

Dynamic capabilities and innovation: a Multiple-Case Study

Technical University of Catalonia (UPC), Terrassa, Spain

Edna Bravo Ibarra, Edna.bravo@upc.edu; Joan Mundet Hiern, Joan.mundet@upc.edu; Albert Suñé, Albert.sune@upc.edu

Abstract. After a detailed survey of the scientific literature, it was found that several characteristics of dynamic capabilities were similar to those of innovation capability. Therefore, with a deeper study of the first ones, it could be possible to design a model aimed to structure innovation capability. Thus, this work presents a conceptual model, where the innovation capability is shown as result of three processes: knowledge absorption and creation capability, knowledge integration and knowledge reconfiguration. Furthermore, taking into account that dynamic capabilities are underpinned on actors, physical resources, structures and systems, and organizational culture, the model uses variables that integrate each one of these four subconstructos in order to facilitate the measurement of innovation capability in future researches. Moreover, the model separates knowledge exploitation and exploration activities. Applying this model, firms will be able of structuring and identifying the more important activities in the process of continuous innovation. Finally, model validation is done by means of an exploratory multiple-case study, which is applied on three technology-based companies of the audiovisual sector.

Keywords: Dynamic capabilities, innovation capability, Integration knowledge, Exploration/Exploitation knowledge.

1. Introduction

In recent years, the debate regarding organizational theory and strategy has shifted from the sustainability of competitive advantage to the capacity to manage innovation and change (Brown and Eisenhardt 1997; Tushman and O' Really 2008). Therefore, a lot of effort has gone to the study of organizational innovation given as a result a large number of works published in the specialized literature¹. Understanding of innovative behaviour in organizations, however, remains relatively undeveloped, since the results of organizational innovation research have been inconclusive, inconsistent, and characterized by low levels of explanation (Wolfe 1994; Roy, Gupta, Saxena and Sikdar 2007). The purpose of this article is to contribute to better understand the organizational resources involved in the continuous innovation process. In order to fulfill this objective, this paper provides an in-depth analysis of three leading companies in the Spanish audiovisual sector, which showed an ability to develop new products. Considering that the introduction of new products in the market has known as one of the most effective ways of turning change into a continuous process (Eisenhardt and Tabrizi 1996), this work identifies a set of best practices, which integrated, form innovative activities that have helped these three companies to acquire the capacity to continuously innovate by means of product development projects. In order to identify these practices, this research used the perspective of dynamic capabilities. This approach defines the Dynamic capabilities as "The subset of competence/capabilities which allow the firm to create new products and processes, and respond to changing market circumstances" (Teece et al., 1997:510). These processes combine different kinds of specialized knowledge. This combination constitutes the essence of products innovation. Therefore, and according to the knowledge-based nature of dynamic capabilities, the findings of our study indicate how continuous innovation requires the simultaneous presence of three fundamental processes: knowledge creation and absorption, knowledge integration and knowledge reconfiguration. More specifically, in this research these three capabilities are the driving force behind the innovation and they are formed by different organizational activities, which are identified and classified in this work in four groups of resources that reinforce the continuous product innovation taken into account the dynamic capabilities theory. These four groups of resources are: actors, physical resources, structure and systems, and company culture (for details see sets of resources that underpin each capacity in tables 1, 2, 3)

¹ Publication of 22034 articles. Each article/dissertation included in this quantity has the words Organizational Innovation in their title, abstract or key term list. These numbers are based on ISI Web of knowledge.

2. Research Method

Given the early stage of empirical research on innovation capacity, the logic of grounded theory was followed in the analysis of a multiple exploratory case study (Miles and Huberman, 1994; Yin 2003). The adoption of a qualitative methodology is also consistent with the fact that capabilities are processes and present an embedded nature (Lee, 1999). In an attempt to improve the understanding of the organizational sources of continuous innovation several approaches were used for the collection of data. The first source of data was accomplished by doing 27 semi-structured interviews, which were carried out from March to November of 2005. The interviews were made personally to the heads of projects development, to technical directors, and operational staff. Additional information was collected by informal meetings with members of the projects team, and by reports provided by them with the intention of increasing our knowledge about the activities of the company. Work environment such as the design of the office was included as part of the observation. This serves the purpose of gaining first hand information. The core objective of the participation-observation process in this research was to understand how the innovation projects were organized and controlled by the social interaction between the members of the different teams. Moreover, in addition to the two main data sources, administrative documents, reports, news and information from company web sites were collected.

3. Results and discussion

In the multiple cases study were identified the organizational activities that form each one of the three innovation capability processes. After, codifying the acquire information, the activities were located in the corresponding group of resources defined in the dynamic capabilities theory.

The first result of the study indicates that in order to sustain product innovation an organization should build dynamic capabilities that allow simultaneous and continuous knowledge absorption, integration and reconfiguration. Moreover, the study demonstrated that R&D projects are platforms for the integration and creation of organizational knowledge that in long term will be reconfigured to evolve firm products according to the market and strategic dynamism. Furthermore, if an organization wants to maintain product innovation, it should create a context that stimulates creativity from all parts of the firm. Moreover, the analysis of the audiovisual sector companies shows that each dynamic capability is actually supported by company resources, especially

those regarding human and physical capital, structures and systems, and company culture. In order to improve organizational performance, each capability should be composed of a distinctive combination of these four resources, which should also be designed to be coherent and fit into the innovation strategy of the firm.

