Innovation ambidexterity and impact on the performance in IT companies: the moderating role of business experience

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Abstract

This study aims to examine the relation between innovation ambidexterity and organizational performance and the moderating effect of business experience on a sample of IT companies. Various authors pointed out the necessity to analyse not only explorative and exploitative innovation separately, but also their combined effects on organizational performance. These effects are assessed by using polynomial regressions in testing the research hypotheses. Business experience contributes to important differences in both the quantity and quality of resources available, which are critical for innovation. With only a handful of papers specifically addressing business experience in the context of innovation ambidexterity, this study fills a major research gap. The findings demonstrate the positive influence of innovation ambidexterity on organizational performance. In terms of business experience, the findings show that in new ventures it moderates the relation between innovation ambidexterity and organizational performance, while in established companies no relation was found. Business experience is rarely used to explain interactions between innovation and performance and, as such, we provide new insights on how both new ventures and established companies make use of business experience in their innovation approaches.

Keywords: innovation ambidexterity; organizational performance; business experience; exploitative innovation; exploratory innovation

1. Introduction

IT industry represents one of the high growth industries at a global level. IT companies face numerous opportunities on the markets but encounter numerous challenges, also. To better cope with these they have to increasingly rely on innovation. In the development of effective innovation activities, these companies may favour exploitative or exploratory innovation or a combination of them, a term commonly accepted as innovation ambidexterity, as part of their efforts to become or stay competitive (Gibson & Birkinshaw, 2004).

March (1991) first advanced the concept of organizational ambidexterity representing the combination of exploitation and exploration and argued for a balanced approach of both. A specific type of organizational ambidexterity is innovation ambidexterity. It represents those innovation activities pursuing exploitation and exploration simultaneously (He & Wong, 2004). Nowadays, effective companies are ambidextrous (Pertusa-Ortega & Molina-Azorin, 2018).

There is a growing literature on the relation between innovation ambidexterity and organizational performance (Lee et al., 2017; Lennerts et al., 2020). However, the results are ambiguous (Zhang et al., 2015), various scholars finding divergent findings (Peng et al., 2019; Bustinza et al., 2019). It

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can be concluded that the relation between innovation ambidexterity and organizational performance is more complicated than the findings of previous studies demonstrate (Liao et al., 2018), which provide the rationale to test the first research hypothesis in this paper. Various authors pointed out the necessity to analyse not only explorative and exploitative innovation separately, but also their combined effects on organizational performance (Luger et al., 2018).

Business experience contributes to important differences in both the quantity and quality of resources available, which are critical for innovation (Roper & Love, 2018). However, there are only a handful of papers specifically addressing business experience in the context of innovation ambidexterity. Beckman (2006) found empirical evidence that firms whose founding teams had previous business experience demonstrated a higher degree of ambidexterity. Similar results in respect of a mix between newcomers and old timers in management team composition were found by Peretti & Negro (2006). This provided the rationale to test the second research hypothesis.

Romanian IT industry provided the context. IT industry integrates companies with different business experience, requiring different approaches to properly respond to customer requirements. The literature has documented that new ventures pursue different operations than established companies, a fact proven by the high failure rate within the first three years of their operation (Cho et al., 2019), suggesting that innovation ambidexterity plays different roles in new ventures compared to established companies' performance. This is further supported by other studies which have shown that the impact of innovation activities may be influenced by business experience, depending on the industry in which the firm is competing (Cao et al., 2009; Cho et al., 2019). Hence, this study aims to examine the relation between innovation ambidexterity and organizational performance of IT companies and if business experience has a moderating effect of organizational performance.

The paper is organized as follows. In Section 2, a literature review is presented, representing the scientific ground for the research hypotheses. Section 3 contains a description of the considered dataset and outlines also the methods employed for data analysis. The main findings are outlined in Section 4, followed by a discussion in the light of their implications in Section 5, and drawing the conclusions in Section 6.

