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Strategies for I-Business in Virtual Markets: A Co-Evolutionary Approach

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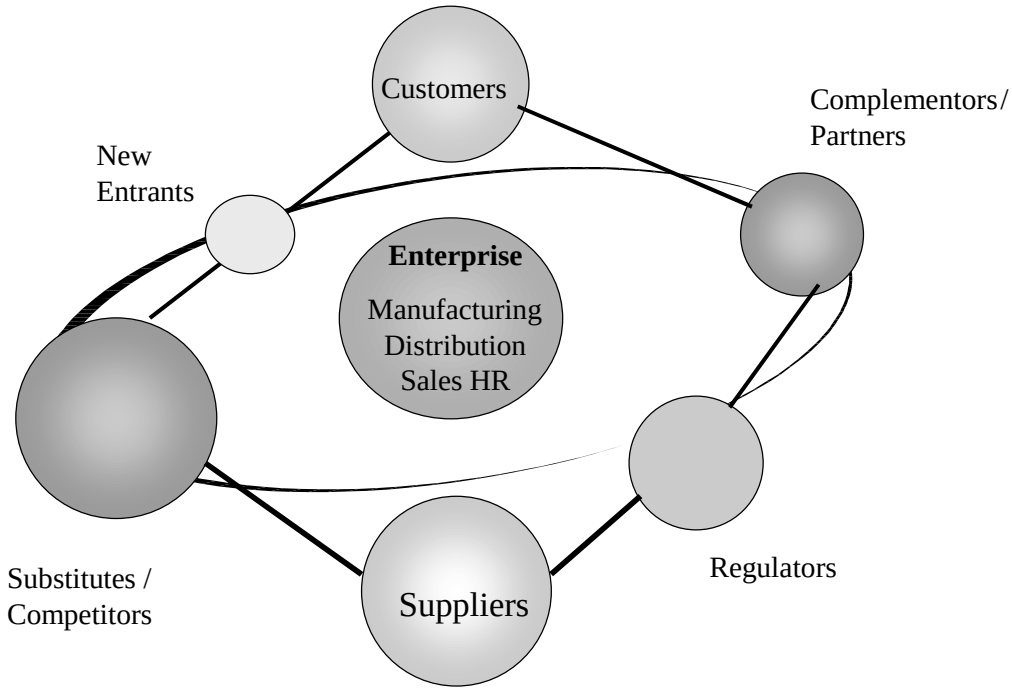
Abstract

This paper presents proposals for current research into IT-based strategies within virtual markets. It argues for a more flexible and dynamic approach to IT enabled change which is a direct consequence of these new organisational forms. An initial overview is presented of the mechanisms and dynamics of change and the unique features of I-Business is described. The paper then considers so-called 'virtual market ecosystems' where organisations evolve to support various changes to their environments through the adoption and implementation of electronic infrastructures. In this way organizations are attempting to deal with their surroundings which includes all aspects of IT-enabled learning and adaptation (Clegg et al, 1996; De Geus, 1997; Dvorak et al, 1997; Hackney et al, 1999). The contribution of the paper is to identify the fundamental theoretical approaches to meet the challenges of these emerging virtual markets and to propose appropriate IT strategies for I-Business in this respect.

Introduction

Driven by such phenomena as the World Wide Web, mass customisation, compressed product life cycles, new distribution channels and new forms of integrated organisations, the most fundamental elements of doing business are changing and a totally new business environment is emerging (Pawlowski et al, 1999). This environment variously described as the Electronic Business Community (EBC) (Ticoll et al, 1998), electronic economy (El Sawy et al, 1999), electronic market (Wigand and Benjamin, 1998) and virtual market (Burn and Barnett, 2000) is characterised by rapid exchange of information within a virtual network of customers and suppliers working together to create value-added processes. This virtual market brings with it new forms of IT-enabled intermediation, virtual supply chains, increasing knowledge intensity and information based business architecture strategies (Turban et al, 2000). This new business paradigm can be described as I-Business where core business processes may need to be rethought and redesigned, new organisational forms and inter-

Figure 1. Virtual Markets



organisational forms may need to be developed and where the emphasis will be on collaboration rather than competition within the virtual market. For the purposes of this paper I-Business is defined as a business with the following core elements

- Internetworked Market
- Internet enabled supply chain
- Interorganisational systems
- Integrated organisational systems
- Intelligent knowledge based decision systems
- Information-based business architecture strategy

Figure 1 illustrates the main components for a virtual market. It emphasises in particular the nature of the enterprise at the heart of the electronic infrastructure where activities associated with 'space' are more critical than the older concepts and importance of 'place' (Davenport, 1998). Customers are clearly able to rotate within the sphere to transact the best opportunities for purchasing from strategically dis-intermediated suppliers.

