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# AN EMPIRICAL STUDY OF ELECTRONIC COMMERCE INTRAPRENEURSHIP WITHIN THE IT UNITS OF LARGE ORGANIZATIONS

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## Abstract

*The rapid growth of the electronic commerce (EC) sector saw the traditional business models of many large organizations being challenged by internet technology-based dot.com start-ups. One reason that can be identified for this is the inability of the information technology (IT) units of these large organizations to respond in a timely manner to the technological innovation and entrepreneurial challenge of electronic commerce. There is therefore a need for chief information officers (CIOs) and information systems managers in large organizations to pay greater attention to nurturing electronic commerce “intrapreneurship” (also known as corporate entrepreneurship) within their IT units. This study develops and empirically validates a theoretical model for electronic commerce intrapreneurship within the IT units of large organizations through an empirical survey of chief information officers. The survey focuses on measuring the level of EC intrapreneurship within the IT unit as represented by its four theoretical components: new business venturing, innovativeness, self-renewal and proactiveness. The study also investigates other constructs representing the environmental and organizational antecedents of IT unit intrapreneurship, as well as its effects on both electronic commerce assimilation and organizational performance. The results clarify the role that the IT units of large corporations have played in the organizational response to the business and technical innovation challenge of electronic commerce.*

**Keywords:** Intrapreneurship, electronic commerce, information technology management.

## INTRODUCTION AND RESEARCH OBJECTIVES

The study of electronic commerce (EC) in the management information systems research literature focuses on many of its significant transformation effects. Examples include its effect on information networks and markets (Grover and Ramanlal 1999), value arising from EC investments (Chircu and Kaufman 2000), and the resulting need for a new organizing logic for an enterprise's IT activities (Sambamurthy and Zmud 2000). The significance of the changes induced by EC suggests that the nature of information technology management in large organizations may have to adapt to the new realities.

A key aspect of this is the growing realization on the part of chief executive officers and chief information officers that there is a need for the information technology (IT) units of large organizations to nurture internally the entrepreneurial spirit of technology-based EC innovation that characterized the “dot.com” era (Kanter 2001). For example, one unique innovative aspect of the era was the manner in which new electronic commerce ventures were financed through competitive venture deal making involving risk capital (Dhaliwal and Persaud 2001). This is today leading many large IT organizations to set aside portions of their information technology budgets for the purposes of corporate venture-capital systems (Kanter 2001) to spur internal technology-based EC innovation and “intrapreneurship” (Pincot 1983). For examples, see Kanter's (2001, pg. 98) description of Honeywell's “grow programs” and “home run programs” for internal technology ventures and Takahashi's (2000) descriptions of intrapreneurship at IBM, INTEL, NTT, Xerox, and Eastman Kodak. The conceptual and empirical basis for such managerial efforts aimed at instilling a greater level of internal EC “entrepreneurship” into the IT units of large organizations, however, has been inadequately researched to date.

This study attempts to fill this gap by focusing on electronic commerce intrapreneurship within the IT units of large organizations by drawing on the significant intrapreneurship literature that exists in the business venturing and organizational strategy domains (for a summary, see Antoncic and Hisrich 2001). It extends prior findings about organizational intrapreneurship to the context of chief information officers managing IT units in large organizations who are seeking to nurture a greater intrapreneurial environment in relation to electronic commerce initiatives.

Within the context of organizational responses to electronic commerce, the specific research questions addressed by this study are:

1. *What is the influence of the environmental and organizational antecedents of intrapreneurship on the level of electronic commerce intrapreneurship within the IT units of large organizations?*
2. *Does the level of intrapreneurship within the IT units of large organizations have a positive effect on EC assimilation and organizational performance?*

## **THEORETICAL FOUNDATIONS**

Intrapreneurship, which is also known as “corporate entrepreneurship” (Burgelman 1983), is broadly defined as “entrepreneurship within existing organizations” and has been studied closely in the business venturing and strategy literatures since the early 1980s (Antoncic and Hisrich 2001). It has also been viewed as the process by which individuals inside organizations pursue opportunities without regard to the resources they currently control (Stevenson and Jarillo 1990). At the organizational level, it has been shown that intrapreneurship has a positive effect on corporate revitalization and the performance of firms (Burgelman 1983; Guth and Ginsburg 1990; Kanter 1984; Luchsinger and Bagby 1987; Schollhammer 1982; Zahra 1991; Zarah and Covin 1995).

For the conceptual and empirical purposes of this study, the definition of the intrapreneurial construct has to be adapted to consider the unique aspects of electronic commerce intrapreneurship within the IT units of large organizations. Therefore, electronic commerce intrapreneurship is defined as the internal IT unit environment and processes that yield new electronic commerce business ventures as well as other innovative electronic commerce activities and orientations such as new products, business models, services, technologies, techniques, strategies, and competitive postures using internet technologies.