2. Literature review and hypotheses development

2.1. Innovation ambidexterity

March (1991) first advanced the concept of organizational ambidexterity, representing the combination of exploitation and exploration. Tushman and O'Reilly (1996) conceptualize organizational ambidexterity as the organizational ability to compete in mature markets, where exploitation is important for success, while simultaneously developing new products or services for emerging markets, where exploration is more important. Later, once the theoretical background of organizational ambidexterity evolved, O'Reilly and Tushman (2013) categorized three approaches:

(a) Sequential ambidexterity assumes that firms realign their structures to reflect changing environmental conditions, with more recent studies proposing temporal shifting as a way for firms to be ambidextrous (Boumgarden et al., 2012). According to this approach, firms can switch between formal structures more easily than changing their organizational culture or informal organization (Chou et al., 2018); (b) Simultaneous or structural ambidexterity assumes a balance between exploration and exploitation by simultaneously pursuing both but in separate units. These units are held together by a common strategy, a common set of values or linking mechanisms to use shared assets (O'Reilly et al., 2013). The key to organizational ambidexterity is the ability of the firm to capitalize new opportunities (O'Reilly & Tushman, 2011). Several studies have also explored the effects of structural ambidexterity in inter-organizational settings (Lavie et al., 2011);

(c) Contextual ambidexterity was proposed by Gibson and Birkinshaw (2004) and focus on solving the tension generated by exploration or exploitation at the individual level, focusing on individuals rather than organizations. Kapoutsis et al. (2016) highlighted managers' political skills in balancing exploration and exploitation in achieving contextual ambidexterity, along willingness to empower others (Prieto & Pilar Pérez, 2012) and willingness to undertake risks (Chang & Hughes, 2012).

In terms of the relation ambidexterity – performance, better understanding of it is needed. Both early (He & Wong, 2004; Lubatkin et al., 2006) and recent studies (Vinit et al., 2016; Hughes, 2018) yield inconsistent evidence about the performance outcomes of ambidexterity (Zhang et al., 2015).

Innovation ambidexterity, conceptualized as the capacity of a firm to pursue high levels of exploitative and exploratory innovation concurrently (Cao et al., 2009), has been intensively scrutinized in the literature (Birkinshaw & Gupta, 2013; O'Reilly & Tushman, 2013). Internal antecedents of innovation ambidexterity, such as centralisation or organizational structure, are important in understanding the phenomenon (Jansen et al., 2006). Centralisation can enable firms to react faster to the requirements of customers, using timely information so that firms can react quickly with its current competences to market uncertainties, supporting exploitative innovation (Jansen et al., 2006). Organizational structure plays a key role in the implementation of innovation ambidexterity (Csaszar, 2013). However, there is not clear what elements of organizational structure foster innovation ambidexterity (Jansen et al., 2009).

In terms of external antecedents, studies suggest that the external environmental context influences ambidexterity (Jansen et al., 2006). Environmental dynamism and environmental competitiveness represent two particular external conditions which put pressure on firms to be ambidextrous (Raisch & Birkinshaw, 2008).

Firms operating in dynamic environments are under intense pressure to develop new products and services to fit with customers' changing demand (Sorensen & Stuart, 2000). Accordingly, firms need to develop explorative innovation to explore beyond current products and markets. Explorative innovation creates opportunities for firms to achieve performance by targeting first new market segments (Zahra & Bogner, 2000). Therefore, in dynamic environments, SMEs will pursue explorative innovation because of the nature of the pressures that such environment conditions place on firms' performance. On the other hand, environmental competitiveness, determines SMEs to reduce available resources for explorative innovations because of the pressure to continuously improve their current market position. Also, under highly competitive environment conditions, firms may not consider to develop new products and services owing to their associated high risks and high costs and lower probability of success (Zahra & Bogner, 2000). Therefore, SMEs tend to use exploitative innovation to support their performance (Lumpkin & Dess, 2001). Through exploitative innovation, firms are able to maintain their existing customers and build customer loyalty without incurring the costs associated with explorative innovation (Jansen et al., 2006).

2.2. Innovation ambidexterity and organizational performance

Innovation ambidexterity has been intensively scrutinized in the literature in the last decade (Saunila, 2017; Walrave et al., 2017). It represents the capacity of a firm to pursue high levels of exploitative and exploratory innovation concurrently (Cao et al., 2009).

