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Managerial and Technological Innovations: Any Relationship?

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Abstract

The crucial role of innovation is considered a major factor in creating value and enhancing business performance. However, the analysis of innovation has long been limited to technological innovation and few studies have been devoted to other forms of innovation including managerial innovation.
The objective of this work is to verify the existence of a link between managerial innovation and technological innovation based on a Moroccan national survey on R & D and innovation.
The results of the present article suggest that the more a company conducts technological innovations, the more it is prone to adopt managerial innovations. This means that the two types of innovation would be rather related and not in a pyramidal hierarchy.

Keywords: Innovation, Managerial Innovation, Technological Innovation.

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1. Introduction

Recognizing that innovation remains a key imperative for enterprise performance, public and private decision makers mobilized increasing financial and human resources for over a decade in order to promote the knowledge economy and innovation. However, innovation analysis has long been restricted to technology, especially products and processes (Fontan et al., 2004). Indeed, Birkinshaw and Mol (B&H, 2006: 82) indicated that more than 12,700 articles are published in scientific journals technological innovation against only 114 articles about managerial innovation. Yet, because of the rapid development of science and technology, several authors have questioned the ability of technological innovation to create and maintain a competitive edge (Hamel, 2006; Domanpour, 2009; Birkinshaw, Hamel and Mol, 2008). Others have even concluded that only managerial innovation has the ability to create Long-term benefits (Hamel, 2007). While only few academic studies have focused on managerial innovation, literature investigating the relationship between the latter and technological innovation is uncommon (Ayerbe-Machat, 2003).

The objective of this work is to investigate possible links between technological and managerial innovations. To this aim, a literature review is presented to better understand the theoretical concepts of the two types of innovation. In

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addition, from a sample of 1001 firms from the Moroccan national survey on R&D and technological innovation (process and product) and managerial innovation, multiple potential relationships are examined. Thereafter, the results are discussed and the limitations of the research are presented.

2. Literature Review And Hypotheses

Since the seminal work of Schumpeter, the innovation analysis has evolved and has taken center stage in the economic analysis. The modern innovation analysis focuses more on the different terms and types depending on the nature or impact of innovation on economic activity.

In the literature, one can distinguish between different types of innovation, especially by type and degree of innovation. Indeed, the first distinction regarding the nature of innovation, on which is based the OECD definition, occurs in the activity of the company, depending on whether it relates to products, processes, the organization and / or marketing.

The second type is the innovation degree of novelty. It can distinguish between radical innovation and incremental innovation, and thus the type of change in the business and their impact on the market and/or technology. This diversity makes it difficult for a precise definition of innovation (Dosi et al.1988) and makes incomplete, often, the distinction between type (Handerson & Clarck.1990).

Therefore, the Oslo Manual defines innovation as "the implementation of a product (good or service), or a new or significantly improved process, a new marketing method, or a new organizational method in business practices, workplace organization or external working relationships".

2.1. Managerial Innovation: IM

Kimberly was the first to use the term "Managerial Innovation" in an article with the same name in 1981 (Kimberly, 1981). Other terms such as "administrative innovation" (Evan, 1966; Teece, 1980; Damanpour, 1987) or "organizational innovation" (Daft, 1966 and Evans, 1984, Menard 1995 Ayerbe-Machat, 2003) are studied in the literature referring to all of the innovations that are not subject to technological innovation.

Managerial innovation has been analyzed under different approaches. The emergence of innovative socio-economic conditions were scrutinized (chandler, 1962 Abrahamson, 1996). Managerial modes also have been long studied (Midler, 1986, Gill and Whittle, 1992; Abrahamson , 1996, Abrahamson and Fairchild, 1999). The adoption process by organizations was evaluated as well (Gill and Whittle, 1992; Zbaracki, 1998, Lynch, 2007). The diffusion process received also its share of research interest (Huzcynski 1993; Waston, 1994 Roger, 1995, Abrahamson and Fairchild, 1999 Sturdy, 2004). Finally, managerial innovation itself, including its emergence was examined (David and Hatchuel 2007 Birkinshaw, Hamel and Mol, 2008).

During the 2000s, the concept of managerial innovation was at the heart of a research program at the London Business School, and directed by Hamel, Birkinshaw and Mol proposed the following definition: "the invention and implementation of a practice, a process of a structure or a management technique that is new in terms of the state of knowledge and contributes to the achievement of the organization ". (Birkinshaw, Hamel and Mol, 2008).

With this definition, the authors focus on three main features of managerial innovation. The first is that managerial innovation lies at the operational level, not at the theoretical level of managerial ideas, since it concerns a practice, process, structure or technique. The second characteristic is that managerial innovation cannot be considered as such if it is new compared to the state of the art, not only for organizations that adopt them. Managerial innovation must, according to that definition, include the 'intentional' aiming to extend the organization's objectives. Mol and Birkinshaw (2009) state that managerial innovation changes how managers seek to achieve the objectives of the company mainly through the introduction of new management practices to improve business performance.

