilient framework for sustaining competitive advantage in digital economy requires understanding of the impact of Internet and Web technology on: (1) the *functions* of business, (2) the *processes* of business, (3) the *structure* of organizations, (4) the *work culture* and behaviour, (5) the *competitive landscape* of eBusiness, and (6) the *sustainability* of eBusiness.

Figure 1 illustrates the impacts of Internet and Web technology on eBusiness application management.

Impact of Internet and web technology can be assessed in several ways. In this case, the results of Momentum Research Group (MGR 2002, 2003, 2004 and 2005), European Union (EBW 2003 and 2005) and others secondary sources were used to examine the impact of Internet and Web technology on sustainability of competitive advantage.

3.1 Impact of Internet on Business Functions

The results of Net Impact research (MRG 2002, 2003, 2004, and 2005) and the report of European Union's eBusiness Market Watch (EBW 2003 and 2005) demonstrate that Internet and Web technologies have substantially changed the functions and processes of private and public sector organizations across US, EU and Latin America. The Internet technology is influencing almost all functions of contemporary organizations. Organizations of all sizes across industries, across countries either have adopted or actively trying to adopt Internet business solutions as a tool to lower operating costs, increase revenue, increase operational productivity, increasing customers' satisfaction and harvesting rich dividends.

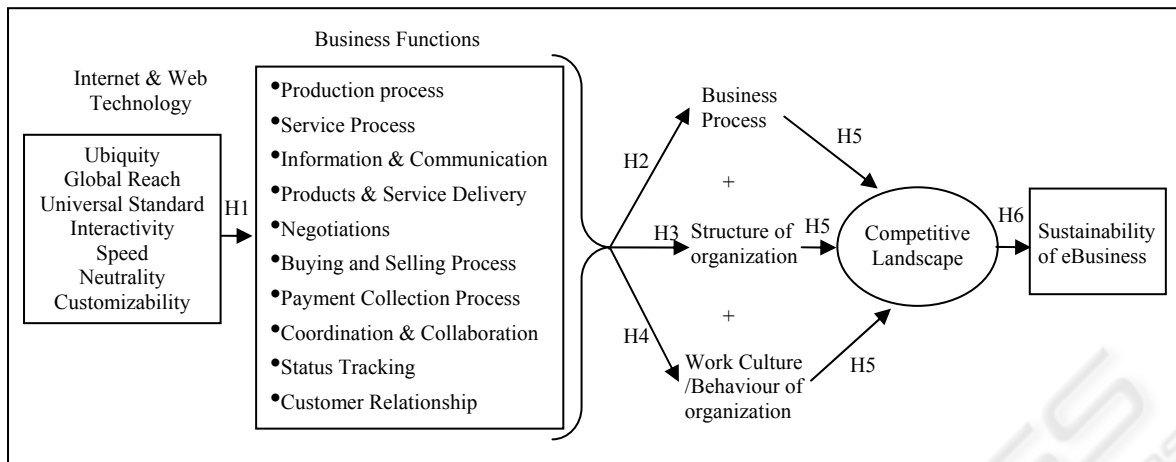


Figure 1: Impacts of Internet and Web Technology on Management of eBusiness Applications.

30-60% of European public sector organizations (MRG 2004, p-2) have been able to automate the typical business processes involved in their delivery of citizen services. The automation of these processes not only increase the speed of service delivery, but also reduce data-reentry errors, and facilitate the transmission of data to other complementary services. The public sector organizations are focused to extend the capabilities of existing citizen services, to introduce new services, to reduce costs of operations and increase citizen satisfaction. The level of network-enabled adaptation of Latin America 2005 is strikingly similar to the network-enabled adaptation behaviour of US 2003 (MRS 2005, p-16).

Web enabled applications account for a greater percentage of deployed applications in Latin American Networked-organizations than that was observed in US in 2003 (MRS 2005 p-17). Smaller organizations (less than 100 employees) had high level of applications that use web-based technology and the same is expected to observe in US (MRS 2005 p-18). This shows that small organizations are smart, flexible, and are adapting web technology to e-enable their business functions.

3.2 Impact of Internet on Business Processes

The process and business functions are interlinked. With the progress of automation, many of the old business functions have been subsumed within the activities of back-office. Thus business processes have become more important than functions. The Internet and Web technology is transforming all

processes into automated web-enabled processes. The result of repeated Net Impact study (MRG 2003, 2004, and 2005) shows that business processes have to to be reengineered to leverage new technology capabilities. However, the timing of process reengineering can significantly influence the final results. Research results demonstrate that organizations do not accomplish their desired results, if they do not reengineer their business processes before implementation of the technology. Process reengineering after application deployment tend to increase in operating costs significantly. This reveals the fact that Internet / Web technology is a general-purpose tool; results of application depend on the correctness of the application process. It is hard to change the meal, once it is cooked. Secondly, technology does not guarantee results, if it is not managed well.

