

DO PRODUCT INNOVATION-RELATED ACTIVITIES AFFECT DOWNSIZING DECISIONS? AN ORGANIZATIONAL EFFICIENCY PERSPECTIVE

Jiménez Castillo, David; Estrella Ramón, Antonia; Magán Díaz, Amalia.

Universidad de Almería.

ABSTRACT

Firms' innovation strategy typically involves the need to shape organizational changes within work structures and routines, even those concerning employee downsizing decisions. However, little effort has been directed toward exploring the role of firm innovation strategy as a determinant of downsizing. Drawing on organizational efficiency perspective, this study proposes a framework to examine the impact of product innovation-related activities on downsizing. The model will be tested using data from a longitudinal sample of Spanish innovative manufacturing firms. It is expected that the results show that firms developing product and process innovations are associated with downsizing decisions. Furthermore, companies that use formal protection of intellectual property through patents, utility models, trademarks and copyrights are believed to keep their personnel. The study attempt to unravel the impact of firm innovation on downsizing decisions and to offer guidance on how innovative firms might operate to control negative effects on their workforce.

Keywords:

Organizational efficiency; Employee downsizing; Product innovation; Innovation protection.

1. Introduction

Employee downsizing has become a very popular management practice in firms around the world over the recent decades (Brenner et al., 2014; Datta et al., 2010). As is evident from the literature, firms carry out downsizing mainly to respond to external events (e.g., competitive pressures) and short-term needs (e.g., decrease in the number of orders), typically limited to the fulfilment of a cost reduction strategy or, to a lesser extent, to rationalize their business structures and processes (e.g., Kozlowski et al., 1993; Parker et al., 1997). Indeed, the key impetus to downsize is the increase in firm performance (Datta et al., 2010). The intensified competition in markets and the world economic crisis have induced firms to become more innovative and at the same time to cut costs by downsizing. Since, a priori, the need of innovation abilities conflicts with the need of downsizing in firms, the question that naturally arises is which practices (if any) within the innovation strategy can affect employee downsizing, considering efficiency and productivity as primary goals in contemporary firms.

This study draws firm innovation strategy into the debate about the antecedents of downsizing, providing a greater understanding of how product innovation-related practices may determine downsizing decisions. The requirement by companies to differentiate themselves in the marketplace through innovation activities has noticeably affected the shape and scope of jobs during recent decades. More importantly, the incorporation of innovations and technological advances in firms has become a relevant source of employment dynamics, particularly in the creation and destruction of jobs (Gandolfi and Hansson, 2011; Greenan and Guellec, 2000), pursuing a more efficient utilization of human resources and redressing organizational performance. Innovation is one of the least discussed topics in the literature on the organizational antecedents of downsizing (see Datta et al., 2010). Scholars have put more effort into studying the effects of downsizing on innovation outcomes (e.g., Dougherty and Bowman, 1995; Mellahi and Wilkinson, 2010; Richtnér and Åhlström, 2006), and only recently has there been empirical evidence of the effect of merely product and process innovation on downsizing (see Vicente-Lorente and Zúñiga-Vicente, 2012).

The present study explicitly addresses whether and the extent to which product innovation-related activities allow understanding into why firms tend to implement the practice of employee downsizing. To answer these questions, the organizational efficiency approach (see Datta et al., 2010) is adopted as the theoretical framework in the study. This study assumes that downsizing is a practice intended to improve organizational efficiency and thus, firms implement it when a product innovation strategy is believed to generate a direct or indirect positive influence upon firm performance. In particular, product and process innovations and formal protection of intellectual property (i.e., patents, utility models, trademarks, copyright) are examined as product innovation-related activities that may affect downsizing.

2. Theoretical perspectives on the causes of employee downsizing

An overview of the management literature reveals two main approaches to downsizing: the economic/rational and the institutional perspectives (McKinley *et al.*, 2000). The economic approach assumes that organizations implement downsizing in order to reduce costs and

improve efficiency (McKinley *et al.*, 1998). Therefore, downsizing is viewed as a restructuring, performance improvement strategy attempting to increase firms' future productivity and organizational efficiency. The institutional perspective considers the social processes presented in the organizational field as determinants of downsizing instead of the organization's economic interests. This approach conceives downsizing as an organizational response to institutional forces and suggests that organizations' motivation to downsize is to obtain social legitimacy for this decision as downsizing has the status of an institutional norm (Greenwood *et al.*, 2010; Lamertz and Baum, 1998; McKinley *et al.*, 1998). In addition, Datta *et al.* (2010) point out organizational efficiency as a rational approach to explain why firms downsize.

The organizational efficiency approach draws on the resource-based view of the firm to assert that employee downsizing, with attendant cost savings, allows more efficient utilization of human resources and redressed organizational performance declines (Datta *et al.*, 2010). Consistent with these arguments, the economic and efficiency views may account for the impact of innovation activity of firms on downsizing. For example, the introduction of new technology seeks to achieve greater efficiency in production processes, which would result in increased productivity and a decrease in required workers. Following the general consensus across studies that firm performance is the key factor in downsizing decisions (Datta *et al.*, 2010) and that firms are rational, self-interest seeking and driven by efficiency to reduce personnel (McKinley *et al.*, 2000), this study adopts an organizational efficiency perspective to explain why product innovation-related activities can precipitate employee downsizing.

