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Monideepa Tarafdar
University of St. Thomas

Sanjiv Vaidya
Indian Institute of Management Calcutta

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ADOPTION OF E-COMMERCE BY ORGANIZATIONS: INTEGRATED PERSPECTIVES ON THE STRATEGIC AND ENVIRONMENTAL IMPERATIVES IN DEVELOPING COUNTRIES

Monideepa Tarafdar
Univesrity of St. Thomas
mtarafdar@stthomas.edu

Sanjiv D. Vaidya
Indian Institute of Management Calcutta
sdvaidya@iim.cal.ac.in

Abstract

In recent years many developing nations have been exposed to significant external changes such as economic deregulation and globalization. Anecdotal evidence suggests that this has resulted in the adoption of EC by companies in these countries. It is important to understand these strategic and environmental imperatives for EC adoption. Such understanding is required for anticipating necessary changes in EC adoption with impending and emerging changes in the environment. It is also needed for formulating business strategies in alignment with the organization's IS strategies and IT capabilities, and in order to address managerial challenges in EC adoption. This paper is based on research-in-progress that explores the manner in which conditions related to the environmental and competitive contexts of the organization, lead to the adoption of EC in companies in developing societies. We studied the EC adoption of eighteen companies from eleven industries in India. Preliminary results, based on interviews with more than a hundred people in these organizations indicate that there are broadly three conditions under which an organization is forced to adopt EC. These are related to the external environment, organizational performance and specific internal management compulsions. This research addresses a crucial and scarcely studied area in the management of IT in developing countries.

Keywords: E-commerce adoption, developing countries, strategic and environmental imperatives

Introduction and Research Questions

Strategic and environmental imperatives have been cited as important reasons that lead to E-Commerce (EC) adoption (Iacavou et al 1995, Premkumar and Ramamurthy 1995, Chwelos et al 2001). In recent years many developing nations in Asia and South America have been exposed to significant changes such as economic deregulation and globalization. Recent IS research indicates that these changes have been important drivers of EC adoption (Dasgupta et al 1999, Tarafdar and Vaidya 2002b) and that there is a need for companies in these countries to respond to external conditions brought about by the demands of an interdependent and global economy (Deans and Ricks 1993, Watson et al 1997, Gallupe and Tan 1997). It is therefore important to understand the external context of EC adoption in developing countries. Such understanding is crucial for three reasons. First, it is necessary for anticipating and planning necessary changes in the level and nature of EC adoption, with impending and emerging changes in the environment. Second it is required, for formulating business strategies in alignment with the organization's IS strategies and IT capabilities. Third, it is important, in order to address managerial challenges in EC adoption (Deans and Ricks 1993).

Researchers have pointed out the lack of conceptual frameworks in this domain and have emphasized that a greater understanding of the phenomenon is required (Palvia 1997, Gallupe and Tan 1999). This paper is based on current research-in-progress that explores the manner in which changes in the environmental conditions and strategic contexts lead to the adoption of EC in companies in developing societies. The following research questions have been addressed.

1. How do environmental, competitive and strategic factors affect the adoption of EC for companies in developing countries?
2. How can companies anticipate such changes and accordingly plan for corresponding required changes in EC adoption?
3. What are the implications for EC planning and management, for responding to changes in competitive, strategic and environmental factors?

The rest of the paper is structured as follows. Section 2 consists of a brief description of the conceptual foundations in the field. Section 3 outlines the research design. Sections 4 and 5 describe some of the preliminary findings and give pointers to expected future findings. Section 6 explains the contributions and significance of the research.

Brief Conceptual Foundations

Literature on strategic management suggests that the following situations force organizations to bring in changes into their products, processes and strategies.

1. Certain changes in the environment (Johnson and Scholes 1999)
2. The competitive context that organizations face (Porter 1985)
3. The manner in which organisations respond to these changes (Hrebaniak and Joyce 1985, Nadler et al 1990).