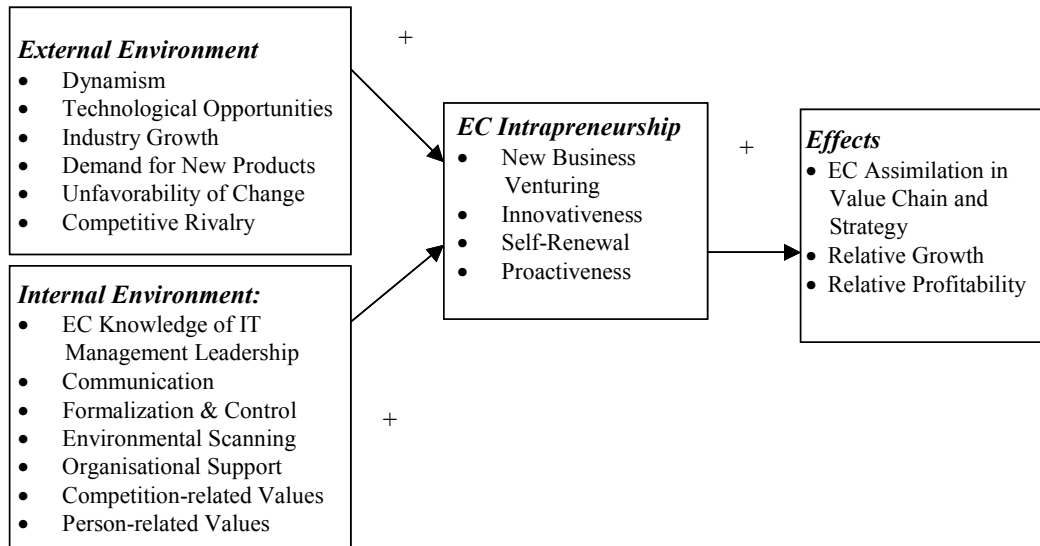
### **Dimensions of EC Intrapreneurship**

As depicted in Figure 1, prior research conceptualizes intrapreneurship as constituting four distinct dimensions: (1) new business venturing, (2) innovativeness, (3) self-renewal, and (4) proactiveness. New business venturing generally represents the most visible dimension of intrapreneurship as it results in the creation of a new autonomous or semi-autonomous (EC) business within the existing organization by redefining the organization’s products or services and/or by opening up new markets (Schollhammer 1982). The innovativeness dimension focuses on the extensiveness and frequency of the IT unit’s development or enhancement of products, services, production techniques, business methods, and technology solutions by utilizing EC models and technology.

The self-renewal dimension reflects the periodic transformation of organizations through the renewal of key ideas and resources that are central to their functioning (Guth and Ginsburg 1990). In our case, the focus is on how an IT unit is able to renew its skills base, capabilities, organizing logic, and orientation to respond to the challenges and opportunities of electronic commerce. The fourth dimension, proactiveness, pertains to the willingness of the IT unit to take risks by conducting experiments (Stopford and Baden-Fuller 1994) in electronic commerce and maintaining an aggressive posture relative to competitors (Knight 1997) in terms of organizational and industry developments in EC. It also emphasizes the requirement for initiative and leadership in attempting to lead the organization, rather than following, in formulating organizational responses to electronic commerce.

### **Antecedents of EC Intrapreneurship**

Based on the prior literature in information systems strategy, planning, implementation, and business venturing, two sets of antecedents can be identified for EC intrapreneurship within the IT units of large organizations. The first set pertains to the external IT (Ranganathan and Sethi 2000) and competitive environment faced by the organization while the second set represents internal organizational factors pertaining to the IT unit that impact the level of EC intrapreneurship. These are shown in Figure 1 but are not discussed in greater detail due to space limitations. Table 1 in the research methodology section presents a summary of the number of items that were used to measure each antecedent as well as the source literature from which the items were culled and adapted for the context and purposes of this study. Specific hypotheses pertaining to the influence of each antecedent variable on the level of EC intrapreneurship within the IT unit are tested as part of this research.



**Figure 1. Research Model for IT Unit Intrapreneurship: Antecedents, Dimensions and Effects**  
(Adapted from Antoncic and Hisrich 2001)

### Effects of EC Intrapreneurship

The research model of EC intrapreneurship includes three dependent variables or effects. First, it is posited that higher levels of EC intrapreneurship will have a positive effect on EC assimilation. IT assimilation has been identified in the MIS literature as being a key outcome variable for organizations (Armstrong and Sambamurthy 1999; Javenpaa and Ives 1991; Sabherwal and King 1991; Sethi and King 1994). Assimilation of IT into the value chain activities and business strategies of an organization is viewed as a necessary prerequisite for being able to generate value from IT investments (Boynton et al. 1994; Cooper and Zmud 1990). Electronic commerce assimilation is, therefore, identified as a key outcome of EC intrapreneurship. It is defined as the success achieved by organizations in utilizing the capabilities of electronic commerce to enhance their business performance. It is hypothesised that higher levels of EC intrapreneurship will have a positive effect on EC assimilation into the value chain and business strategies of an organization.

