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ENTREPRENEURIAL ORIENTATION INFLUENCE ON SUSTAINABLE ORIENTED INNOVATION IN MANUFACTURING SMEs

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Abstract

This paper analyses the influence of Entrepreneurial Orientation on Sustainable oriented Innovation. Entrepreneurial Orientation construct is based on five dimensions – Innovativeness, Risk taking, Proactiveness, Competitive aggressiveness and Autonomy, while Sustainable oriented Innovation considers three dimensions – process, organizational and product innovations. The conclusion is that Entrepreneurial Orientation positively impacts upon Sustainable oriented Innovation.

Keywords: *entrepreneurial orientation; sustainability oriented innovations; Knowledge Management process; small and medium sized enterprises*

1. Introduction

Innovation is one of the main sources of competitive advantage for companies (Damanpour & Schneider, 2006). Although there is a considerable body of literature focusing on innovation, most studies emphasize technological innovation (Caroli & Van Reenen, 2001; Ceptureanu & Ceptureanu, 2019). Innovation represents, in this study, the implementation of a new or significantly improved products, process, or organizational methods (Hansen et al., 2009; Schaltegger & Wagner, 2011).

In the last decades, small and medium sized enterprises (SMEs) have increasingly started to use strategies seeking to achieve sustainable competitive advantage. These strategies imply new or improvement of products, processes and organizational practices, making innovation critical (Popadiuk & Choo, 2007). Innovation allows SMEs to be more successful

in coping with changing environments and in developing new capabilities (Bueno & Ordoñez, 2004). Under these circumstances, where innovation is essential for the organizational success, SMEs focus on it may prove decisive (Wang & Ahmed, 2004). One increasingly important way for firms to do so is to focus on sustainability oriented innovation (Schaltegger, 2011). With environmental issues being recognized in the literature as sources of strategic change (Aragón-Correa et al., 2008), environmental factors were included in innovation research (Schiederig et al., 2012), and sustainability oriented innovation and its product, Sustainability oriented innovations, started being operationalized by SMEs (Huber, 2008).

At the same time, Entrepreneurial Orientation (EO) has become a key topic in entrepreneurial literature (Rauch et al.; 2009). As EO increases, it may determine a greater focus on innovation (Zahra et al., 1999). Although there are scholars conceiving innovation as an indicator of EO (Fornell & Larcker, 1981), few researches have actually empirically tested this relationship. Since SMEs displaying high levels of EO constantly scan their environment to find new opportunities (Covin & Miles, 1999), a positive relationship between EO and SI (SI) was assumed for this study.

2. Literature review

2.1. Entrepreneurial Orientation

The first scholar to discuss EO was Miller (Miller, 1983), who described it as business behavior that is characterized by innovativeness, proactiveness, and risk-taking. The concept has evolved, indicating that EO depends on the extent to which change and innovation, risk-taking, and competitive aggressiveness are encouraged (George & Marino, 2011). As such, it involves the discovery, evaluation, and exploitation of opportunities to introduce new products, services or organizational processes (Ribeiro-Soriano & Huarng, 2013).

For this paper a broader approach of EO was considered (Lumpkin & Dess, 1996), consisting of Innovativeness, Risk taking, Proactiveness, Competitive aggressiveness and Autonomy.

a. Innovativeness represents organizational engagement in implementation of new ideas and creative processes. It may result in new products or services, new technological processes or new organizational methods (Certo et al., 2009). Innovativeness motivates SMEs to increase investment to carry out technology innovation activities such as new technology acquisition or new product development, improving technological innovation ability (Lumpkin & Dess, 1996). Moreover, Innovativeness can promote SMEs innovation, accelerate the flow and transformation of new knowledge, and contribute to the generation of new knowledge and technology (Menon & Varadarajan, 1992). It reflects SMEs orientation toward creativity and experimentation, technological leadership, novelty, and R&D for new products and/or processes. SMEs without the capacity to innovate may invest time and resources in studying markets but are unable to translate this knowledge into practice. Thus, Innovativeness may create differentiation and develop solutions allowing SMEs to surpass competitors. However, it also may entails large investments, long-term payoffs, and a high risk of failure, while needing highly qualified HR resources.

