7-3-2008

The Role of IT in the Relationship between Business Ecosystem's Healthiness and Flagship Firm's Performance: A Conceptual Foundation and Empirical Validation

Hyeyoung Kim  
*Korea University Business School, hyeyoung@korea.ac.kr*

Jae-Nam Lee  
*Korea University Business School, isjnlee@korea.ac.kr*

Jaemin Han  
*Korea University Business School, jaemin@korea.ac.kr*

Follow this and additional works at: [http://aisel.aisnet.org/pacis2008](http://aisel.aisnet.org/pacis2008)

Recommended Citation

[http://aisel.aisnet.org/pacis2008/276](http://aisel.aisnet.org/pacis2008/276)

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
The Role of IT in the Relationship between Business Ecosystem’s Healthiness and Flagship Firm’s Performance: A Conceptual Foundation and Empirical Validation

Dissertation Proposal

Hyeyoung Kim¹, Jae-Nam Lee², and Jaemin Han³
hyeyoung@korea.ac.kr; isjnlee@korea.ac.kr; jaemin@korea.ac.kr
Korea University Business School,
Anam-Dong 5Ga, Sungbuk-Gu, Seoul, 136-701, Korea

• Total words: 2,368 (excluding the cover page and references)
The Role of IT in the Relationship between Business Ecosystem’s Healthiness and Flagship Firm’s Performance: A Conceptual Foundation and Empirical Validation

Proposal Summary

A business ecosystem’s healthiness may be attributed to the superior financial performance of a firm. This paper develops the concept of a business ecosystem’s healthiness as an organizational capability and empirically examines the association between healthiness and a firm’s financial performance with the moderating effect of IT capability. To do this, a business ecosystem’s healthiness is conceptualized by the ecology and business network research stream. Moreover, the relationship between a business ecosystem’s healthiness, a flagship firm’s performance, and IT capability are examined using the Structured Equation Model. If this study produces expected results, this paper can be a backgrounder for a business ecosystem’s academic guidelines in the perspective of a single company.

1. Introduction

A firm’s business processes are related to other firm’s processes. For instance, an online purchasing process for a complete product or service is related to a credit-card firm’s, and an e-market place such as an Internet portal or online shopping site, as well as a settlement solution providers’ business processes. Therefore, a single firm’s performance is produced through the cooperation of a diverse number of entities in a same business ecosystem.

The concept of a business ecosystem is used habitually in the practical area, but research stays in the initial stages. At first glance, a business ecosystem perspective may be recognized as another version of existing concepts such as social networks, or cluster research. The differences between the business ecosystem perspective and the previous concept have to be defined through a theoretical approach. Therefore, the first purpose of this paper is to define the business ecosystem perspective in the theoretical perspective.

The business ecosystem perspective is begun from biology and ecology (Corallo & Protopapa 2007). From ecologic standpoints, some behaviors of organisms make up the business ecosystem perspective. Diverse interrelations among organisms can be understood by looking at the sequence of events in an alliance and cooperation in a business ecosystem. Anderson & Narus (1990) defined a cooperation as similar or complementary coordinated activities performed by firms in a business relationship to produce superior mutual outcomes or singular outcomes with expected reciprocity over time. Therefore, interrelationships and outcomes are main concerns in this study.

An important issue for the business ecosystem perspective is firm performance, both in terms of the performance of the relationship itself (process) and the performance of the firms (nature) entering the business ecosystem. The business ecosystem perspective can give credit to its significance when the individual firms belonging to the business ecosystem can easily gain better firm performance. Even though examining a business ecosystem is unattainable, it should meet implications of individual companies. To link the business ecosystem perspective and firm performance, this study introduces the healthiness concept. Healthiness is a degree of a healthy business ecosystem, which means that a firm in a healthy business ecosystem can easily reach its financial goal better than other firms in other business ecosystems. If the assumptions are examined as the initial desire, we can estimate whether Information Technology (IT) plays an important role in enhancing higher firm performance. This study examines IT capability as a moderating variable in the relationship between healthiness and firm performance.

The second purpose of the study is to assess the relatedness of a business ecosystem’s
healthiness and firm performance with the moderating effect of IT capability, especially in the aspect of the flagship firm.

Two research questions focus on the performance issue: Is there any relationship between a healthy business ecosystem and an individual firm’s performance? How does IT work towards enhancing a flagship firm’s performance? If an individual company’s financial performance is related to its business ecosystem’s healthiness, a company should be able to make its business strategy for a healthy business ecosystem. Through this study, we will be able to confirm if an individual company’s IT capabilities play an important role in a healthy business ecosystem. The desired result of this paper will provide implications to practitioners and give additional ideas to IT researchers.

The paper is organized as follows. After the introduction, section two is devoted to the conceptualization of the business ecosystem as a concept where issues revolving around the definition of a business ecosystem’s healthiness are discussed. We then introduce the plan of research design and data gathering and describe methods and expected contributions.