In this context, external pressures in the form of actions of competitors and the expectations of customers, for instance, have been major driving forces in EC adoption (Iacovou et al 1995, Watson et al 1997, Tarafdar and Vaidya 2002b). Various studies have identified different strategic and environmental factors that influence the adoption of EC. We find that these factors can be broadly classified into three categories as follows.

1. The general environment of the firm
2. The immediate competitive environment
3. Overall strategy of the firm

The different factors have been briefly described below and illustrated in Figure 1.

Factors Related to the General Environment of the Firm

The general environment of an organization consists of the socio cultural, technical, economic and political components (Duncan 1972, Johnson and Scholes 1999). A number of studies have explained how changes in the different aspects of the general environment act as drivers for the adoption of EC by firms. These drivers include changes in government policies and legislation (Ives and Jarvenpaa 1991), social conditions (Palvia 1998) and economic circumstances (Dasgupta et al 1999, Gallupe and Tan 1999, Palvia 1998).

Factors Related to the Specific Competitive Environment of the Firm

Changes in industry structure forces (Porter 1985) lead to changes in the company's operations and serve as possible imperatives for the adoption of EC. Competitive rivalry and pressures cause an organization to adopt EC when other firms in the industry have done so (Iacovou et al 1995, Premkumar et al 1995, Palvia 1998). In the case of B2B technologies, adoption by partners results in positive externalities. Encouragement, commitment, support and coercion from customers and suppliers for instance, lead to the adoption of B2B E-Commerce (Reich and Benbasat 1990, Crook and Kumar 1998, Hart and Saunders 1998, Payton 2000, Chwelos et al 2001, Mehrtens et al 2001). Hart and Saunders (1997) have reported that trust and interdependence between a company and its suppliers and customers act as strategic facilitators for EC adoption.

Factors Related to the Firm's Strategy

Nature of Products

Firm strategy has also been found to affect the adoption of EC. Studies have focused on the relevant characteristics of products and services, and the activities involved in the acquisition and use of the product by the customers. The content and context of