Exploitative innovation focuses on existing customers or markets, relying on existing resources (Jansen et al., 2006). It involves routinization, tight control and bureaucracy, stable markets and technologies (Raisch & Birkinshaw, 2008). Companies engaging in exploitation are capitalizing on existing knowledge and assets to innovate. As such, exploitative innovation emphasizes replicating past innovation, accumulating knowledge and improving the innovation competences, focusing on the development of existing products and services (Piao & Zajac, 2016). Usually, exploitative

innovation is less prone to the uncertainties compared to exploration, with experience accumulation facilitating production costs cuts (Jiang & Li, 2009), improving organizational performance. However, focusing on exploitative innovation makes companies less sensitive to technological changes, altering their competitive position (Zhan & Chen, 2013). Exploitative innovation generates innovation outcomes that are more certain and temporally more proximate than exploration, leading companies to increasingly assign resources for its development.

Exploratory innovation focuses on new customers or markets, relying on new knowledge and skills (Benner & Tushman, 2003). Exploratory innovation involves organic structures, loosely coupled systems and improvisation, emphasizing generation of new ideas and new services (Rothaermel & Alexandre, 2009). Exploratory innovation is common for companies making use of their disruptive capabilities to create new and innovative products or services (Lin et al., 2017). However, the pursuit of solely exploration development is not desirable as firms engaged in exploration often use the resources originally assigned for exploitation (Piao & Zajac, 2016). Setting up exploration often takes more time than developing exploitation, while the associated risks and costs are also higher (Andriopoulos & Lewis, 2009). Failure often prompts exploration development, encouraging change and innovation (Lin et al., 2017). Still, new product creation assumes a long-term orientation, making the operational performance poor if compared with operating cost. As such, out of focus exploitation can harm firms' long-term innovation prospects.

While innovation ambidexterity involves the pursuit of both exploitation and exploration (Cao et al., 2009), there are various approaches regarding how these processes are taking place (O'Reilly & Tushman, 2013). One assumes distinct periods of exploration and exploitation, separated in time (Boumgarden et al., 2012). Another approach proposes a simultaneous pursuit of exploration and exploitation, either in distinct organizational units (Diaz-Fernandez et al., 2017) or by outsourcing (Stettner & Lavie, 2014). Finally, another approach assumes pursuing the exploration and exploitation simultaneously by managing the tension (Raisch & Birkinshaw, 2008). Our perspective assumes a simultaneous and complementary relation between exploitation and exploration, in vein with other studies (Koryak et al., 2018).

Exploratory innovation deals with new innovation related opportunities while exploitation provides the resources needed to support creation of new products (Cao et al., 2009). Conversely, firms that keep themselves updated with the latest developments can take advantage of the extant capabilities (exploitation), thus increasing the likelihood of developing new and innovative products (exploration). By achieving innovation ambidexterity, this is likely to be particularly beneficial to innovation (Andriopoulos & Lewis, 2009).

Innovation is a process allowing companies to establish long term competitive advantages due to inimitable products or services, unique capabilities or knowledge and learning developments (Jansen et al., 2006). However, different types of innovation may provide a faster or slower increase in organizational performance. Exploitative innovation involves the effective use of company's available resources and is important for short-term performance, while exploratory innovation assumes new products development for new markets, and is essential to achieve performance in the long-term (Brion et al., 2010).

Firms focusing on current products or services through exploitative innovation are likely to face more challenges in the long-term organizational performance. In contrast, when pursuing exploratory innovation excessively, it can yield extra costs due to failed innovation attempts and unsatisfied consumers who expect better products or services (Bernal et al., 2019). The extant studies on the topic provide mixed results. There are scholars arguing that assigning available resources for both exploitation and exploration do not necessarily lead to improved organizational performance at all (Hughes et al., 2010). Other authors emphasized the need to focus on innovation ambidexterity (Birkinshaw & Gupta, 2013; O'Reilly & Tushman, 2013) since an imbalanced

relation between exploitative innovation and exploratory innovation harms innovation (Piao & Zajac, 2016). Usually, firms' engagement for exploitation is greater than that for exploration and there is a substantial lack of motivation to develop new products or services. Ambidexterity leverages the synergy between new innovation opportunities and existing routines limitations (Mathias et al., 2017). The simultaneous combination of exploration and exploitation may enable firms to make better use of existing resources, and make their combination more effective, thus generating synergistic benefits (Kristal et al., 2010). Therefore, we assume that:
Hypothesis 1: Innovation ambidexterity positively influences organizational performance.