3.3 Impact of Internet on Organizational Structure

Internet is changing the structure of organizations from hierarchical to flat task-based. The middle managers' positions are being eroded. Big organizations are being disintegrated as smaller task focused connected business units with specific responsibility sharing common organizational resource pull like human resource, IT resources. Conversely, small organizations are forming task-driven umbrella organization and operating like a big corporation, but maintaining their individual identity and profit centers. The bigger the world economy, the more powerful is the smallest players. Like globalization, Internet is molecularizing the

organizations. The relationships grow more business-like between employers and employees, the traditional chain of command is breaking, and the hierarchy-linked authority and power that used to be taken for granted are now being questioned (Malone 1998).

3.4 Impact of Internet on Organizational Behaviour

Behavior and culture of organization has significant impact on the technology driven performance (MRG 2005 p-27). This point out that value realization (implementation and governance) from digital process requires different mindsets and cultural bent. The results Net Impact study (MRG 2003, 2004 and 2005) reveals that “desire to improve customers satisfaction” is the number one objective of using ICT driven processes. Both the Net Impact 2003 study and European Public Sector 2004 study revealed that customer or citizen satisfaction was the most frequently cited driver of technology investments. Net Impact study of Latin America (MRG 2005) exhibits that the urge for achieving complete advantage by accelerating organizational speed, improving customer satisfaction or lowering costs are common mindsets of networked organizations.

3.5 Impact of Internet on Competitive Landscape

By design all networked organization are global entities. The struggle for opportunity sizing is also global—and the winners are those—that have highest ability to deliver on time, within budget and according to the preferences of the customers. What defines this “new world,” and the competitive landscape of business? The four key elements that make the current business landscape different are: globalization, Internet, importance of knowledge, and collaboration across organizational “boundaries.”

The major challenges are: What are the fundamental issues needs to be addressed to create sustainable organizational improvement. How to determine what is the right eBusiness opportunity? How can an organization move from where it is to where it wants to be? What are the transitional issues? Why do some organizations execute successfully, while other organizations fail to do so? What are the key factors that make the most differences?

3.6 Impact on Sustainability

In digital economy, the distance is dead. Work never sleeps. Value chains and boundaries of industry are blurring. Profits proved hard to come by, and many high-flying companies came crashing down. In little more than one year, many companies have fallen, the business world changed dramatically. The dot-com bubble burst, a recession came, and economic uncertainties snowballed (Kaplan 2002).

Sustainability depends on speed correctness of the business model and soundness of execution and governance. The new business ecosystems are compelling organizations to rethink their directions and revamp their business models.

Successful organizations of US, EU and Latin America are first focusing on back-office applications like finance and accounting, human resource and inventory management before shifting to customer-facing applications that improve employees, partner, customer, client or citizen (public sector) interactions (MRS 2005). The message is that organizations must be internally efficient to meet the divergent needs of their customers and other external business partners.

4 FRAMEWORK FOR COMPETITIVE SUSTAINABILITY

The pace technological change is continuous in digital business ecosystem. How long will a distinctive competitive advantage of a firm last, depends on what actions the firm takes to enhance and protect its capabilities and what actions the competitors take to replicate them. In connected economy news move fast and provokes competitors to take counter actions to match, alter or to supersede them. How long a firm can uphold its key strategic advantages?

Lucas (Lucas 2005) suggests that in digital business ecosystem only those competitive advantages will last for a while if they are rare, inimitable, non-substitutable and protect-able. Long-term sustainability of competitive advantage depends on organization’s ability to add additional resources, which are valuable, inimitable and non-substitutable.

Protecting competitive advantage in Internet economy is impossible, unless it is complementary to the characteristics of connected economy. Conversely, eBusiness firms cannot survive, if it does not have any competitive advantage (Barney 1991).

The continuity of success depends on how complementary and resilient is the firm's plans to transform dodging power of Internet into a unifying force to beat or equal the competition in terms of cost, quality, speed and innovation.

The endurance of competitive advantage of eBusiness depends not only on the worth of the advantage and the degree of difficulties of duplication or imitation, but also on the worth of imitation and on the strategy of protection as well as conversion of challengers and competitors into contributors and co-operators. Another theory of protection is development of capsules, modules and devices that can embed/encapsulate complex operations into simple capsules, modules or devices, which could be used by many for many different things and pulled by large number of users. Moreover, sustainability of eBusiness depends on pull-worthiness of the business rather than push power of the promoters.

First movers' advantages are short-lived (Barney 1991). In digital economy, "knowledge" is the key resource and success factor of digital economy. Nevertheless, knowledge is not static; it requires continuous updating and creation. To sustain in this knowledge economy, one has to be fast learner, talent attractor and continuous addition of resources and refreshing of their capabilities. Organizations have to be the homes of innovators and knowledge creators, who would be able to continuously develop new solutions and advantages. To survive and thrive in

this ever changing world of digital economy, organizations have to develop superior and resilient supply / demand matching capabilities that are more responsive to changing market conditions and have to have multiple sources of revenue.