Recognizing that EC assimilation in value chain activities and business strategies represents only an intermediate level effect of EC intrapreneurship, the study also used relative growth and relative profitability as effects. Organizations with IT units that engage in EC intrapreneurial activities can be expected to achieve relatively higher levels of growth and profitability than those with non-intrapreneurial IT units. These variables have been found to be significantly related with the level of organizational intrapreneurship in the business venturing literature (Covin and Levin 1986; Zahra 1991; Zahra and Covin 1995). This study attempts to assess if these relationships extend to the level of EC intrapreneurship in the IT units of large organizations. It was felt that relative measures of growth and profitability were more appropriate than absolute measures for these constructs.

While not shown in Figure 1, the research model also includes various other factors representing control variables such as type of industry, age and size of organization, as well as fit to overall business strategy.

### RESEARCH METHODOLOGY

The study involved the following phases:

1. Development of a conceptual framework for intrapreneurship that is applicable to the IT units of large corporations looking to bring electronic commerce ventures into their organizations. This was outlined in the theoretical foundations section.
2. Contextual adaptation, development, and initial testing of a valid and reliable measurement instrument for electronic commerce intrapreneurship within the IT unit by combining and adapting two prior scales for intrapreneurship from other

contexts. These are the ENTRESALE scale (Khandwalla 1977; Knight 1997) and the corporate entrepreneurship scale (Zahra 1991, 1993) from the business venturing literature. Table 1 provides details as to the operationalization of the various constructs used in the study. Four information systems faculty members as well as five senior information technology executives reviewed the resulting survey instrument that was iteratively refined on the basis of the feedback.

3. Carrying out a large-scale survey of electronic commerce intrapreneurship within the IT divisions of large organizations. The instrument was sent to the chief information officers or senior information systems managers of 1,038 organizations selected from organizations listed on the Toronto Stock Exchange (TSE) and that had at least 50 employees. Prior web-site analysis, using the TSE's Listed Company Directory as the starting point, and telephone calls were made to ensure that these organizations had a clearly identifiable senior IT management function and leader to whom the survey could be addressed. Respondents were given the option of either faxing back the completed survey or completing it over the Internet. A total of 166 complete and usable responses were returned giving a response rate of 15.99%.
4. Statistical testing of the validity and reliability of the constructs as well as analysis of the data collected represents the final phase. Both exploratory factor analysis as well as confirmatory factor analysis were conducted for the various dimensions of each construct to check for the reliability of loadings, as well as to assess convergent and discriminant validity. Structural path analysis using the partial least squares methodology was then used for assessing the hypothesized relationships between the constructs in the model as well as for establishing nomological validity.

**Table 1. Operationalization of Research Constructs**

<i><b>CONSTRUCT (# of items)</b></i>	<i><b>OPERATIONALIZATION: Adapted from</b></i>
Dynamism (3)	Ranganathan and Sethi 2000; Zahra 1993
Technological Opportunities (4)	Zahra 1993
Industry Growth (5)	Antoncic and Hisrich 2001
Demand for New Products (4)	Antoncic and Hisrich 2001
Unfavorability of Change (5)	Zahra 1993
Competitive Rivalry (3)	Ranganathan and Sethi 2000; Zahra 1993
EC Knowledge of Information Technology Management (7)	Armstrong and Sambamurthy 1999
Communication (3)	Zahra 1991
Formalization and Control (3)	Khandwalla 1977; Ranganathan 1998; Zmud 1982
Environmental Scanning (4)	Miller and Friesen 1984
Organizational Support (5)	Hornsby et al. 1993
Competition-related Values (3)	Antoncic and Hisrich 2001; Zahra 1991
Person-related Values (6)	Antoncic and Hisrich 2001
New Business Venturing (5)	Zahra 1993: corporate entrepreneurial scale
Innovativeness (14)	Zahra 1993; Knight 1997: ENTRESALE
Self-renewal (13)	Zahra 1993: corporate entrepreneurial scale
Proactiveness (4)	Knight 1997: ENTRESALE
Relative Profitability (2)	Chandler and Hanks 1993
Relative Growth (2)	Chandler and Hanks 1993
EC Assimilation (14)	Armstrong and Sambamurthy 1999

## CONCLUSIONS

This study provides a report on the current status of electronic commerce intrapreneurship within the IT units of large organizations. The results pertaining to the antecedents and effects of intrapreneurship also provide direction as to practical efforts aimed at the development of managerial tactics useful for managing intrapreneurship within the IT unit. These are timely given that the

bursting of the dot.com bubble has spurred many large organizations to undertake internal electronic commerce ventures pertaining to their business models and domains (Kanter 2001; Takahashi 2000). The collapse of the dot.com sector has also called into question the logic behind cannibalization strategies (Christensen 1997) for electronic commerce. In this regard, the study provides clarification as to the viability of intrapreneurship (within the internal IT unit) as an alternative strategic option for large organizations facing up to the innovation challenge of electronic commerce.

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