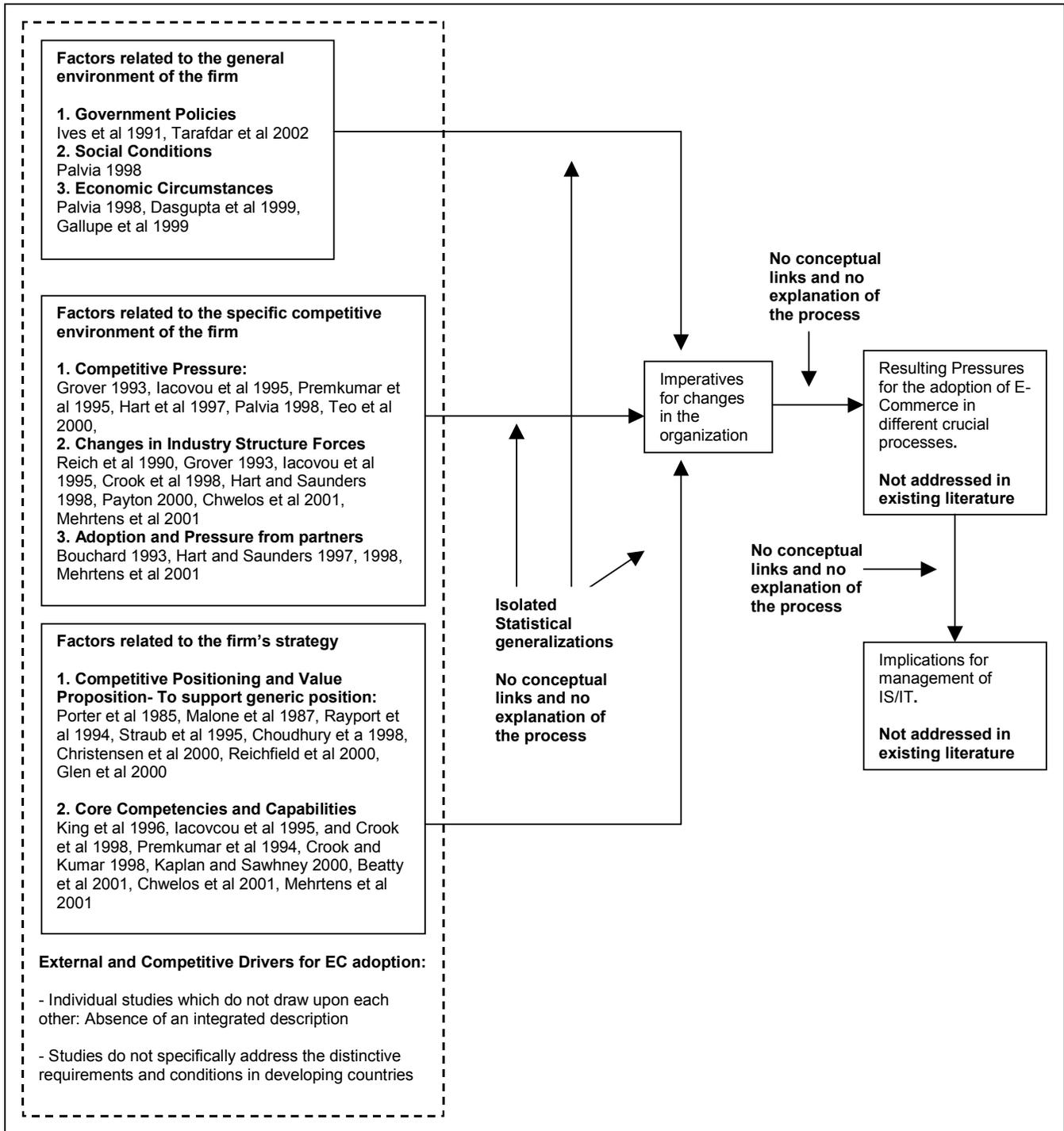


Figure 1. Analysis of Existing Literature

information that is required to be supplied to customers, along with the product, have implications for the use of B2C systems (Malone et al 1987, Rayport and Sviokla 1994). Information based products can be effectively distributed through electronic means (Porter et al 1985). Thus B2C E-Commerce can be used to effectively differentiate such products (Straub and Watson 1995, Choudhury et al 1998).

Potential Business Benefits from EC

The nature of the core competencies (Prahalad and Hamel 1992) and capabilities of the firm, resulting from its generic strategy position (Porter and Millar 1985) and value proposition (Day 1994) also determine the nature and extent of EC adoption. Organizations often proactively push for EC adoption, for realizing operational benefits and supporting their competitive strategies (Iacovcou et al 1995, and Crook and Kumar (1998). Directly perceived benefits in terms of reduced costs and inventory, better communication, quick response, a wider reach, and increased process efficiency, have a positive influence on EC adoption (Premkumar et al 1994, Crook and Kumar 1998, Kaplan and Sawhney 2000, Chwelos et al 2001, Mehrrens et al 2001). The expectation of indirect benefits such as improved customer service, competitiveness and overall productivity also leads to EC adoption (Chwelos et al 2001, Beatty et al 2001).

Analysis of the Literature

The following observations can be made with regard to the literature.

Most of the literature deals with research carried out in the developed countries. Studies have shown that there are two significant differences between developing nations and developed nations, which affect the adoption of IT. Structural differences are concerned with differences in physical, social and economic arrangements that shape e-commerce business models and influence individual and organizational use of the Internet (Markus and Soh 2002, Mennecke and West 2001, Walsham and Sahay 1999). Cultural differences relate to differences in organizational and national culture such as power distance and uncertainty avoidance (Watson et al 1997), and approaches to information processing and decision-making (Walsham and Sahay 1999), which affect the adoption of IT and e-commerce. These differences have been described in Table 1. As the table shows, developing nations exist in a different technological, economic and social setting. It is therefore necessary to study the process of EC adoption and the external drivers for it, specifically from the point of view of companies in developing countries.