The identification of the specific activities of the three knowledge-related processes and their placing within the four groups of resources can provide a systematic framework, which can acts as a basis for future empirical researches in a wider range of firms.

The key idea derived from the cases study is that the organizations can learn constantly of the experience and apply what they have learnt in future actions. For example, in the firms studied many of the innovation projects were used as a foundation for the development of new projects, which became highly profitable products.

Table 1. Set of the resources that underpins Knowledge creation and absorption capability

KNOWLEDGE CREATION AND ABSORPTION	
<p style="text-align: center;">ACTORS</p> <ul style="list-style-type: none"> -Investment in basic science -Reputation in the academic field -Employee Selection Process -Employees well-trained -Closed customer relations -Collaborations with experts from universities -Different types of knowledge -High overlapping capabilities -Investment in learning 	<p style="text-align: center;">PHYSICAL RESOURCES</p> <ul style="list-style-type: none"> -Environment that foments a community of learning -Databases with specific information on the core competences of the organization -Budgets for the acquisition of new - technologies -Investment in R & D
<p style="text-align: center;">STRUCTURES AND SYSTEMS</p> <ul style="list-style-type: none"> -Previous projects as a platform for new products -Team Rewards and Employee Motivation -Autonomy of the director over the use of the annual budget -Architecture of internal and external participation (Innovation and supplier networks) -High number of formal and informal meetings -Promotion of activities that create knowledge -Communication structure 	<p style="text-align: center;">CULTURE</p> <ul style="list-style-type: none"> -Organizational culture -oriented exploration of knowledge -Unrestricted exploration of digital issues -Open attitude towards the scientific community: Willingness to share research results -Commitment to research (master's degree in telecommunications)

Table 2. Set of the resources that underpins Knowledge Integration capability

KNOWLEDGE INTEGRATION	
<p>ACTORS</p> <ul style="list-style-type: none"> -Employees with skills, able to work in an unconventional environment -Combination of knowledge of different products -Ability to exploit the knowledge acquired 	<p>PHYSICAL RESOURCES</p> <ul style="list-style-type: none"> - New workplace layout (open space offices, meeting points, coffee counters, etc.) - Easily accessible electronic archive -Documentation related to organizational routines
<p>STRUCTURES AND SYSTEMS</p> <ul style="list-style-type: none"> -Cross functional teams -Professional areas -Self-participation in projects -Customer product co-development -Socialization of knowledge -Collaboration between teams -High inter-functional communication -virtual communities (Customer feedback) 	<p>CULTURE</p> <ul style="list-style-type: none"> -Openness to creativity -Absence of departmental identification -Interaction and dialogue encouraged -Collective behavior that promote and facilitate capacity building process

Table 3. Set of the resources that underpins Knowledge reconfiguration capability

KNOWLEDGE RECONFIGURATION	
<p>ACTORS</p> <ul style="list-style-type: none"> -Motivated employees -Open conversations among employees -Managerial experience 	<p>PHYSICAL RESOURCES</p> <ul style="list-style-type: none"> -Flexible workplace design -Knowledge encoded files
<p>STRUCTURES AND SYSTEMS</p> <ul style="list-style-type: none"> -Participatory design processes -Leveraging employee talent -Absence of barriers between departments -Development group -Free allocation of time and skills -Continuous collection and evaluation of proposals 	<p>CULTURE</p> <ul style="list-style-type: none"> -Openness to group proposals -Openness to individual creativity -Broad involvement in innovative processes (EFQM)

References

- Brown, S.L., and K.M Eisenhardt 1997 "The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations". *Administrative Science Quarterly* 42/1: 1-34.
- Eisenhardt, K.M., and B.N., Tabrizi 1995 "Accelerating adaptive processes - product innovation in the global computer industry". *Administrative Science Quarterly* 40/1:84-110
- Miles, M.B., and A.M Huberman 1994 "Qualitative Data Analysis. An expanded Sourcebook". Sage Publications: Thousand Oaks, C.A.
- Lee, T.W.
1999 "Using Qualitative Methods in Organizational Research". Sage Publications: Thousand Oaks, C.A.
- O'Reilly, C.A., and M.L Tushman 2008 "Ambidexterity as a dynamic capability: Resolving the innovator's dilemma". *Research in Organization Behavior* 28/1: 185-206.
- Roy, A., R.K. Gupta, K.B.C Saxena, and A. Sikdar 2007 "Knowledge management: innovation, technology and cultures". *Book Series: Series on Innovation and Knowledge* 6/: 211-226
- Teece D.J., G Pisano, and A. Shuen 1997 "Dynamic capabilities and strategic management". *Strategic Management Journal* 18/7: 509-533.
- Wolfe, R.A. 1994 "Organizational innovation- review, Critique and suggested research directions". *Journal of Management Studies* 31/3: 405-431.
- Yin, R.K 2003 "Case study research: Design and methods". Sage Publications: Thousand Oaks, C.A.