Dynamic IT-Enabled Organisational Structures

Dhillon and Hackney (2000) view IT enabled organisational changes as broadly classified into three categories based on the focus they accord viz. Pragmatic/behavioural focus, formal/structural focus, and technology focus. Pragmatic/behavioural focus on the organisational change points at a cultural dynamic in individual and group behaviours and an alternative approach to business practices through formation of intra and inter-organisational teams who facilitating intense information sharing. A number of researchers have noted the formation of core groups or alliances within organizations which constitute individuals drawn from various levels of hierarchy as well as from different functional disciplines and geographical locations (Greenwood and Hinings, 1996; Tushman and O'Reilly, 1996). The core group forms the network entailing a strong information linkage between them. The relationship between the members of this group is not only formal but also informal which results in a significant level of social coherence (Walsham, 1993).

Manifestations of inter-organisational teams are evidenced through the increasing number of strategic alliances cutting across organisational and national boundaries. Organisations become "location and structure independent" and are constantly influenced by the changing nature of their environment (Hall, 1993; Burton, 1995). This pushes them to make collaborations within and beyond the confines of their firm. These collaborations are supported by both electronic and human networks. Increasingly individuals and companies are setting up such transnational networks that pay absolutely no heed to national boundaries and barriers (Mowshowitz, 1994; Burn and Barnett 2000). For example, many Multinational corporations made an entry into the East European countries and other developing Asian economies in 1990s through strategic alliances with local leading companies. For instance IBM alliances with Kvant in Russia and Coco-cola's and Pepsi's entry into Indian market etc.

It is possible to trace the evolution of organisational structures from traditional monolithic, centralised and hierarchical organisations into loosely coupled organic networks. The new organic forms strike a balance between radical decentralisation, driven by the need for more responsiveness and autonomy to subsidiaries, and centralisation that connotes stricter controls. Co-operation emerges as the key design principle in the new network organisational forms. Such structures facilitate intense sharing of information and a high level of inter-personal and inter-organisational connectivity (Gebauer, 1996; Berryman et al, 1998). The technological perspective on the organisational changes relates to the opportunities for the extensive exploitation of IT. Nolan (1979) originally argued that a 'bureaucratic hierarchy' adopted by most organisations could usefully be enhanced with an IT-enabled network. The technological perspective considers these to be formed through the physical linkage of people and processes within organisations. Ross et al (1996) note that the organisation are information rich, and by connecting information, people and skills together the firm in aggregate is more effective. This is to consider an IT-enabled network as being fundamental to the management of functional, geographical, value chain integration and team support. In order to be more efficient, effective, and responsive organisations give prominence to the use of networks. Facing pressures of organisational costs containment and external competition, many companies are "rushing headlong" into adopting IT. The objective is to support these co-ordination-intensive activities which are most prevalent in network organisational structures. Clearly, the complexity of this issue is the extent that IT could indeed support these mainly non-coordinated activities. These have been termed by Englert, et al (1996) as 'ad-hoc-cooperation-processes' where the technology is required to augment management practice.

Clearly, there is an extensive reliance upon the features of IT to achieve these aims of a organisation. However, it is argued that since these new organisational forms entail increased informality, mutual trust and co-operation, leveraging of technological potential is contingent upon creating an appropriate information culture. Dhillon and Hackney (2000) contend that successful changes constitute equal importance to all the three dimensions of change namely pragmatic/behavioural, formal/structural, and technology. Over emphasis on any one of the dimensions without being adequately complemented by

other dimensions may lead to undesirable results. The I-Business should have an information focus and not the technical emphasis commonly prescribed. The forgoing so-called 'stage models' of change are limited because they portray only one possible sequence of events, through which all organisations are expected to progress. Hence, research on organizational transitions is likely to benefit more by treating processes as sequences of events that emerge over time, unconstrained by any *a priori* definition of stages of change (Choi, 1995; Larsen and Myers, 1997; Robey and Boudreau, 1999). These are the most likely scenarios of the virtual market place and the nature of future competitive (dot.com) environments.