3. Hypotheses development

3.1. Product innovations

Innovative efforts are frequently divided into product innovation and process innovation (Cohen and Klepper, 1996; Utterback and Abernathy, 1975). Product innovation refers to the physical products and the services a firm provides, and is defined as the process of conceiving and implementing new products (Nakata and Sivakumar, 1996), including activities such as technical design, R&D, and commercial activities involved in the marketing of a new (or improved) product (Alegre, 2006).

Some previous researchers find a positive effect of product innovations on employee growth (e.g., Greenan and Guellec, 2000; Pianta, 2001), or in other words, firms that introduce more product innovations have lower downsizing rates. This assertion is consistent with the initial phases of the product life cycle of successful market novelties as the low degree of competence and the high sales levels predict an increase of workforce growth (Vicente-Lorente and Zúñiga-Vicente, 2012). However, considering the dynamics of innovation, as the introduction of new or improved products increases the sales of these novel products, some proportion of the firm's current sales of old products may be cannibalized (Nijssen *et al.*, 2005). Consequently, old products may be replaced totally or partially by market novelties. Accordingly, contrary to the above evidence and from an organizational efficiency perspective it is argued that the cost assumed by reductions in production and market sales of old products can provide organizations with incentives to downsize; firms may consider unnecessary retain those employees related to old products in

order to be more efficient. The previous arguments allow us to formulate the following research hypothesis:

Hypothesis 1: Firms that generate product innovations are more likely to downsize as opposed to firms that do not generate them.

3.2. Process innovations

Process innovation, which involves innovation in production processes and component technologies (for instance, new machineries and equipment) used to produce the firm's products (Gopalakrishnan and Damanpour, 1997; Utterback and Abernathy, 1975), can allow both efficiency and effectiveness gains. Process innovation is also a key source of long-term competitive advantage for achieving renewal, survival, and growth in manufacturing firms (Tushman and Nadler, 1986). Past research suggests that process innovation is mainly driven by internal production objectives (Cohen and Klepper, 1996; Lager and Hörte, 2005), such as the reduction of production costs, higher production yields, or improvement of production volumes and product recoveries (Lager, 2002). Consequently, process innovation is primarily efficiency-driven, being in many cases a possible and an immediate outcome, the reduction of the overall number of workers.

The economic and management perspectives can provide explanations about the negative effect of process innovation on employee downsizing. From an economic approach, in general, process innovation may lead to a reduction in employment due to the destruction of existing jobs (Greenan and Guellec, 2000). Since the development (or the adoption) of process innovations leads to greater efficiency of production, with savings in labour and/or capital allowing firms to operate with fewer workers, it is logical to think that those firms investing in process innovation will have a higher level of employee downsizing.

Drawing on a management perspective, the introduction of process innovation in the form of new technology in most firms is supported by the need to introduce some organizational adjustments related to employees (Brynjolfsson and Hitt, 2000; Caroli, 2001). In this regard, despite the fact that the incorporation of new methods of organizing employees can be associated, in some cases, with the creation of new jobs and the need for more educated employees (Doms et al., 1997), a primary effect of process innovations is the elimination of some functions and jobs and the consequent employee downsizing (Cyert and Mowery, 1987; Pinsonneault and Kraemer, 2002). Thus, we propose:

Hypothesis 2: Firms that generate process innovations are more likely to downsize as opposed to firms that do not generate them.

3.3. Appropriability regime

Appropriability regime refers to the set of formal and informal mechanisms that enable a firm to protect and utilize its intangibles and innovations (Hurmelinna-Laukkanen, 2012). Innovative firms frequently combine knowledge protection through formal, legal mechanisms, such as intellectual property rights (IPR) (e.g., patents, utility models, trademarks, copyright), with other informal ways of protection, which are not mutually exclusive or even competing, but rather supporting each other (Päällysaho and Kuusisto, 2011). Cultivating commitment and loyalty of personnel is one example of informal protection method, after all, much of the knowledge relies upon the key employees. The

knowledge embodied in employees is seen as the most valuable asset in the company, which generates a strong dependence on key personnel (Päällysaaho and Kuusisto, 2011). In fact, innovative firms need their knowledgeable employees to generate new innovation, to get profits from these innovations, and maintain capabilities to continue innovating (Olander and Hurmelinna-Laukkanen, 2015). The complementarity between formal and informal appropriability mechanisms suggests that organizations that make an effort in developing and implementing formal mechanisms of IP protection are more likely to adopt other informal ways of capturing and protecting IP embodied in personnel. Therefore, formal IP-oriented organizations are less likely to downsize in an aim to avoid the loss of information and knowledge that employees' departure entails and the potential threats derived from the loss of knowledgeable and skilled employees (e.g., loss of core information). Formally stated:

Hypothesis 3: Firms that apply for or register formal protection of IP are less likely to downsize as opposed to firms that do not apply for or register it.