As for the process of managerial innovation, it has been described by Birkinshaw, Hamel and Mol (2008), as a recursive and non-linear process consisting of four phases: motivation, invention, implementation and theorizing and labeling. Figure 1 depicts this phase succession.

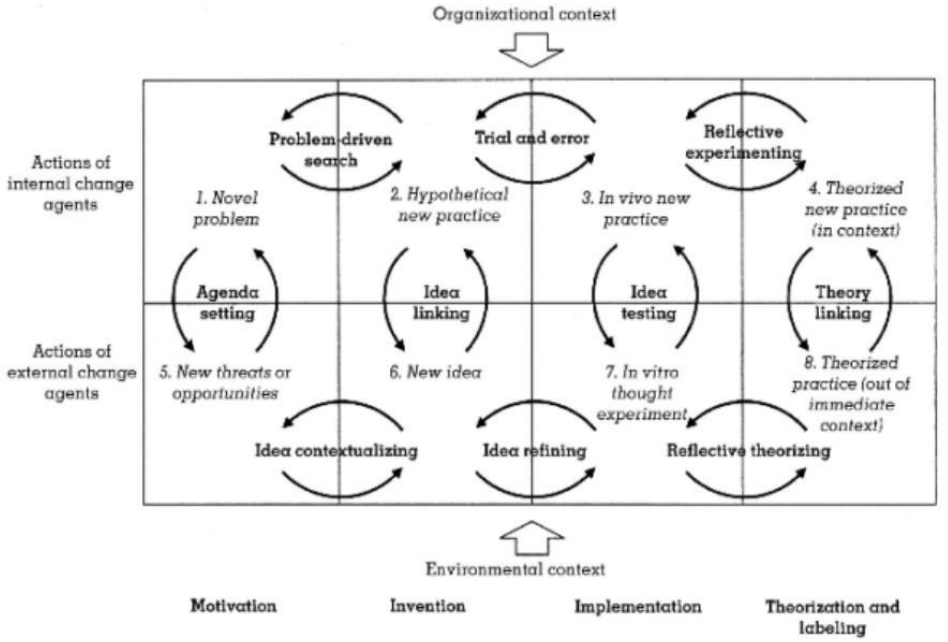

Figure 1: Management Innovation Process Framework

2.2. Managerial vs. Technological Innovation:

Managerial innovation for Damanpour and Aravind (2011) refers to the organizational, administrative and management innovation. Their designs have been developed to distinguish innovation of products/services and processes (technological innovation). Thus, organizational innovation does not contain technological elements per se, and generally cannot be based on R & D (Edquist et al., 2001).

Furthermore, analysis of managerial innovation begins to take place in academic research against the predominance of the analysis of technological innovation rather abundant (Abernathy and Utterback, 1978; Encaoua et al, 2001.). 48% of innovations in France, for example, have no technological components (see report Morand 2010).

That said, the relationship between technological innovation and managerial innovation is treated in the literature from several points of view (Hamel, 2006; Damanpour, 2011). Two major approaches are prevailing. For the first approach, technological innovation and managerial innovation are analyzed as two variables that influence each other over time. Indeed, for Damanpour and Evan (1984), managerial innovation tends to trigger and increase technological innovation, and Hamel and Breen (2009), managerial innovation is at the top of the pyramid innovation.

For the second approach, Hamel and Breen (2007) distinguish four categories of innovation, namely (i) managerial innovation, (ii) strategic innovation, (iii) product/service innovation and (iv) process innovation. These categories form an innovation pyramid with managerial innovation at the top, because it can guarantee (or cause) a sustainable break for the company that can be difficult to identify and clone by competitors.

Below managerial innovation in the pyramid, strategic innovation can provide a new business model for the company. At the base are process innovation and products/service innovation that can offer an important development, which are often quickly copied and / or exceeded (Hamel and Breen, 2007).

Thus, the ability to better meet a company's performance objectives is closely linked to its managerial innovation capability, which changes substantially the implementation methods of management activities or even corporate structures (Hamel, 2009). However, this approach is not based on sufficient empirical evidence that can consolidate.

2.3. Development of Hypotheses

Based on the second approach about the relationship between managerial and technological innovation, which implies that they are not in a pyramidal hierarchical relationship but rather in a complementary dynamic system, the following hypothesis will be tested:

H1: high technological innovation (product/service and process) in a company correlates with high managerial innovation.

3. Methodology

The data are based on the Moroccan national survey on R & D and innovation carried out in 2005, which aimed to provide data on the situation of innovation and research in business in Morocco.