Figure 2 exhibits a framework for sustaining competitive advantage in networked economy. It illustrates that to pull initial advantage organization must have a distinctive competency, a worthy network, rare resources and unique capability. Nevertheless, to remain successful, eBusiness initiating organization must be able to pull enterprises with complementary values and create a talent pull. Moreover, add additional resources and capabilities develop efficient and effective integrated operating models and create strong high performance work culture to become a superior provider of products and services and respond quickly with diverge needs of the customers and markets. To ascertain sustainability in uncertain and ever changing business environment, one has to have superior and capabilities, which are resilient, inimitable and renewable. To haze the risks of failure, one should have multiple sources of revenue rather than a single source of revenue.

Best-fit business plans call for assessment of the worth-of-the-network. Lucas (Lucas 2005) mentions about network externalities. However, from networked organizations' viewpoint, worth of a network is more important rather than "network externalities".

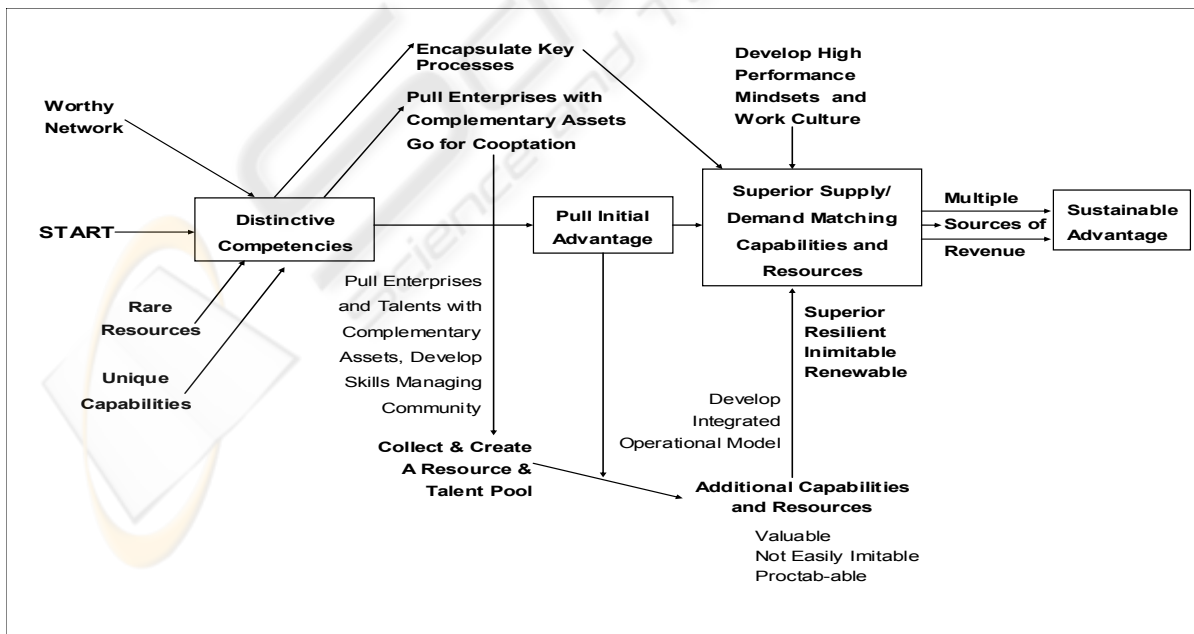


Figure 2: A Conceptual Model for Sustaining Competitive Advantage in Digital Economy.

Worth-of-a-Network can be estimated by the formula as given below.

$$WN = N * C * G + \sum P$$

WN = Worth of a Network,
 N = Number of Customers Use the Network,
 C = Per Capita Consumption,
 G = Growth Potential,
 P = Number of Potential Contributors
 Connected with the Network and their Worth

5 CONCLUSIONS

In digital economy initial opportunities are short lived. Changes are continuous. Challenges are endless. To haze through the maze of eBusiness, has to have comprehensive roadmap for value creation and delivery. This paper provides a dynamic framework for sustaining competitive advantage in digital economy.

This model advocates the need of network of complementary capabilities for continuation. The initial success depends on the worth of the network and the distinctiveness of the competencies. Continuity of success depends on capability building, effectiveness of operational model, performance “mindsets” and the work culture of the organization.

Continuity of competitive advantages requires continuous scanning of the opportunity as well as reviewing the strategies of technology-enablement of the processes, monitoring execution, and critical examination of the performance of the competitors. Continuity demands continuous process improvements and innovation. Sustainability can no longer ensured without adding more recourses and creating pool of talents and resources, and discovering new sources of revenues. Successful eBusiness management demands continuous learning. The other fundamental elements of success are collaboration and leadership.

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