Most of the studies are concerned with isolated testing of statistical variables (Tarafdar and Vaidya 2002a). They do provide some pointers to strategic and external factors that influence EC adoption. However they do not explain how and why these factors affect EC adoption. There are no explanatory models that present an understanding of the process of EC adoption (Palvia 1997).

In the absence of an understanding of the phenomenon of how external factors affect EC adoption, management strategies for predicting and managing IS and IT planning and implementation have not been derived and explained. In this regard, it has been observed that there is a need to predict and foresee rather than react, such that companies can better manage the demands of an IS function that is increasingly dependent on rapidly changing environmental, competitive and strategic variables (Watson et al 1997).

Research Design

A qualitative, exploratory research methodology was adopted considering the lack of explanatory literature in the domain (Lee 1989, Guba and Lincoln 1994). This allowed us to develop rich descriptions of the phenomenon. We studied the EC adoption of eighteen companies from eleven industries in India (Table 2). India forms an appropriate and interesting setting for the study, because increased competition as a result of economic liberalization in the last decade, has led to modernization and IT adoption in many sectors of the economy. At the same time, because of infrastructure deficiencies and a low GDP, India is still largely a developing nation (Watson et al 1997, Walsham and Sahay 1999). Moreover, there is a relative lack of familiarity with and confidence in IT among organizations. Reliable IT infrastructure is also largely absent. The broad range of industries would help to generalize the findings of this study. A structured, open-ended questionnaire was used and data was collected through face-to-face interviews, with a total of 104 people from the different companies. Although the questions were guided by the literature findings, we were open to emergent concepts (Table 1). The qualitative analysis software ATLAS Ti (Weitzman 2000) has been used to code and analyze the interview transcripts and secondary data, and to understand and demonstrate the relationships between the different concepts that emerged from the data.

Brief Description of the Research Findings so Far

Our analysis so far has found that organizations in developing countries are often compelled to adopt EC due to changes in their external environment, competitive imperatives and product market characteristics. Preliminary analysis of the data indicates that there are broadly three conditions under which an organization is forced to adopt EC. These are related to the external environment

Table 1. Structural and Cultural Differences between Developing Countries and Developed Countries

Elements of Structural Differences	Literature References	Implications for the strategic and environmental imperatives for the adoption of EC
<p>Infrastructure</p> <ul style="list-style-type: none"> - Networking /Telecommunication - Security - Financial infrastructure and electronic payment systems - Technology Barriers to technology dissemination and internalization - Availability of hardware and software - Logistics and Distribution - National Information Infrastructure 	<p>Markus et al 2002, Tractincky et al 1995 Wresh 2003 Ein Dor et al 1993, Wresh 2003</p> <p>Walsham et al 1999, Markus, Qiu Bin et al 2003 Walsham et al 1999</p> <p>Ives and Jarvenpaa, 1991, Qiu Bin et al 2003, Wresh Meso et al 2000</p>	<p>Infrastructural elements provide the support systems for E-Commerce activities to be carried out. They determine the extent to which it is feasible for a nation to carry out electronic commerce activities, within the given infrastructural capabilities and constraints</p>
<p>Government</p> <ul style="list-style-type: none"> -Legal and Regulatory framework -National policies about governing and regulating Internet Usage -Lack of structured reporting mechanisms and shortage of trained decision makers -Power of Government sector in framing industry policies -Extent of globalization -National Development priorities for the allocation of human and economic resources for IT development 	<p>Markus et al 2002, Tractincky et al 1995, Gallupe et al 1999</p> <p>-National policies about governing and regulating Internet Usage Mennecke et al 2001</p> <p>Mennecke et al 2001</p> <p>Palvia 1997 Walsham et al 1999 Palvia 1997, Ein dor et al 1993</p>	<p>In many developing countries the government plays an important role in framing the regulatory and legislative policies, as well as specifying major economic decisions. The policies and frameworks provide the competitive and external context in which firms take decisions related to E- Commerce</p>
<p>Demographic</p> <ul style="list-style-type: none"> -Non Uniform education across age groups -Local Business Practices- purchasing and financing 	<p>Markus et al 2002, Wresh</p> <p>Markus et al 2002</p>	<p>Demographic factors determine characteristics of the general population which may encourage or constrain the adoption of E-Commerce</p>
<p>Industry / Market Structure Related</p> <ul style="list-style-type: none"> -Role of family business -Industry Concentration - Industry Competition - Absence / Presence of mature markets 	<p>Markus et al 2002</p> <p>Markus et al 2002</p> <p>Deans et al 1993</p> <p>Mennecke et al 2001</p>	<p>Industry conditions specify the competitive drivers which influence the adoption of E-Commerce</p>
<p>National Culture</p> <ul style="list-style-type: none"> - Uncertainty Avoidance - Power Distance - Individualism -Trust 	<p>Myers et al 2002, Watson et al 1997, Katz et al 2000</p> <p>Myers et al 2002, Watson et al 1997, Katz et al 2000</p> <p>Myers et al 2000</p> <p>Tractincky et al 1995</p>	<p>Elements of the overall national culture determine the extent to which general social and cultural factors are conducive to the adoption of specific E-Commerce activities</p>