2. Theoretical Background

2.1. Previous research about the business ecosystem

Ecosystems as whole systems are represented by both biological organisms and a complex set of physical factors, and form a network of relationships (Tansley 1935). The business ecosystem perspective is introduced by Rothschild (1990) and the most famous approach is due to Moore (1993), who argued that a firm is not just a member of a single industry, but a part of a business ecosystem that crosses a variety of industries (Moore 1993). A business ecosystem is defined as an extended business network which includes customers, competitors, suppliers, retailers, and other financiers (Moore 1993, Iansiti & Levien 2004). Entities doing business are weightily related to other entities’ value in the same business ecosystem. In other words, the values that comprise products or services flow from one entity to another in a business ecosystem.

2.2. The evolitional approach to the study of the business ecosystem

The conceptualizations of business ecosystems have been questioned in both ecology and business research. Here, we briefly discuss the nature of the business ecosystem perspective within ecology and the business research stream. In doing so, we present the principal concepts for each. Figure 1 shows the evolution of the perspective. Biology and ecology influences organizational research (Carroll 1984, Corallo & Protopapa 2007). The business ecosystem perspective was directly introduced in 1990 and many researchers applied it in their own research. However, the clear theoretical meanings remain an issue.

The interest given to each stream has shifted over time (Carroll 1984). Ecological interest in organizational research has changed from being population to individual organism focused. In contrast, business interests tend to focus from single firms to a business network (Podolny & Page 1998). Therefore, the business ecosystem perspective can be interpreted as the set of relationship behaviors among firms belonging in a business network. Some prior research has tried to provide a clearer understanding of the concept. This study tries to provide a rethinking of the meaning of a business ecosystem concept using its origin.
Systems theory has brought a new perspective for managers to interpret patterns and events in the workplace (Kast and Rosenzweig 1972). They said that a system is a collection of a part unified to accomplish an overall goal and recognizes the various parts of an organization, and, in particular, the interrelations between these parts. When this major development is extended to a business network level, it then becomes a business ecosystem. In a business ecosystem, an organization typically is looked at as one part of an ecosystem, and is focused in its interest or values moving all focus to another part. A network means a set of nodes linked by a set of relationships of a specified type (Gulati, 1998). System thinking and network theory support the physical features of the business ecosystem. Tables 1 and 2 represent the main concerns of related theories. Some characteristics of the two research streams fall into the concept of the business ecosystem. Conclusively, the business ecosystem perspective is directly influenced by ecosystem ecology and network theory. Figure 2 shows the relationship among these theories.

Figure 1. The evolution of the business ecosystem

<table>
<thead>
<tr>
<th>Biology</th>
<th>Population ecology</th>
<th>Ecology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied area</td>
<td>Sociocultural, Economic</td>
<td>Industry</td>
</tr>
<tr>
<td>Analysis level</td>
<td>Ecology</td>
<td>Population (same species)</td>
</tr>
<tr>
<td>Research focus</td>
<td>Ecosystemphenomena</td>
<td>Population’s survival rate or fluctuation</td>
</tr>
<tr>
<td>Example</td>
<td>Bioclimatography</td>
<td>Organizational ecology</td>
</tr>
</tbody>
</table>

Table 1. Ecological research stream
### Table 2. Business network research stream

<table>
<thead>
<tr>
<th>Applied area</th>
<th>General system theory</th>
<th>Living system theory</th>
<th>Social network theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis level</td>
<td>System, organization</td>
<td>System, environment</td>
<td>Individual, group, network</td>
</tr>
<tr>
<td>Research focus</td>
<td>Real systems are open to, and interact with environment</td>
<td>Structure and processes of living things and environment</td>
<td>Systemic relationships in terms of nodes and ties. Actors and relations</td>
</tr>
</tbody>
</table>

2.3. Business ecosystem’s healthiness

Iansiti and Levien (2004) argued that firms have to build a healthy business ecosystem. Similarly, Moore (1993) discussed the importance of a rich business ecosystem which is strong enough to grow and be profitable. A healthy business ecosystem means a desired status of a business ecosystem that individual organizations can easily achieve through their performance. The overall healthiness of a business ecosystem is crucial in an individual firms’ sustainable survival. Healthiness can be a roothold for individual organizations. The basic assumption of healthiness is the significance of a healthy business ecosystem to an individual firm’s performance. In this study, we plan to not only conceptualize healthiness, but also validate healthiness and firm performance as an initial stage of the business ecosystem examination, especially the relationship between a business ecosystem’s healthiness and a flagship firm’s performance.

