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# Verifying links in technology management, transaction processes and governance structures

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## Abstract

This paper is a continuation of the work done by Siriram and Snaddon (2003) where a framework linking technology management, transaction processes and governance structures was proposed. In this paper a new model is formed, which introduces other factors i.e. organizational determinants, competitors, external factors and manufacturing mix processes. These other factors are then included in the links between technology management, transaction processes and governance structures. The research is conducted in the electronics and electrical engineering industry and the Information technology industry. Firms are categorized into technological users and system integrators. Views from these two groups are analyzed with respect to the models developed.

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*Keywords:* Technology management; Transaction processes; Governance structures

## 1. Introduction

Siriram and Snaddon (2003) propose a technological framework linking technology management transaction processes and governance structures. This framework is expanded to include an investigative framework, which introduces additional drivers for technology. These other drivers include organizational determinants, competitors, external factors (social, economic and political), and manufacturing mix processes (i.e. processes that affect cost, quality, speed, dependability and flexibility). These drivers are shown in Fig. 1, the investigative framework. The investigative framework is discussed next.

## 2. The investigative framework

### 2.1. Organizational determinants

In terms of this paper organizational determinants (section 2.1) include individuals, assets and organizational structures. Individuals are employees who make decisions that affect the way the firm interacts within markets. Using organizational determinants the firm may be viewed from an

organizational and economic viewpoint. It is the relationship and networking of individuals, assets and organizational structures that lead to all round improvement. Hansen and Wernerfelt (1989, p. 409) make the following comparisons about the organizational and economic view of the firm, they say:

- The organizational and economic effects are roughly independent of each other.
- Industry selection and positioning within an industry are important contributors to performance.
- Good administrative practices are more important contributors to performance than industry selection and positioning.

In summary they argue that management teams who demonstrate excellence in both areas i.e. organizational and economic areas will have better competitive advantages than other firms that opt for a uni-dimensional approach. Further evidence in support of organizational determinants is provided by Porter's (1991, p. 111) diamond paradigm, which incorporates attributes that influence a firm's ability to innovate and upgrade. These attributes are the information available to firms to identify opportunities; the pool of inputs, skills and knowledge; the goals that govern investment; and the pressure on firms to act. Using the diamond paradigm as a basis it may be argued

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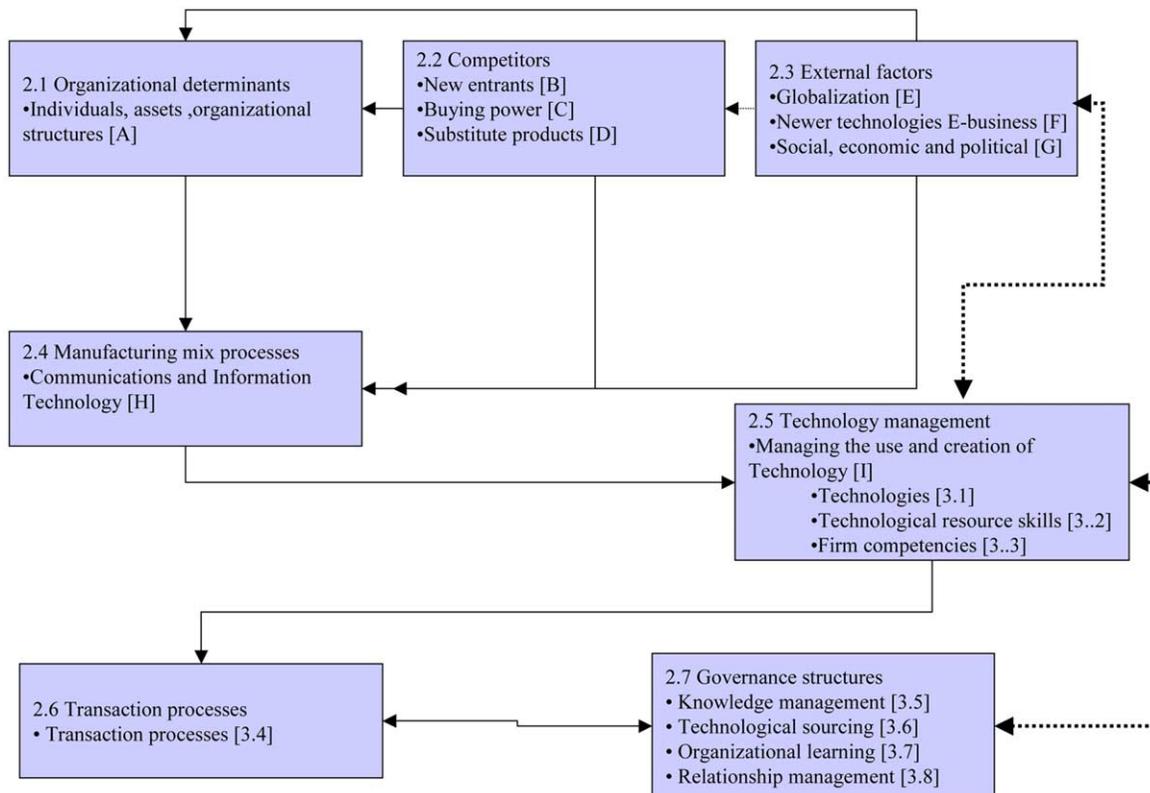


Fig. 1. The investigative framework.

organizational determinants are important for competitive advantage.

Some of the links in Fig. 1<sup>1</sup> may be explained as follows:

- In terms of organizational determinants (section 2.1), managers may be seen as individuals in firms, who make decisions. They therefore influence the behavior of other individuals. This view is also supported by Hansen and Wernerfelt (1989) they say that the organizational theory of the firm suggests that managers can influence the behavior of employees. Therefore they can affect the performance of the firm. Managers make decisions relating to the firms technological requirements, these requirements affect firm competencies and technological resource skills.
- Technological resource skills may create competence enhancing and competence destroying technological effects. These technological effects may require highly skilled individuals to manage technologies in firms. This view is also supported by Porter (1991, p. 113) he says that mobile factors like ideas and highly skilled individuals are becoming more important for international competitiveness. By influencing behavior of individuals managers influence the formal/informal structures, planning, reward, control, information systems,

people skills and personalities, which may led to better knowledge management and organizational learning.

- Knowledge management may be provided through technologies, technological resource skills and firm competencies.

In view of the linkage described we may take organizational determinants to be important.

## 2.2. Competitors

During the 1980s the competitive forces model developed by Porter was the model that was used to analyze the competitive environment. This model emphasizes the actions a firm could take to protect it against competitors (this section). Competitors may be defined to include new entrants [B], buying power [C] and substitute products [D]. Teece et al. (1997, p. 510) cites the strategic conflict approach proposed by Shapiro (1989). The strategic conflict approach focuses on market imperfections, entry deterrence and strategic integration. In the strategic conflict approach firms keep competitors away through strategic investments, pricing strategies, signaling and control of information. The competitive forces model and the strategic conflict model are used to link the technological framework (Siriram and Snaddon

<sup>1</sup> The dotted lines in Fig. 1 indicate relationships that was not initially considered when the investigative framework was constructed.

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