2.3. The moderating role of business experience

Organizational competences and available resources are different according to firm's size and business experience (Lubatkin et al., 2006). Therefore, a firm may or may not be adequately prepared to effectively pursue innovation ambidexterity depending on its business experience (O'Reilly & Tushman, 2013). New ventures face different operating conditions and characteristics compared with established companies (Cao et al., 2009). They must overcome the lack of resources, lack of knowledge about customers and market conditions and lack of capabilities to innovate. These firms are more likely to face a variety of unfamiliar strategic and operational challenges, hampering their efforts to engage in innovation because of their limited business experience (Mathews, 2002).
Innovation ambidexterity requires substantially different structures, processes, skills and strategies that appear contradictory and difficult to be combined (Benner & Tushman, 2003). Structural complexity is, to some extent, a consequence of business experience, since new ventures lack formalization. Business experience may increase organizational performance by improving information awareness (Jansen et al., 2009), encouragement and support for experimentation and creativity (Wei et al., 2011), which are usually hindered in new ventures. Still, new ventures are more decentralized, facilitating recognition of changes in technological developments (Wei et al., 2011). Along with decentralization comes, allowing new ventures to track new opportunities and enables an efficient use of knowledge located at all organizational levels (Foss et al., 2015). Prior studies proved that established firms manage to balance innovation activities based on their business experience and existing competence (Cao et al., 2009). Therefore, established firms may be more suitable to achieve innovation ambidexterity compared with new ventures (Dunlap et al., 2016). In the context of our study, we contend that the relation between innovation ambidexterity and organizational performance could depend on the business experience represented by the number of years of operation. Therefore, we assumed that:
Hypothesis 2: The relation between innovation ambidexterity and organizational performance is moderated by business experience.

3. Method

3.1. The context

Romanian IT industry was employing 10,000 employees 15 years ago. Nowadays, it employs ten times more and produces over 6 billion euro annually (Popescu et al., 2018). The industry has an accelerated pace of development but is hampered by the capacity of the failure of education system to meet the growing demand for specialists. The industry demands at least 12,000 graduates yearly while the education system provides only 7,000. If in 2000 the industry employed 13.000 people, generating 253 million dollars in turnover and 19.000 dollars/employee productivity, nowadays more than 115.000 people work in IT industry, generating 6.3 billion euro with a 55.000 euro/employee yearly productivity (Popescu et al., 2019).

One factor explaining the success of Romanian IT industry rests in the foreign investments. Large companies such as Oracle or IBM have opened subsidiaries in Romania, and nowadays 59% of employees in the IT industry work in companies with foreign capital (Popescu et al., 2018). Other factors are represented by the tax facilities offered by the state, the quality of the workforce, the integration into the European Union that increased Romania's trust capital, the lower costs of relocating in Romania and the lower wages compared with Western Europe. The rapid growth of the industry determined the emergence of many small companies involved in outsourcing projects for foreign companies or developing local software and consultancy (Ceptureanu & Ceptureanu, 2015). Nowadays, Romanian IT industry is considered as strategic by the government, which provides incentives for those willing to start a new venture.

3.2. Data collection and sampling

For the study, a sample of Romanian IT companies was used. Firm-level coordination in IT industry frequently contains conflicting choices between exploitation vs exploration (Napier et al., 2011). For instance, software firms pursue incremental innovations like software process improvements and quality insurance programs (Lee et al., 2017). They also need to consider and adopt radical changes such as open source and globally distributed software development (Lyytinen & Rose, 2006). Thus, software industry provides an appropriate context for identifying the role of innovation ambidexterity (Lee et al., 2017). The authors considered in the sampling those companies operating in the following industries: software (NACE 5829); client oriented software (NACE 6201); IT consultancy (NACE 6202); services for IT (NACE 6209); and web portals (NACE 6312) established in Romanian capital, Bucharest. Between March and May in 2019, the authors delivered the questionnaires via email to the company owners and executives located in Bucharest, the capital city of Romania. Using a convenience sampling method, one owner or top executive per company was contacted to participate in the study. All investigated companies were randomly selected from a list of 1200 companies. Respondents' participation was voluntary. They were assured anonymity and no incentive was provided for their participation. In the end, a total of n = 307 companies replied, yielding a 25.58 percent response rate.