Elements of Structural Differences	Literature References	Implications for the strategic and environmental imperatives for the adoption of EC
Organizational Culture - Data ownership and power - Existence of intra-organizational networks - Existence of lateral communication between departments and communication norms - Nature of control systems - Work norms - Management styles - User acceptance of IT	Myers et al 2002 Myers et al 2002 Myers et al 2002, Walsham et al 1999 Walsham 1995, Tractincky et al 1995. Walsham 1995 Palvia 1997 Myers et al 2000	Elements of the organization culture determine the extent to which specific conditions in the organization related to communication processes, control systems, work norms and management styles encourage the adoption of E-Commerce
Approaches to information processing and decision making	Walsham et al 1999	Organizations in developing nations often use intuitive approaches to decision making, as opposed to the explicitly data based decision making processes that are used by organizations in developed countries. These general approaches to decision making influence the adoption of IT and E-Commerce

Table 2. Summary Description of Organizations Studied

Industry	Standard Industry Classification (SIC Code)	Number of organizations
Non Banking Financial Corporations	6231-02 6141-02	21
Banks (Public Sector)	6021-01	1
Banks (Private Sector)	6021-01	1
Courier Services	4215-01	1
Distribution Services	7319-08	1
Fast Moving Consumer Goods	2111-98 2844-05, 3841-01	11
Educational Institution	8299-72	1
Industrial Products: Metal (Foundry and Process Based)	3353-01, 3354-98, 3355-01 3369-03, 3494-03 3325-02	111
Industrial Products Manufacturing: Hydraulic Equipment	3511-03	1
Industrial Products Manufacturing: Communications Equipment	5065-51	1
Hospitality Industry	7011-12	1
Consulting Services	8748-99 8711-11	11

of the organization, its performance along specific parameters, and the internal management compulsions generated by certain inherent organizational characteristics, respectively. These preliminary findings have been shown in detail in Figure 2 and have been briefly described below.

Predictors Related to the External Environment

Changes in the external environment such as social, economic, political and technological transformations and discontinuous developments in product or process technology affect the industry characteristics and the competitive position of the organisation. For instance, they can induce changes in the power of buyers and suppliers, in entry barriers and in the threat of substitutes. These in turn, often cause changes in the nature of competition in the industry. These may undermine the competitive position and value proposition and make vital processes and systems inefficient and obsolete. Also, demographic changes can lead to altered customer preferences regarding product choice, acquisition and consumption. Finally, adoption of EC by one company in the industry can change the basis of competition. This forces other competitors also, to respond and deploy EC in similar ways.

Organizations typically respond to these pressures by strengthening activities in the value chain, redesigning business processes, modernizing infrastructure and creating new products. While doing so, they are often forced to adopt EC in critical processes. Our data indicates that a major reason for EC adoption by many Indian organizations has been the increase in pressures due to the new deregulation and globalization policies in India, in recent years.