3.1. Sample and Data Collection

This national survey involved 2,000 companies spread throughout the kingdom, all sectors included. 1001 responses were recorded, representing a response rate of 50.05%. Over the previous 10 years, 395 companies reported having implemented at least one innovation project. Our analysis focuses on these 395 companies.

3.2. Results and Analysis:

On a sample of 1,001 companies, 395 companies reported at least one innovation project since 1995, which represents a percentage of 39.5%. Note that 412 companies, representing 41.2% provided no answer. Depending on the number of innovation projects implemented, each company is assigned to an innovation category. Afterwards, a managerial/technological innovation ratio, defined as the ratio between the number of companies with managerial innovation projects and those with technological innovation projects. Table 1 depicts this managerial/technological innovation ratio for companies with different innovation categories.

Of the 395 companies that have already implemented innovation projects, there are 74 or 18.73% who implemented a single project of technological innovation. Of these 74 companies, only one said it also carried out a project in managerial innovation, which comes to a percentage of 0.25% only.

In addition, 181 companies claim to have started between 2 and 4 technological innovation projects. For this category, the percentage of companies that made a project of managerial innovation is 9.94% or 18 companies. This ratio increases to 75.32% and, for the category of companies with between 5 and 10 technological innovation projects, with 58 companies from 77. For the next category, 46 companies reported having between 11 and 24 Technological project. 45 among them have managerial innovation projects, or 97.83%.

The last category contains 17 companies with more than 25 projects of technological innovation, and all of these companies have at least one project managerial innovation, which gives a percentage of 100%.

Consequently, the increase of technological innovation projects in a company seems to increases the likelihood of a managerial innovation projects. Indeed, the percentage of firms reporting at least one managerial innovation project varies between 0.25% for companies that have a single technological innovation project, and 100% for those over 25 technological innovation projects.

Table 1: Managerial/Technological Innovation Ratio per Innovation Category

	Only 1	between 2 and 4	between 5 and 10	between 11 and 24	More than 25	total
Number of Technological Innovation Projects	74	181	77	46	17	395
Number of Managerial Innovation Projects	1	18	58	45	17	139
Managerial/Technological Innovation Ratio	0,25%	9,94%	75,32%	97,83%	100%	35.19%

This graph compares the number of enterprises with technological innovation projects to those with a managerial innovation projects according to five categories of number of selected projects.

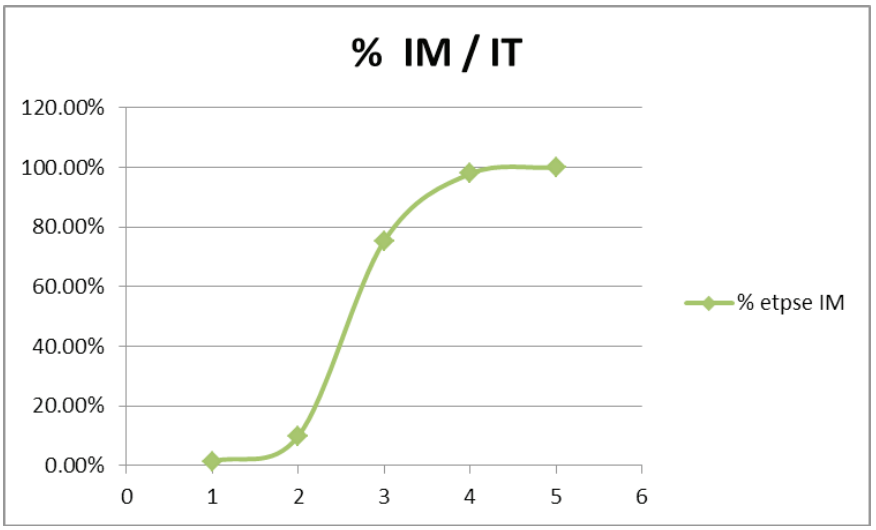

Figure 2: Managerial Innovation Projects vs. Technological Innovation Projects

This diagram shows how the percentage of firms with at least one project managerial innovation among enterprises with technological innovation projects on five categories chosen for the number of projects ranging from 1 to over 25.

Preliminary results show the existence of a positive relationship between the two types of innovation. The implementation of a managerial innovation is related to the implementation of technological innovation. This result can be considered as a confirmation of our hypothesis and thus the synergistic and complementary approach to innovation. This result supports the first approach presented in the literature review. It states that the innovation can be found simultaneously in different areas of innovation, to combine synergistically.

If innovation in its different types is considered a categorical imperative for business performance, this result indicates that the more a company develops innovations in product and/or process, the more it can develop managerial innovations.

4. Conclusion

Between the two approaches identified in the literature on the relationship between managerial innovation and technological innovation, which are pyramidal hierarchical approach and synergistically integrated, this latter seems more relevant in view of the results obtained in this study.