Insert Table 1

3.3. Measurements

Independent variables. Two independent variables were considered in the study, *Exploitative innovation* (EPTI) and *Exploratory innovation* (EPRI). The literature review conducted allowed us to identify various measures regarding EPTI and EPRI, generating 10 items (He & Wong, 2004; Jansen et al., 2006). If most of the early studies used agent variables, nowadays an increasing number of studies use survey questionnaires (Jansen et al., 2006; Lee et al., 2017; Cho et al., 2019). Content validity was assessed through interviews with 8 top executives operating in IT industry and 4 scholars from academia, who assessed the appropriateness of the initial 10 items. As a result, 8 items emerged as being appropriate to assess innovative activities of IT companies, while 2 items were dropped. All items were measured on a seven-point Likert scale, ranging from 1 for strongly disagree to 7 for strongly agree.

Dependent variable. For *organizational performance* (PERF) construct, 3 items were used: market share, sales and return on investment, all on the last three years of operation (Kim et al., 2006). All items were measured on a seven-point Likert scale, ranging from 1 = significantly decreased to 7 = significantly increased.

Control variables. Two control variables were used. First, *Size*, is expressed in terms of number of employees. It is assumed to have a positive effect on resource allocation, since a larger size usually means more resources available. Second, *Type*, describes various types of legal forms according to

Romanian regulations: limited liability, joint stock, other types. Usually, limited liability is associated with small size while joint stock with large sized companies, even though this is not necessary the case.

Moderating variable. *Business experience* (BEX) was used as the moderating variable. To measure it, a proxy, numbers of years in operation, was used to divide the investigated companies into new ventures (in operation less than three years) and established companies (in operation for at least three years). The three years threshold was based on Cho et al. (2019). All the variables and their description are presented in Table 2 and Appendix 1.

Insert Table 2

4. Results

4.1. Empirical results

To test reliability and validity of the measures, confirmatory factor analysis was conducted, proving an overall good fit of the measurement model (GFI = 0.942; CFI = 0.951; IFI = 0.952; RMSEA = 0.045), are presented in Table 2.

All factor loadings, ranging from 0.79 to 0.88, proved significant at $p < 0.001$. The average variance extracted (AVE) for all constructs (EPTI, EPRI and PERF) was above the established threshold (0.50). Composite construct reliability (CR) ranged from 0.89 to 0.92, acceptable under Fornell-Larcker criterion (Fornell & Larcker, 1981). Cronbach's alpha coefficients ranged from 0.87 to 0.89, proving internal consistency (Nunnally, 1978).

This study employed polynomial regression to explore the relations between innovation ambidexterity and PERF (Lee et al., 2017). In the literature there are several approaches of measuring innovation ambidexterity. One approach is as the difference score between EPTI and EPRI, which implies that innovation ambidexterity is highest when EPTI and EPRI are approximately at the same level (Cao, et al., 2009), considering EPTI and EPRI as two end-points of a single dimension rather than two independent dimensions (Cao, et al., 2009). A second approach uses the product of EPTI and EPRI. It assumes that these are independent dimensions and that the effects of EPTI and EPRI depend on each other. Consequently, firms can achieve innovation ambidexterity when they engage in high levels of both EPTI and EPRI, as compared to low levels of either one of both (Simsek, et al., 2009). A third approach considers innovation ambidexterity as the sum of EPTI and EPRI, implying that high levels of both EPTI and EPRI are needed, but either one can compensate for lower levels of the other. All these approaches are inflicted with methodological shortcomings (Dawson, 2014). Therefore, Edwards (1994) proposed using polynomial regression as a viable alternative in research, which is now widely used.

For hypothesis 1, the following polynomial regression was used:

$$PERF = b_0 + b_1EPTI + b_2EPRI + b_3EPTI^2 + b_4(EPTI \times EPRI) + b_5EPRI^2 + e.$$

The model was estimated using the ordinary least squares regression. The independent variables (EPTI and EPRI) along with the control variables (*Size* and *Type*) were introduced and then, the quadratic terms ($EPTI^2$ and $EPRI^2$) and the interaction ($EPTI \times EPRI$). ΔR^2 indicates an increase in variance explained by adding both quadratic and the interaction terms. Regression coefficients were estimated using heteroscedasticity - consistent standard errors.