Predictors Related to Performance

These pressures are created when an organization fails to track changes in customer preferences, environmental conditions and competitive imperatives over prolonged periods of time. Consequently, it is unable to respond to these important changes by taking appropriate strategic and operational decisions at the right time. It fails to implement processes and systems. This results in inefficient processes, obsolete systems and declining performance in terms of drastically reduced revenues, negative profits and decline in share prices. Hence the organization is under pressure to initiate immediate corrective action. This typically has implications for the use of EC. Many firms in our data-set faced these pressures when they failed to respond quickly and adequately respond to increased competition after economic liberalization. They were therefore compelled to use EC to create new products and services. Some adopted EC in their critical processes. Others adopted B2C EC for improved customer service.

Table 3. Details of Data Collected

Parameters Tracked Over Time	Source of Data
<p>Nature and Evolution of EC Deployment</p> <ul style="list-style-type: none"> • Details of different types of IS developed: reasons and drivers for adoption and expected benefits vis-à-vis the strategic and competitive contexts of the company • The strategic importance of, and role, played by different IS adopted over time 	<ul style="list-style-type: none"> • Interviews with senior managers in the IS department for information on EC applications • Interviews with line managers in the functional departments • Company documents of configurations of existing and past and present IS/IT
<p>Drivers of EC adoption</p> <ul style="list-style-type: none"> • Changes in the general and specific environment (government policies, globalization, economic deregulation), and their effect on IT and EC adoption. • Changes in industry structure (power of buyers, suppliers, entry of new competitors, change in the basis of competition) and their effect on the adoption of IT and EC. • The effect of competitive pressures on the adoption of EC technologies • The effect of company performance on EC adoption. • Exploratory study of additional factors which formed imperatives for the adoption of EC technologies 	<ul style="list-style-type: none"> • Relevant secondary industry data from CMIE (Center for Monitoring Indian Economy) databases, business and technology press reports and web-sites for information on how the company was externally perceived, in the context of its use of EC technologies. • Secondary data tracking developments in industry structure, entry of new competitors, changes in customer preferences and the power of suppliers and business partners. • Secondary data tracking changes in the external economic context, government regulations and legislation. • Internal administrative records and data from industry databases showing past performance and its effect on EC adoption