Table 1. e-Market Ecosystem

EcoSystem Stage	Leadership Challenges	Cooperative Challenges	Competitive Challenges
Birth	Maximise customer delivered value *	Find and Create new value in an efficient way	Protect your ideas
Expansion	Attract Critical Mass of Buyers	Work with * Suppliers and Partners	Ensure market standard approach
Authority	Lead co-evolution *	Provide compelling vision for the future	Maintain strong bargaining power
Renewal or Death	Innovate or Perish	Work with * Innovators	Develop and Maintain High Barriers

Virtual Markets Ecosystems

Moore (1997) suggests that businesses are not just members of certain industries but parts of an ecology that incorporates different industries. The driving force is not pure competition but co-evolution. The term co-evolution originated in biology. It refers to successive changes among two or more ecologically interdependent but unique species such that their evolutionary trajectories become intertwined over time. As these species adapt to their environment, they also adapt to one another. The result is an ecosystem of partially interdependent species that adapt together. This interdependence is often symbiotic (each species helps the other), but it can also be commensalist (one species uses the other). Competitive interdependence can emerge as well: one species may drive out the other, or both species may evolve into distinct, noncompetitive niches. Interdependence can change, too, such as when external factors like the climate or geology shift (Tushman and Romanelli, 1985; De Geus, 1997).

The virtual market ecosystem is seen as "an economic community supported by a foundation of interacting organisations and individuals. Over time they coevolve their capabilities and roles, and tend to align themselves with the direction set by one or more central companies" (p. 26). The ecosystems evolve through four distinct stages:

- Birth
- Expansion
- Authority
- Death

And at each of these stages the ecosystem faces different leadership, cooperative and competitive challenges.

This ecosystem can be viewed as the all-embracing electronic market culture within which the I-business maintains equilibrium. In Table 1 a possible evolution path is shown for an I-business as *. The I-business initially focuses on gaining new customers. As the business expands they realise that they need to extend alliances with suppliers and so set up a number of different alliances throughout their value chain. This requires more rigorous management of different communication channels reflecting different degrees of dependency and reciprocity. At this stage the I-business may decide to impose more control over the alliance in order to lead a co-evolution to a market alliance. Simultaneously other I-businesses have been formed as the market has matured and at stage 4 the I-business faces a choice which may result in a completely new virtual form with the same or different players in the virtual market and the recommencement of the evolutionary cycle.

This view is supported by Eisenhardt and Galunic (2000) who point out that the new roles of collaboration in I-business are actually counterintuitive and that collaboration does not naturally lead to synergy. Where synergies are achieved the managers have mastered the corporate strategic process of coevolving. These managers routinely change the web of collaborative links - everything from information exchanges to shared assets to multibusiness strategies -among businesses. The result is a shifting web of relationships that exploits fresh opportunities for synergies and drops deteriorating ones.

Table 2 shows the different approaches involved in traditional collaboration and the new coevolution model.

Table 2. Traditional Collaboration Versus Coevolution (after Eisehardt and Galunic, 2000)

	Traditional Collaboration	Coevolution
Form of collaboration	Frozen links among static businesses	Shifting webs among evolving businesses
Objectives	Efficiency and economies of scale	Growth, agility, and economies of scope
Internal dynamics	Collaborate	Collaborate and compete
Focus	Content of collaboration	Content and number of collaborative links
Corporate role	Drive Collaboration	Set Collaborative Content
Business role	Execute collaboration	Drive and execute collaboration
Incentive	Varied	Self-interest, based on individual business unit performance
Business metrics	Performance against budget, the preceding year, or sister-business performance	Performance against competitors in growth, share and profits

This ecosystems approach can be applied to different market models such as the four models of virtual market environments identified by Ticoll et al (1998) in their examination of e-business communities. They suggest that such markets differentiate along two primary dimensions: economic control and value integration (figure 2).