Insert Table 3

In Model 1, we found out that both EPTI (β = 0.215, t = 3.479) and EPRI (β = 0.119, t = 2.256) were significantly and positively associated with PERF. In Model 2, the value of R^2 significantly increased by adding the quadratic terms ($EPTI^2$ and $EPRI^2$) and the interaction term (EPTI × EPRI) ($\Delta R^2 = 0.029$, $\Delta F = 3.649$). Therefore, we find support for the first hypothesis.

4.2. Testing the moderating effects

For testing hypothesis 2, the following polynomial regression was used:

$$PERF = b_0 + b_1EPTI + b_2EPRI + b_3EPTI^2 + b_4(EPTI \times EPRI) + b_5EPRI^2 + b_6BEX + b_7(EPTI \times BEX) + b_8(EPRI \times BEX) + b_9(EPTI \times EPRI \times BEX) + e.$$

Again, the polynomial regression model was estimated using OLS regression. In Model 1, the independent variables, the quadratic terms and the interaction term along with the control variables were introduced. In Model 2, the moderating variable, BEX, with the new ventures as a reference group, was added. In Model 3, three interaction terms (EPTI × BEX, EPRI × BEX and EPTI × EPRI × BEX) were introduced.

As seen in Table 4, the increase in R^2 in step 2 was significant (β = 0.020, $\Delta F = 7.498^{***}$) and also the R^2 significantly increased (β = 0.049, $\Delta F = 6.338^{**}$). ΔR^2 indicates an increase in variance explained by adding the quadratic and the interaction terms.

Insert Table 4

As seen in Table 5, results of two polynomial regression analyses indicated a significant increase in R^2 for the new ventures ($\Delta R^2 = 0.058$, $\Delta F = 3.127$), but there was a non-significant increase in R^2 for the established companies ($\Delta R^2 = 0.029$, $\Delta F = 2.421$). These findings suggest that BEX moderates the relation between innovation ambidexterity and PERF in new ventures, but not in the established companies.

Insert Table 5

5. Discussion

This study proved that innovation ambidexterity positively influences organizational performance in Romanian IT industry. Hence, it provides a theoretical incentive for executives or entrepreneurs to pursue both exploitative and exploratory innovation simultaneously in order to improve organizational performance of their companies. A balanced approach of both exploratory and exploitative innovation would lead, in the short term, at least, to improvements in market share, sales and return on investment.

Moreover, it confirms prior studies on the relation between innovation ambidexterity and organizational performance (Pertusa-Ortega & Molina-Azorín, 2018; Liao et al., 2018).

Many new ventures focus on disruptive innovation, a type of innovation commonly associated with exploratory innovation, so exploratory innovation looks more promising for them (Lin et al., 2017). However, it is also a lengthy process, while the associated risks and costs are also high (Andriopoulos & Lewis, 2009). New ventures have, in this case, to assume a long-term orientation, requiring dedication at all hierarchical levels (Katila & Ahuja, 2002), a difficult endeavour. The newness of new ventures makes exploitative innovation, associated with the development of existing products or services (Lin et al., 2017), difficult, also. The entrepreneurial approach of many new ventures makes them seeking innovation success in the short term.

The study proves combining exploitative innovation and exploratory innovation leads to better organizational performance as a result of better synergy between new innovation opportunities and the limitations of existing routines and knowledge (Mathias et al., 2017). The simultaneous combination of both can help companies to make an efficient use of existing knowledge and resources - and make their exploratory and exploitative innovation mutually supportive - by leveraging the strengths of each other.

The study also analysed the moderating role of business experience on the relation between innovation ambidexterity and organizational performance. Business experience is an explicit factor analysed in only a handful of papers. The findings, contrary to initial expectations, show that business experience is more important for new ventures in moderating the balance between exploitative innovation and exploratory innovation and their effects on organizational performance. Our findings confirms a recent study (Cho et al., 2019), even though we do not necessarily consider new ventures as start-ups.