b. Risk taking represents organizational engagement in high-risk actions and managerial preferences for spirited actions in order to pursue high reward (Kraus et al., 2012). SMEs displaying high level of Risk-taking are willing to commit extensive resources to exploit opportunities in which the outcome may be highly uncertain (Keh et al., 2002), such as tech-

nological innovation (Wiklund & Shepherd, 2003) or entering new markets (Lyon et al., 2000). Risk-taking may enhance SMEs innovation capabilities, facilitating the acquisition, learning, and absorbing of the new external technology and constantly seek, discover, and make use of new opportunities to get the benefits of innovation. Risk taking tolerance orients the firm toward action, induces it to break away from the tried-and-true, and motivates it to venture into the unknown, in the interest of obtaining high returns by seizing opportunities in the marketplace. Given that risk-aversion hinders firms from undertaking explorative activities and developing new market opportunities, firms need a degree of risk taking to challenge the existing order of business and ensure performance. Aversion for Risk taking may harm the ability of SMEs to deal with dynamic and uncertain environments, and may even jeopardize their survival.

c. *Proactiveness* represents the organizational process of anticipating and acting on expected requirements by capitalizing new opportunities, such as introduction of new products or services, ahead of competition (Lumpkin & Dess, 2001). SMEs with high level of Proactiveness are more willing to dominate competitors through a combination of proactive and aggressive moves. Since Proactiveness reflects the foresight needed to act in anticipation of future demand and to shape the environment (Lumpkin & Dess, 1996), it fosters the organizational ability to anticipate change and evolving needs in the marketplace, to be among the first to act upon them, and to capitalize on emerging opportunities. Proactiveness seems to operate as an enabler of competitive advantage. It is considered as one of the most important dimensions of EO since SMEs are often less bureaucratic and more flexible than their large sized competitors, and thus capable of making decisions more quickly. This enables them to respond quickly to new opportunities, which has consequences for their performance.

d. *Competitive aggressiveness* represents the organizational tendency to intensely and directly challenge competitors in order to outperform them (Certo et al., 2009). As such, it describes the propensity to engage in a sustained, diverse, or unique series of actions to challenge rivals and enhance their relative competitive position. SMEs displaying high levels of Competitive aggressiveness are willing to be unconventional rather than rely on traditional competition methods (Lumpkin & Dess, 1996). A strong and aggressive stance gives a business the ability to be a decisive competitor and to act forcefully to secure or improve its position. Hence, Competitive aggressiveness describes how firms relate to their competitors.

e. *Autonomy* represents SMEs employees' ability to make decisions and to proceed with actions independently, without any restrictions from the organization (Lumpkin & Dess, 1996). Autonomy has been found to encourage innovation, increase the competitiveness and effectiveness of SMEs or influences firm differentiation (Brock, 2003). It allows SMEs members the freedom and flexibility to develop and perform entrepreneurial initiatives.

2.2. Sustainability oriented innovations

One increasingly important way for SMEs to compete in changing markets and environments, while contributing to sustainable development, is through sustainability oriented innovation practices (Paramanathan et al., 2004). Environmental factors were increasingly included in innovation research (Noci &Verganti, 1999), and cleaner production, life cycle assessments, and eco-design become common eco-innovation practices. Nowadays, SI are considered those innovations encompassing environmental, social and, economic dimensions (Altham, 2007), so that they become integrated into the design of new products, pro-

cesses, and organizational structures (Rennings, 2000). While both large and small companies can engage in Sustainability oriented innovations, small and medium sized enterprises (SMEs) will innovate differently (Bos-Brouwers, 2010).

Research on SI of SMEs is, unfortunately, fragmented (Del Brío & Junquera, 2003; Tranfield et al., 2003). Prior research have focused on barriers and drivers (Klewitz & Hansen, 2014) and on policy interventions to facilitate eco-innovation in SMEs (Parker et al., 2009), but the SI practices at the product, process, and organizational level are not dealt with in detail.

For this study, three types of SI were considered:

a. Process innovations describe production of goods and services, with the aim of increasing eco-efficiency and eco-effectiveness (Huber, 2008). SMEs engaging in cleaner production change their way of using resources, manage non-product outputs through closed loop production schemes or industrial symbiosis, and improve the overall eco-efficiency of operations (Altham, 2007). In most studies, Sustainable Process innovations are considered as part of technological innovations (Kitchell, 1997). Process innovations are imperative in overall innovative capability of SMEs, improving their ability to exploit the resources and capabilities, and most importantly, enhancing the ability to reconfigure them to meet the requirement of creative production (Klewitz & Hansen, 2014).