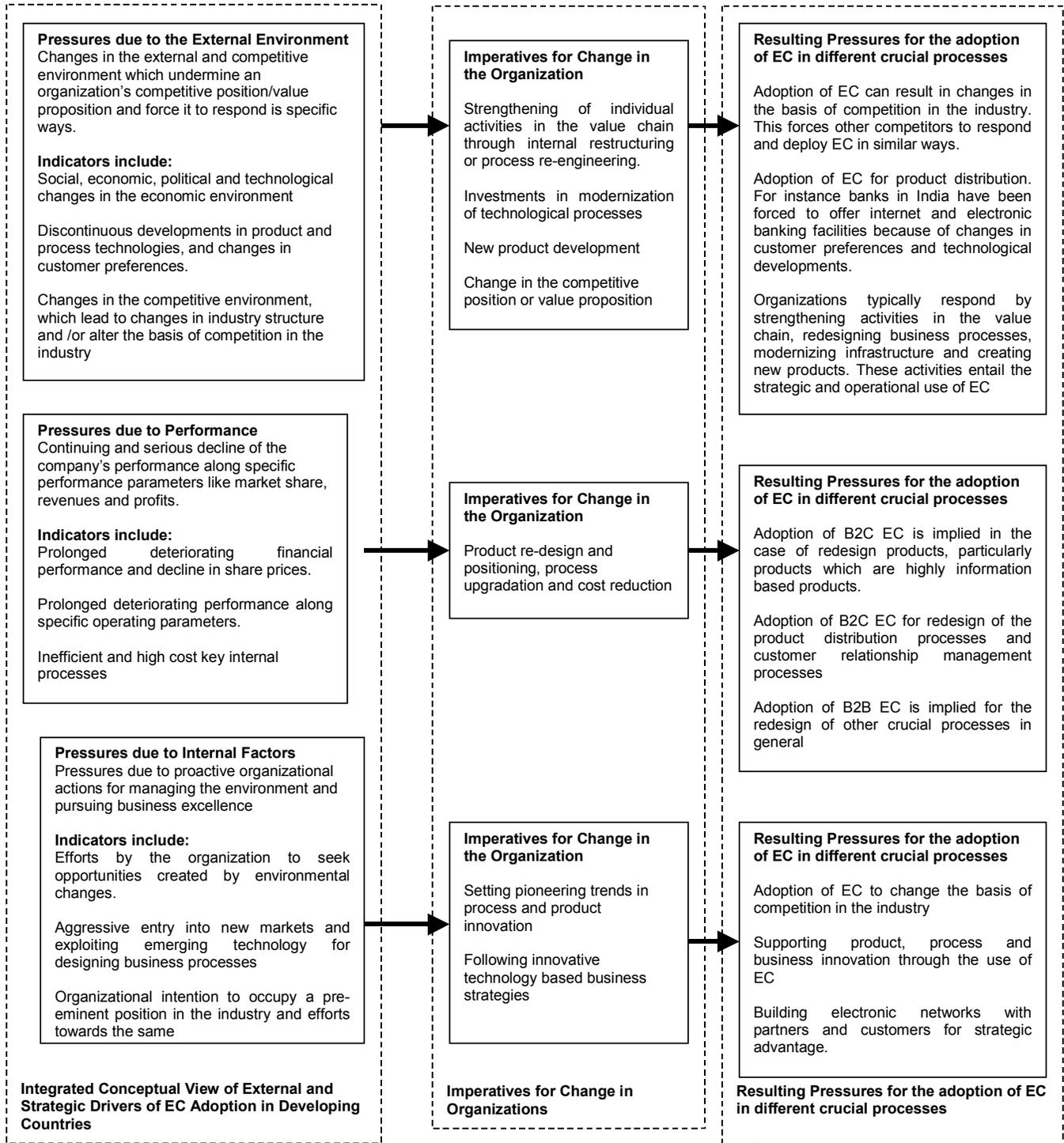


Figure 2. Preliminary Findings: An Integrated Analysis and Competitive Drivers of E-Commerce in Developing Countries

Predictors Related to Internal Factors

Finally, our analysis so far indicates that a few organizations have a passion for and culture of striving for excellence. This drives them to adopt a proactive stance towards environmental trends and pursue business excellence irrespective of the presence of any external pressures. Such organizations are often industry leaders. In many instances, their proactive strategies can bring about fundamental changes in industry structure and characteristics. Their constant efforts at business innovation often entail adoption of EC, especially if they are operating in information intensive industries. Our data suggests that this aspect has been less prominent in India and possibly other developing nations, and has only recently emerged as an important driver for EC adoption. The possible reasons for this are the relatively low levels of IT awareness and confidence in IT, and the lack of IT a reliable IT infrastructure.

Current Status of the Research

Our ongoing data analysis is aimed at concretely defining and describing each of the three broad factors/constructs, by identifying their different indicators. This analysis is also expected to lead to concrete measures for the constructs. Further we propose to develop and explanation for the conceptual links among the three factors, the resulting pressures for change and the consequent imperatives for adoption on EC (Figure 3). We also propose to identify the related implications for IS/IT management.