4. Methodology and expected contributions of the study

The Spanish manufacturing industry has been selected as the research context of this study. This choice is due several reasons. First, employee downsizing is more prevalent among manufacturing firms than nonmanufacturing firms as is shown in many studies (e.g., Budros, 2002; Coucke et al., 2007; Datta et al., 2010). Also, innovation activities of firms in manufacturing industries are more frequent and intense than in nonmanufacturing firms (e.g., Arbussà and Coenders, 2007). Second, despite Spain had a regulatory tradition of employment protection and job security (Greenwood et al., 2010), the Spanish labor market has been progressively deregulated and nowadays downsizing seems to be an accepted and spread strategy among Spanish firms (Vicente-Lorente and Suárez-González, 2007). Third, Spain is a technologically advanced country with similar industrial structures that other countries in its environment (Santamaría et al., 2012). In particular, Spanish traditional industries are prominent and in recent years this country has developed an increasingly high specialization in more advanced industries, such as renewable energy production (De Marchi, 2012). These arguments suggest that the Spanish manufacturing industry is a relevant and appropriate setting for this study.

The empirical analysis will be performed using data from the Spanish Technological Innovation Panel (henceforth, PITEC). PITEC contains detailed information from Spanish CIS data related to firms' innovation activities. Anonymity of surveyed firms is assured and they are free to omit or provide the information requested by the questionnaire. The database includes micro data from 6,476 innovative manufacturing firms coming from different sectors of activity over the period 2003-2013 on a yearly basis. During this period, the economic situation in Spain was one of prosperity until 2007, the beginning of the world financial crisis. Accordingly, since downsizing may be accentuated during difficult economic periods (Brenner et al., 2014), the majority of the downsizing measures adopted during this time may have been responses to factors other than economic issues.

Next, we focus on the variables and measures that will be used to test the hypotheses. First, *downsizing* will be the dependent variable in the model. Downsizing can be defined as the yearly percentage of employee reduction by 5% or more, as is proposed in prior empirical

studies (e.g., Guthrie and Datta, 2008; Vicente-Lorente and Zúñiga-Vicente, 2012). A dichotomous variable will be calculated which will take the value of 1 if the percentage of employment reduction is higher than 5% during a given year, and 0 otherwise (i.e., if employment reduction is equal or lower than 5%) (Mellahi and Wilkinson, 2010; Muñoz-Bullón and Sánchez-Bueno, 2010). Regarding the independent variables, *product and process innovations* will be codified as binary variables taking a value of 1 if a firm has accomplished product or process innovations respectively, during a given year, and 0 otherwise (Jiménez-Jiménez and Sanz-Valle, 2011; Santamaría et al., 2012). Finally, regarding the *appropriability regime* in terms of formal protected intellectual property methods, we will include the number of patents applications in a given year (i.e., a continuous variable) (Brem et al., 2016; Hottenrott and Lopes-Bento, 2014), and whether the company has protected innovations through utility models, trademarks or copyrights. The three latter variables will be codified as binary variables taking a value of 1 if a firm has registered utility models, trademarks or has claimed copyrights respectively during a given year, and 0 otherwise (Busom et al., 2014). To understand the effect of the product innovation-related process of manufacturing firms on downsizing and to reduce the risk of the omitted variable bias, we will include a set of control variables in the proposed model, in particular, sector of activity, type of firm ownership, firm age, firm size, downsizing experience and innovativeness level.

This research attempts to build on and extend previous research in several ways. First, we expect adding new evidence to the relatively unexplored issue of innovation as a determinant of downsizing. Given the focus on examining downsizing effects on firm innovation (e.g., Dougherty and Bowman, 1995; Mellahi and Wilkinson, 2010; Richtnéř and Åhlström, 2006), this study suggests that the reverse relationship is equally plausible. Second, we try to support organizational efficiency as a valid approach to explain how innovation activities affect downsizing decisions; managers are likely to implement downsizing when the innovation strategy is supposed to enhance firm performance. Third, this study also points to an important conceptual refinement concerning innovation as an antecedent of downsizing. It is unproductive to conceive firm innovation as a predictor of downsizing without considering that the effect may vary from activity to activity. In particular, we suggest a differential effect of innovation activity on downsizing, with firms developing product and process innovation activities being most associated with downsizing decisions, and companies using formal protection of IP tending to keep their workforce. Overall, the study will attempt to resolve the discrepancies about the relationship between innovation strategy and downsizing, which constitutes a valuable addition to the literature.

Regarding the expected managerial implications, the study tries to reveal the importance of treating product innovation-related strategy as a central aspect in the practice of downsizing. Although it has been argued that firm innovation can play a role in downsizing decisions, this research might help managers to be aware of specific innovation activities that could lead to reduce or keep personnel. This is important for innovative companies concerned about employee engagement and welfare. This study is expected to offer guidance on how to efficiently allocate resources in innovation activities when there is a focus on reducing the impact on employees. We believe that the results will suggest a mix of product innovation-related activities to be strategically coordinated and aligned not only

to serve their purpose more efficiently and effectively, but also to reduce the likelihood of downsizing or avoid the consequences of this decision.

5. References

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