The results of the present article suggest that the more a company conducts technological innovations, the more it is prone to adopt managerial innovations. This means that the two types of innovation would be rather related and not in a pyramidal hierarchy.

The results of the Moroccan national survey on R&D and innovation support this approach. However, these results can be further investigated regarding the data changing time and the validity of data in other economic context. Indeed, survey data dates back to 2005 and relate only to Morocco, it would be appropriate to review the data from the national survey of 2010 and make a comparison. Another axis to further this research is to include other aspects of

managerial innovation, since this paper targeted organizational innovation while managerial innovation is much broader.

Finally, other parameters can be added to the empirical analysis to better test the link between managerial and technological innovation, and to verify the causal relationship between the two and also the direction of the causality.

References

Abrahamson, E. 1991. Managerial fads and fashions: The diffusion and rejection of innovations. ***Academy of Management Review,*** 16: 586–612.

Abrahamson, E. 1996. Management fashion. ***Academy of Management Review,*** 21: 254–285.

Abrahamson, E. 1997. The emergence and prevalence of employee management rhetorics: The effects of longwaves, labor unions, and turnover, 1875 to 1992. ***Academy of Management Journal,*** 40: 491–533.

Abrahamson, E., & Fairchild, G. 1999. Management fashion: Lifecycles, triggers, and collective learning processes.***Administrative Science Quarterly,*** 44: 708–740.

Abrahamson, E., & Fairchild, G. 2001. Knowledge industries and idea entrepreneurs. In C. B. Schoonhoven & E. Romanelli (Eds.), ***The entrepreneurship dynamic in industry evolution:*** 147–177. Stanford, CA: Stanford University Press.

Birkinshaw, J., Crainer, S., & Mol, M. 2007. Special report on management innovation. ***Business Strategy Review,*** 18(1): 45–73.

Birkinshaw, J., & Mol, M. 2006. How management innovation happens. ***Sloan Management Review,*** 47(4): 81–88.

Czarniawska, B., & Sevo´n, G. (Eds.). 2005. ***Global ideas: How ideas, objects and practices travel in the global economy.*** Malmo¨ : Liber/CBS.

Damanpour, F. 1987. The adoption of technological, administrative, and ancillary innovations: Impact of organizational factors. ***Journal of Management,*** 13: 675–688.

Damanpour, F., & Evan, W. M. 1984. Organizational innovation and performance: The problem of "organizational lag." ***Administrative Science Quarterly,*** 29: 392–409.

Davenport, T. H., & Prusak, L. 2003. ***What's the big idea? Creating and capitalizing on the best management thinking.*** Boston: Harvard Business School Press.

Georgantzas, N. C., & Shapiro, H. J. 1993. Viable theoretical forms of synchronous production innovation. ***Journal of Operations Management,*** 11: 161–183.

Ghoshal, S., & Bartlett, C. 1994. Linking organizational context and managerial action: The dimensions of quality of management. ***Strategic Management Journal,*** 15: 91–112.

Gill, J., & Whittle, S. 1992. Management by panacea: Accounting for transience. ***Journal of Management Studies,*** 30:281–295.

Hamel, G. 1998. Strategy innovation and the quest for value. ***Sloan Management Review,*** 39(2): 7–14.

Hamel, G. (2006), The why, what and How of Management Innovation, Harvard Business Review, 84 : 2, 72-84.

Hamel, G. et B. Breen (2007), The Future of Management, New York : Harvard Business School Press.

Hamel, G. (2009), Management Innovation, Leadership Excellence, 26 : 5

Hatchuel, A. et B. Weil (1992), L'expert et le système, Paris : Editions Economica.

Helper, S. et M. Sako (2010), Management innovation in supply chain: appreciating Chandler in the twenty-first century, Industrial and corporate change, 19 : 2, 399-429.

Henderson, R.M. et K. B. Clark (1990), Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms, Administrative Science Quarterly, 35 : 1, 9-30.

Kimberly, J. R. et M. J. Evanisko (1981), Organizational Innovation: the Influence of individual organizational and contextual factors on hospital adoption of technological and administrative innovations, Academy of Management Journal, 24 : 4, 689-713.

Kimberly, J .R. (1981), Managerial innovation, in P. C. Nystrom & W, H. Starbuck, Handbook of organizational design, New York : Oxford University Press, 84-104.

Mol, M. J. et J. Birkinshaw (2006), Against the flow: reaping the rewards of management innovation, European Business Forum, winter 2006 : 24-29.

Mol, M. J. et J. Birkinshaw (2009), The sources of management innovation: when firms introduce new management practices, Journal of Business Research, 62 : 1269-1280.

Mohr, L. B. (1969), Determinants of innovation in organizations, American Political Science Review, 63 : 111-126.

Schumpeter, J. A. 1947. ***Capitalism, socialism, and democracy.*** New York: Harper & Brothers.