### 3. Research Framework and Methodology

3.1. Conceptual framework

The research model proposed in this study is represented in figure 3. Each component of the research model is described as follow.
The dependent variable: A flagship firm’s financial performance. Previous literature has emphasized that ‘keystone’ means a leader firm that defines the characteristics of an ecosystem. Iansiti and Levien (2004) presented keystone as important in making a healthy business ecosystem and said that a keystone gains advantages from the business ecosystem. We will replace the definition with a broad concept ‘flagship’, because keystone firms are rare in real business. A flagship firms lies at the hub of partners such as suppliers, customers, competitors, and other partner firms (Rugman & D’Cruz, 2000). Flagship firms are important parts of an ecosystem but they do not determine an overall ecosystem’s characteristics. As a dependent variable, we focus on the financial performance of flagship firms using public financial data to minimize the variance of firm performance. The flagship firm’s performance will be controlled by a few variables such as firm size, industry type, and business ecosystem size.

The independent variable: A business ecosystem’s healthiness. Healthiness is the capability within interrelated companies to provide comparative advantages to other companies (Kim & Lee & Han 2007). A healthy business ecosystem is where companies can easily reach their business goals through the exchange of vital values on a reasonably stable structure and process between companies. Moore (1993) said that stable and profitable business ecosystems are the desirable state for each company. Iansiti and Levien (2004) emphasized that a healthy business ecosystem should be ‘robust’, ‘responsive’, ‘productive’, ‘innovative’, and ‘predictable’. In organizational ecology, Carroll (1984) argued that ‘efficiency’ and ‘effectiveness’ may drive some organizational selection processes such as profit making firms into the competitive industry, and neo-institutional theorists and organizational ecologists have joined together in critical assessments of the program of research on ‘density’ dependence. Carroll and Hannan (1989) defended ‘density’ as a proxy for the prevalence of an organizational form because it had the advantage of generalizability. Diversified firms form a well-established change in the world of organizations, and present a substantial challenge to organizational ecology. From these concerns, we define four major healthiness dimensions. It means that healthiness is a second-order factor consisting of the four major dimensions, as described below.

The firms have to consistently transform raw materials into increasing the number of valuable new products and services. Diverse products can provide greater choice and reliability to the customers (Kim & Lee & Han 2007). Therefore, a firm and related firms’ ‘creativity’ explains healthiness. The concern of firms should be on how to enhance their ‘adaptability’, which is normally regarded as learning. Adaptability is the capacity of the social components in a system to manage ecological resilience (Walker et.al. 2004). Organisms can grow only by adaption to the environment’s immediate signals and by continually converting procedures into data (Levey 1999). Adaptability is a dimension of the independent variable.
The relationships between firms should be robust enough to keep them safe from external dangers and threats. Therefore, ‘robustness’ is another dimension. Finally, a firm should have ‘interoperability’ to work with other firms. It is the starting point in building diverse relationships with other firms having higher business capability. Interoperability means the ability to create a new relationship without long term preparatory proceedings. If a firm is equipped interoperability, it can make a stable relationship in a business ecosystem (Abe & Dempsey & Bassett 1998, Rothschild 1990). Overall, in this study, if a firm has a higher level of robustness, creativity, productivity, and interoperability, it can easily reach its financial goal. Creativity and productivity will be surveyed as the ‘nature’ of a firm and related entities in a business ecosystem. Robustness and interoperability will be investigated as ‘process’ to create a healthy business ecosystem. These dimensions are estimated as second order variables in this study.

**The moderating variable: IT capability.** IT can cross organizational boundaries and IS links one or more firms to their customers or suppliers, and facilitates the exchange of products and services, and it can create economic values (Bakos 1991). And IT helps assign tasks among partners, and supports synchronize activities, and sharing knowledge (O’Callaghan 2007). Ravichandran and Lertwongsatien (2002) said that IT capabilities are indirectly related to firm performance. This study tries to investigate the role of IT in a business ecosystem using the concept of healthiness while focusing on the flagship’s IT capabilities that pave the way for higher firm performance.

### 3.2. Research methodology

Measurement is developed from the concept of ecology, and the business network as what we stated in the previous review. We plan to gather data from the top 500 Korean companies. The desired respondents are top managers (CEO, CIO level). A pretest will be conducted by having in-depth interviews with several practitioners and academics. Once the questionnaire is finalized, it will be distributed to top managers. To increase the response rate, the Total Design Method proposed by Dillman (1991) will be applied to our main survey.. Gathered data are analyzed by a Structural Equation Modeling tool, i.e., LISREL.

### 4. Expected Contribution

This paper employs the business ecosystem concept to develop theoretical links and empirically examine the association between healthiness, IT capability, and business performance. A strategic perspective on business ecosystems suggests that firms ally with those with whom they share the greatest opportunity. If this study is evaluated with regard to the desired directions, we then can provide valuable guidelines for individual companies that should benefit or enhance not only its competitiveness but also its related companies’ capabilities using IT. Finally, IT researchers can get an idea from an extended IT’s future roles in a business ecosystem.

### Reference