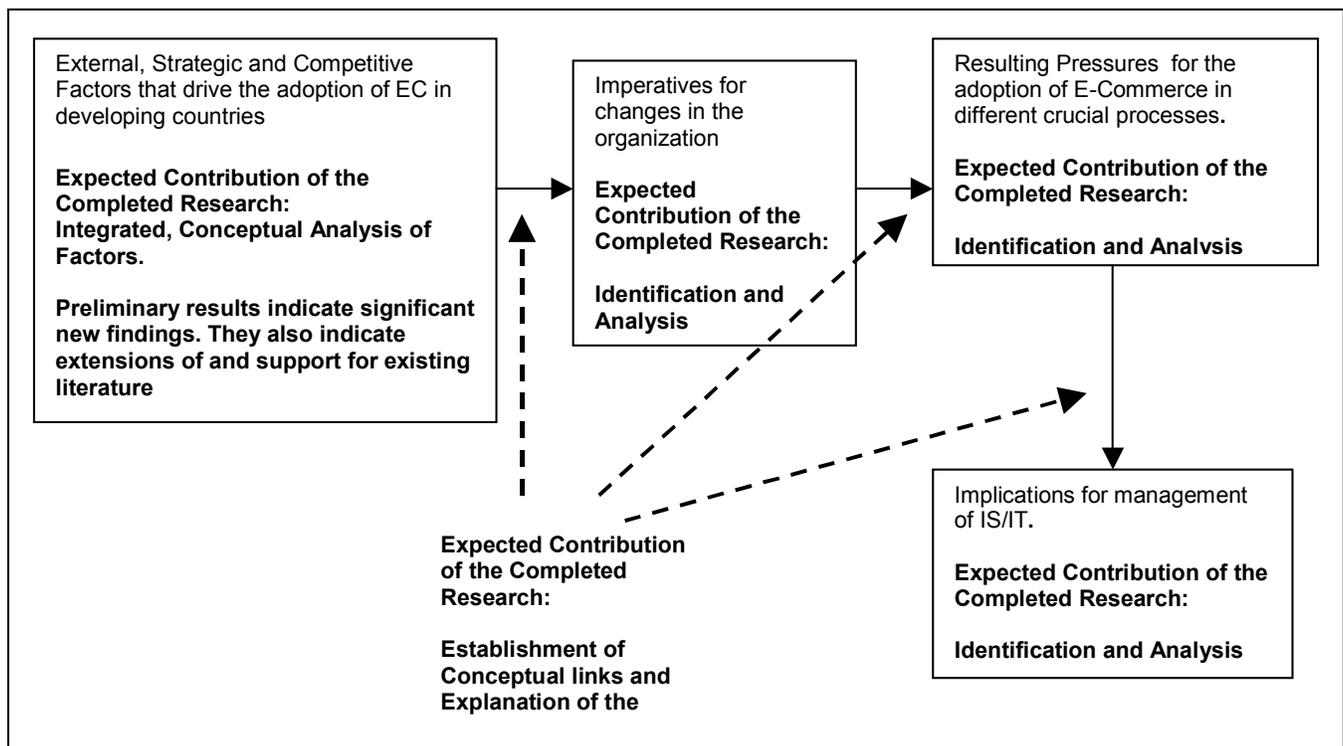


Figure 3. Summary and Expected Contributions of the Completed Research

Contributions and Importance of the Completed Study

This research is expected to yield comprehensive and detailed insights into the phenomenon of EC adoption in developing countries. Specifically it is aimed at revealing the impact of strategic and external drivers of EC adoption. These insights are expected to interest academicians and practitioner alike. The expected contributions can be summarized as follows.

- Identification and analysis of three distinct dimensions and imperatives related to the strategic and environmental context of the firm, for the adoption of EC. Each of these factors describes a specific aspect of EC adoption in developing countries.
- An integrated and detailed description of the indicators and factors associated with each dimension, to give a comprehensive and measurable enumeration of the detailed drivers of EC adoption.

- An explanation and understanding of the conceptual links between the three broad factors and the nature and extent of EC adoption.
- Prescriptive strategies for managing the IS/IT environment during EC adoption.

Developing countries are experiencing rapid globalization and economic deregulation. This has resulted in an increase in the strategic role that IT/EC can play in organizations. Therefore, there is an intense need to understand the strategic and environmental drivers behind adoption of EC, for firms in developing countries. In this context, this research is expected to address a significant gap in this crucially important and sparsely studied area.

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