Figure 2. Four Models of Virtual Market

High

Aggregation	Value Chain
Open Market	Alliance

Low value integration High

The open market model is basically a business to consumer model without any single player in overall control although different players and market alliances can drive events at different times. The aggregation model normally has one business in control positioning itself between suppliers and producers. Value chains have a similarly hierarchical model but maximise value integration through operational effectiveness and alliances retain that high value integration but rely on shared visions, standards and business practices to provide a full solution environment without any single company exercising overall control. In many virtual market environments this can be seen as a staged growth evolution of I-business maturity. Each of these stages of maturity demands different approaches to strategy and different approaches to process management.

Relating Strategies to Models

Berryman et al (1998) suggest there are three types of marketplace differentiated through control ownership: those controlled by sellers, those controlled by buyers, and those controlled by neutral third parties. Marketplaces controlled by sellers are usually set up by a single vendor seeking many buyers. Its aim is to create or retain value and market power in any transaction. Buyer-controlled marketplaces are set up by or for one or more buyers with the aim of shifting power and value in the marketplace to the buyer's side. Many involve an intermediary, but some particularly strong buyers have developed marketplaces for themselves. Neutral marketplaces are set up by third-party intermediaries to match many buyers to many sellers. Choosing one of these models is essentially a strategy for I-business. Some examples are shown in Figure 3.

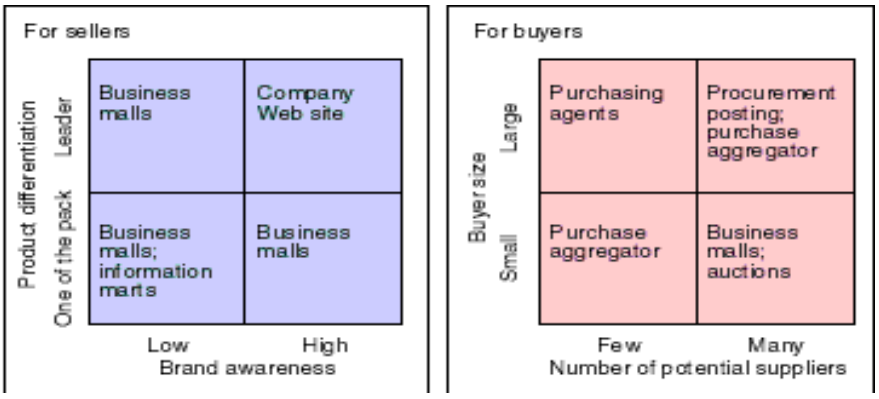
Companies wanting to evaluate which model suits them best should answer the following four questions to help them determine an appropriate strategy.

- Are there transaction savings or benefits to be realized?
  - Cost reduction through greater process efficiency
  - Improved reach.
  - Reduction in prices to buyers

Figure 3. Types of Electronic Markets

Seller Controlled	Information-only vendor web sites Vendor web sites with on-line ordering	Cisco Systems
Buyer controlled	Web site procurement planning Purchasing agents Purchasing aggregators	Japan Airlines Freemarkets Online TPN Register
Neutral	Industry/product specific search engines Information marts Business malls Auction spaces	FastParts

Figure 4. Choosing the right marketplace



- Is an electronic market for our product developing quickly?
  - Do we have transaction inefficiencies?
  - How sophisticated is the buyer?
  - Is the product e-friendly?
- Do we have substantial market share or buying power? This is illustrated in Figure 4 where choosing the right market for sellers and buyers becomes critical for the virtual market place.
- Would a neutral intermediary be beneficial?
  - Advantage of scale in transaction processing
  - Value of the information acquired during buying and selling
  - Anonymity.

For buyers, the strategic imperative is clear as they have little to lose and much to gain and should therefore organize a buyer-controlled marketplace as quickly as possible. The dynamics of electronic marketplaces also create clear opportunities for third-party intermediaries, which can create value by virtue of their neutrality. Sellers are the most vulnerable participants, because they will increasingly have to compete with other vendors in a transparent environment. The dynamics and rapid growth of electronic marketplaces are forcing businesses to choose their strategies now (Turban et al, 2000). Electronic business-to-business commerce is not simply a question of automating existing channels and processes. It is a whole new way of doing business.

Conclusion

This paper has demonstrated the consequences and challenges for an IT-enabled infrastructure where organisations are immersed in highly competitive virtual business environments. It has outlined a number of business models which form a potential strategy for I-Business in these situations.

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