It is common for new ventures to face numerous operational and strategic challenges that are unfamiliar with. This is further compounded by poorly formalized structures and decentralized decision making mechanisms. Thus, new ventures should adapt by developing partnerships with stakeholders (Chang et al., 2011). These companies are more likely to be incentivised by getting access to additional resources and new learning opportunities, enabling new knowledge, skills and new markets, which in the end improve organizational performance (O'Reilly & Tushman, 2013). Accordingly, innovation ambidexterity may prove essential for new ventures.

Our findings revealed that innovation ambidexterity is important for new ventures, yet not for established companies. Established firms have strong ties with their stakeholders, particularly customers, and tend to be more centralized and formalized compared with new ventures. Thus, established firms are able to better use available resources and knowledge achieved through business experience. On the other hand, the established firms tend to avoid risks, leading to a loss of flexibility and more inertia (Chang et al., 2011). As SMEs mature, they become more formal and less flexible, reducing responsiveness to emerging market opportunities (Benner & Tushman, 2003) and negatively affecting exploratory innovation. Established firms are more likely to develop long-term ties with their stakeholders, leading to unwillingness to innovate and more routine (Yu et al., 2001). Therefore, established companies tend to prefer exploitative over the exploratory innovation (McGrath, 2001).

6. Conclusion

This study provides several theoretical contributions to the literature and implications for entrepreneurs and executives. First, it highlights the relation between innovation ambidexterity and organizational performance, and explains how balancing exploitative innovation and exploratory innovation may improve performance of companies. The study suggests that IT companies should focus on innovation to improve their performance. Second, the study extends the innovation ambidexterity related literature by unveiling how it affects performance of IT companies. So far, prior studies provided mixed results. We support other studies results that innovation is beneficial to performance. Third, by differentiating new ventures from established companies' innovation approaches, in this case by adding business experience as a moderator of innovation ambidexterity – organizational performance relation. Business experience is rarely used to explain interactions between innovation and performance and, as such, we provide new insights on how both new ventures and established companies make use of business experience in their innovation approaches.

Still, the findings must take into account the limitations of the present study. First, the results are context specific, since only Romanian IT companies were investigated. The study used a

convenience sampling of IT companies located in Bucharest, Romania. Therefore, results need to be replicated in other countries to measure similarities in the findings this first effort has provided. The specific differences between Romanian IT companies and those in other countries may lead to different outcomes, when the present analysis is proposed for other regional realities.

Second, innovation ambidexterity may have further implications for organizational performance in the long term; since the present study is not longitudinal, long term effects are not assessed. Data collection was limited to a specific time period. Moreover, collecting data at several points in time would allow an in-depth analysis.

Third, the concept of business experience is related to both companies and individuals, either executives or entrepreneurs. In this study, we assumed that companies' number of years of operation is equivalent to the executives or entrepreneurs experience. This may not be the case.

Another study limitation results from using self-reported data to measure organizational performance – market share, sales and return on investment. Even though we used methods to reduce associated bias by ensuring anonymity, emphasizing the voluntary participation, still, future studies may use measures less prone to subjectivity to evaluate organizational performance.

Finally, another limitation rests in the measurement of exploratory and exploitative innovation. Most of the studies in the past use agent variables without using questionnaires. However, one should reckon that in the last years a number of studies emerged using survey variables instead of agent variables.

In terms of future research avenues, extending the range of the investigated companies by including service companies may provide a more comprehensive view on the relation between innovation ambidexterity and organizational performance and the moderating effect of business experience. Second, a more detailed structure of both exploitative and exploratory innovation will be beneficial for innovation ambidexterity by providing a more comprehensive framework for executives and entrepreneurs to decide the exact nature of exploration and exploitation related innovation in their companies. Finally, a differentiation between start-ups and other new ventures may be analysed in the future, since there are different approaches to innovation in start-ups compared to new, but traditional companies.