b. Organizational innovations determine the reorganization of SMEs routines and structures and entail new forms of management, with a focus on environment, such as adoption of environmental management systems (Rennings et al., 2006). More and more researchers have directed their attention towards Organizational innovations to realize its critical contributions to long-term firm success (Birkinshaw et al., 2008; Vaccaro et al., 2012; Damanpour & Aravind, 2011). There are two types of Organizational innovations (Mol & Birkinshaw, 2009): generating innovation, describing a practice or a structure, which is new to the state of the art without known precedent (Birkinshaw et al., 2008); and adoptive innovation, describing something that is novel to the firm and is adopted from another context (Lin & Su, 2014). Though many studies on Sustainable Organizational innovations focus on generating type (Birkinshaw et al., 2007) or blend the two types together (McCabe, 2002), some others have realized the importance of exploring adoptive innovation (Abrahamson, 1996) since these seems to dominate the innovation practice of SMEs, such as the extensive introduction and implementation of total quality management (TQM), business process reengineering, strategic change, customer relationship management programs (Zbaracki, 1998).

c. Product innovations are improvements or entirely new developments of products and services, incorporating organic or recycled materials, high durability, low energy consumption while the development of environmental or sustainable technologies represent entirely new products (Hart & Milstein, 2003). Sustainable Product innovations has been a major interest (Zirger, 1997), in that it is a critical antecedent to product success (Sethi et al., 2001), which in turn is highly associated to sustainable business success (Henard & Szymanski, 2001). Product innovations are most often referred to as perceived newness, novelty, originality, or uniqueness of products (Henard & Szymanski, 2001). Innovative products present good opportunities for SMEs in terms of growth and expansion into new areas and allow them to establish a strong competitive position in an existing market or gain a foothold in a new one (Danneels & Kleinschmidt, 2001).

Based on the literature we hypothesize: *Hypothesis 1: EO positively affects SI.*

Based on the above discussion, this study attempts to examine the relationships among EO and SI in Romanian SMEs.

3. Materials and Methods

The study used a questionnaire to collect data, and all independent and dependent variables require five-point Likert-style responses ranged from 1 = "strongly disagree" to 5 = "strongly agree". The author distribute 365 questionnaires and request the questionnaires to be completed by entrepreneurs.

Of the 365 questionnaires distributed, 175 responses were received and 11 of them were incomplete. The remaining 164 valid and complete questionnaires were used for the quantitative analysis. It represented a useable response rate of 44.9%.

Table 1. Measurement items and reliabilities

Construct	Items	Cronbach alpha
EO	Innovativeness	0.858
	Risk-taking	0.808
	Proactiveness	0.884
	Competitive aggressiveness	0.783
	Autonomy	0.904
SI	Process innovations	0.763
	Organizational innovations	0.720
	Product innovations	0.742

*: All items were measured with five-point Likert scale

4. Data analysis and results

This study applied Average Variance Extracted (AVE) to access the discriminate validity of the measurement. We found that there is adequate discriminate validity between the two constructs. The hypotheses were examined using LISREL 8.5.

Paths between constructs represent individual hypotheses, and it was assessed for statistical significance of the path coefficient. This study tested hypothesized relationships with a full model, and the LISREL analysis of this model produced a chi-square of 47.31 (df = 32). In addition to this chi-square value (models had chi-squares less than three times their degrees of freedom, 47.31/32 = 1.48), the various goodness-of-fit indices also suggested a very good fit (GFI = 0.95, AGFI = 0.91, NFI = 0.95, CFI = 0.98, RMSEA = 0.054). The analysis also provided support for the three study's hypotheses.

Table 2. The loadings of the items and AVEs of the constructs

Construct	Items	λ	The square root of AVE
EO	Innovativeness	0.69	0.70
	Risk-taking	0.67	
	Proactiveness	0.79	
	Competitive aggressiveness	0.65	
	Autonomy	0.70	
SI	Process innovations	0.56	0.54
	Organizational innovations	0.52	
	Product innovations	0.58	

Table 3. Means, standard deviations and correlations of the constructs

Construct	Mean	S.D	1	2	3
EO	3.167	0.603	1.000		
SI	2.558	0.571	0.445**	0.496**	1.000

**: Correlation is significant at the 0.01 level (2-tailed)

Table 4. Structural model results

Hypothesis	Proposed effect	Path coefficient	T-value	Results
H1	+	0.38	2.82**	H1 is supported

**: p<0.01

Chi-square = 47.31, df = 32, RMSEA = 0.054, GFI = 0.95, CFI = 0.98.

As hypothesized, there is a positive relationship between EO and SI ($\gamma 11 = 0.36$, $t = 2.80$). Therefore, H1 is supported. Results uphold the proposition that the two concepts are indeed related and, therefore, support the conclusions, which postulate that EO is important to support SI.

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