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Table 1. Sample statistics

	Frequency	Percentage
Total (n=307)		
Industry (NACE)		
5829	95	30.94%
6201	76	24.76%
6202	42	13.68%
6209	63	20.52%
6312	31	10.10%
Size		
micro	54	17.59%
small	156	50.81%
medium	97	31.60%
Type		
limited liability	249	81.11%
joint stock	26	8.47%
other	32	10.42%

Table 2. Validity and reliability of measurements

Construct	Mean	Std. deviation	Std. loadings	*t*-value	CR	AVE	Cronbach's alpha
EPTI	4.96	1.15	-	-	0.90	0.74	0.87
EPTI1			0.84	20.44***			
EPTI2			0.86	40.76***			
EPTI3			0.84	22.38***			
EPTI4			0.88	39.57***			
EPRI	4.43	1.20	-	-	0.89	0.62	0.85
EPRI1			0.85	19.37***			
EPRI2			0.87	23.64***			
EPRI3			0.79	8.23***			
EPRI4			0.80	9.16***			
PERF	4.52	1.96	-	-	0.92	0.80	0.89
PERF1			0.88	49.83***			
PERF2			0.82	35.52***			
PERF3			0.84	43.38***			

*** $p < .001$; $\chi^2 = 177.83$. (df = 62), $p < 0.001$

Table 3. Results of regression analysis

	PERF			
	Model 1		Model 2	
	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value
Constant (b_0)	1.579**	2.392	2.231***	3.244
Control variables				
Size	0.796***	5.618	0.683***	4.709
Type	0.069	0.741	0.063	0.704
EPTI	0.215***	3.475	0.241***	1.664
EPRI	0.119*	2.252	0.133*	2.931
$EPTI^2$			0.055	1.468
EPTI × EPRI			0.042	0.989
$EPRI^2$			0.081**	2.689
ΔR^2			0.029	
ΔF			3.649*	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Testing the moderating effect of business experience

	PERF					
	Model 1		Model 2		Model 3	
	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value
Constant (b_0)	2.229***	3.251	1.982***	2.903	2.321***	3.478
Control variables						
Size	0.685***	4.707	0.693***	4.827	0.601***	4.229
Type	0.061	0.706	0.067	0.761	0.017	0.161
EPTI	0.239***	1.668	0.238***	2.942	0.333***	3.316
EPRI	0.135*	2.929	0.112*	1.446	0.158*	1.633
$EPTI^2$	0.049	1.468	0.053	1.427	0.071*	2.042
EPTI × EPRI	0.041	0.988	0.032	0.708	0.022	0.072
$EPRI^2$	0.081**	2.689	0.085**	2.879	0.093**	2.162
BEX			0.469***	2.734	1.055***	4.563
EPTI × BEX					0.232*	1.999
EPRI × BEX					0.259*	2.333
EPTI × EPRI × BEX					0.043	0.709
ΔR^2			0.020		0.049	
ΔF			7.498***		6.338***	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 5. Results of polynomial regression analyses

	PERF							
	New ventures				Established companies			
	Model 1		Model 2		Model 1		Model 2	
	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value	Unstandardized β coefficients	*t*-value
Constant (b_0)	2.051**	2.208	2.481**	2.609	2.261**	2.219	2.789**	2.668
Control variables								
Size	0.617***	2.773	0.553**	2.497	0.807***	4.132	0.678***	3.411
Type	0.285**	2.606	0.258**	2.399	0.299	1.818	0.304	1.831
EPTI	0.242**	2.408	0.361**	2.997	0.202*	1.961	0.193*	1.893
EPRI	0.186*	1.837	0.219*	1.938	0.239**	2.394	0.392***	3.192
$EPTI^2$	0.111**	2.827	0.069	1.468				
EPTI × EPRI			0.058	1.083			0.088	1.909
$EPRI^2$			0.057	0.813			0.047	0.883
ΔR^2			0.058				0.029	
ΔF			3.127*				2.421	

*p < 0.05, **p < 0.01, ***p < 0.001.

Appendix 1

Construct	Item	Description
EPTI	*EPTI1*	The company initiates actions to improve the existent products/services portfolio
	EPTI2	The company initiates actions to improve the technologies used for the existent products/services portfolio
	EPTI3	The company initiates actions to improve the efficiency of existent services portfolio
	EPTI4	The company initiates actions to improve the satisfaction of existent customers portfolio
EPRI	*EPRI1*	The company initiates actions to create new products/services
	EPRI2	The company initiates actions to implement new marketing and sales strategies
	EPRI3	The company initiates actions to enter new markets
	EPRI4	The company initiates actions to attract new customers
PERF	*PERF1*	In the last year, the company's market share increase
	PERF2	In the last year, the company's sales increase
	PERF3	In the last year, the company's return on investment increase