European Journal of Innovation Management

Insights from the later stage of the new product development process: findings from Turkey

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Received 21 August 2017
Revised 13 October 2017
2 January 2018
Accepted 24 January 2018

Abstract

Purpose – The understanding of the later stage (i.e. the exploitation phase) in the new product development (NPD) process by companies from emerging markets is underdeveloped. The purpose of this paper is to address this lack and, by drawing upon a data set from Turkish firms, explore how different factors affect the exploitation phase of the NPD process.

Design/methodology/approach – Multiple hierarchical regression analyses were carried out on a sample of 671 Turkish firms operating in five industries (i.e. information and communication technologies, biomedical, machinery, chemical and plastic, and food and beverage) in the Izmir region (Turkey) to test the hypotheses.

Findings – Results reveal major differences regarding human capital, leadership, marketing capabilities, and business and institutional networks in terms of the commercialization of newly developed products in domestic and international markets.

Originality/value – By focusing on the exploitation stage, this paper extents the growing research efforts to study the NPD process of companies in emerging economies other than China by using primary data from Turkey.

Keywords Innovation, Emerging economies, Turkey, New product development, Exploitation stage, New product commercialization

Paper type Research paper

1. Introduction

One of the most critical steps in the process of innovation, or more precisely in the process of new product development (NPD) is the introduction of new products or services in the market (Trott, 2017). The NPD process has been studied frequently (Ragatz *et al.*, 1997; Hultink *et al.*, 2000; Rothaermel and Deeds, 2004). Thereby the exploitation (commercialization) part of the NPD process/innovation process seems to be less developed than the exploration (R&D) stage (Lee *et al.*, 2010); the latter is about testing, launching, and marketing the new products (Tidd and Bodley, 2002). Additionally, existent research is still dominated by a developed economy perspective (Ernst *et al.*, 2015), thus, the generalization of NPD findings is to some extent limited to the specific context of developed economies (Sok *et al.*, 2016), which in turn is very likely to influence the NPD process undertaken (Wright *et al.*, 2005).

In the last decade, the study of innovation and specifically how it is practiced has been increased in emerging markets too (Subramaniam *et al.*, 2015). Emerging markets account for more than half of the world's population. Yet, having a closer look at the study of innovation in emerging economies, what is striking is a strong focus on the BRIC countries (Brazil, Russia,

European Journal of Innovation Management

1460-1060
DOI 10.1108/EJIM-08-2017-0102

India, and China), China in particular (Subramaniam *et al.*, 2015; Durst *et al.*, 2017). Given these countries growth rates in recent years, this is comprehensible, but it also suggests that our understanding of innovation practices is one-sided and thus not generalizable. Given different business, institutional, and cultural contexts between countries (Kiss *et al.*, 2012), one should take a broader perspective of this field.

Even though emerging economies are difficult to define, according to Manimala and Wasdani (2015), there are certain characteristics such as underdeveloped institutions, personalized networks, and reluctant internationalization that are characteristics of these economies. In addition, different forms of instability relating to inflation rates, debt and currency affect emerging economies' scope of action with regard to innovation (Brenes *et al.*, 2016).

Against this background, this paper joins the growing number of companies from emerging economies entering world markets (Fey *et al.*, 2016) and investigates factors that affect the exploitation stage of the NPD process taking these firms' perspective. By using primary data from Turkey, the paper contributes to the study of NPD from emerging economies other than China (Subramaniam *et al.*, 2015) and India (Fey *et al.*, 2016).

As the focus is on the NPD exploitation stage, the present paper is mainly interested in the end of the NPD process, where product launch/new product commercialization is at the center (Barczak *et al.*, 2009). In this study, "products" refer to physical goods. From existent research on NPD (e.g. Jansen *et al.*, 2009; Hsu and Fang, 2009; Sok *et al.*, 2016), this study analyses the roles of leadership, human capital, networks, and marketing capabilities as factors affecting the exploitation stage of companies in emerging economies.

The paper is structured as follows. In the following section, the literature is reviewed, and hypotheses are proposed. This is followed by a section that describes our data and method, which is then followed by a presentation of the results. The paper terminates with the discussion and conclusion.

2. Literature review and hypotheses

The entry of large foreign firms, the opening of new markets, highly competitive environments, and the globalization phenomenon put pressure on companies from emerging economies, in particular (Heirati and O'Cass, 2016). Using innovation can be a respond to these challenges and improve business performance in these economies (Forsman and Temel, 2011). Turning product ideas into commercial use is not an easy task (Millson, 2013), and requires other resources, skills, and capabilities than in earlier NPD stages (Wheelwright and Clark, 1992), e.g., market know-how, access to networks, and increased financial resources. Prior research has shown the influence of internal factors on the NPD process as well as different phases such as innovation capability (Cooper and Kleinschmidt, 1996; Millson and Wilemon, 2002; Rosenthal and Capper, 2006), teams (Edmondson and Nembhard, 2009), human capital (Shane, 2003), leadership (Elkins and Keller, 2003), learning and market orientation (Kaya and Patton, 2011), marketing capabilities (Drechsler *et al.*, 2013), access to knowledge (Santarelli and Tran, 2013), strategic alliances (Shan *et al.*, 1994; Baum *et al.*, 2000), innovation strategy (Revilla and Rodríguez, 2011), and culture (Naranjo Valencia *et al.*, 2010). This research has in common that it has mainly been conducted in companies from developed economies. In the case of emerging economies, only a few papers are available, and they are emphasizing companies in China (Lu and Yang, 2004; Yan and Kull, 2015).

Success regarding the commercialization of products is likely to vary from country to country, thus external factors are relevant too. One reason could be that different market structures have different requirements for the successful introduction of new products. These structures are influenced by different forces such as level of education, rules and regulations, historical patterns as well as factors such as access to knowledge and the country's level of development (Iyer *et al.*, 2006). Thus, in the NPD process and consequently

the exploitation stage the specific country context matters, which means in turn that one should avoid studying innovation in emerging economies with an advanced economy perspective (Chang *et al.*, 2006).

The commercialization of products is not limited to domestic markets but includes international markets as well. In emerging economies, there are an increasing number of companies, predominantly the so-called emerging market multinational corporations, who have demonstrated that they are serious competitors (Fey *et al.*, 2016). But other types of companies in emerging economies have learned the benefits of introducing their products to international markets too (Fey *et al.*, 2016).

Turkey refers to the so-called NIMPT countries – the five emerging economies comprising Nigeria, Indonesia, Mexico, the Philippines, and Turkey – that are expected to provide exciting growth opportunities for consumer goods manufacturers (Euromonitor, 2015). In addition to the liberalization policies and transition to a liberal economy, it has been said that Turkey has a higher potential for innovation compared to most of the advanced countries, as it has a relatively younger population compared to the latter (Hamilton and Webster, 2015). Moreover, Turkey is a country that suffers from the typical challenges of emerging economies such as economic and political instability as well as other institutional challenges (Alpay *et al.*, 2008).

This study focuses on a number of organizational factors that play a vital role in the exploitation phase (Pattikawa *et al.*, 2006). These factors are often intangible in nature and are considered as critical to company success (Ernst, 2002; Graner and Mißler-Behr, 2013) referring to both companies in developed economies and in emerging economies. More precisely, the focus is on the concepts of leadership, human capital, networks, and marketing capabilities. As research suggests that the commercialization success depends on the levels and types of uncertainty involved (Tatikonda and Rosenthal, 2000), an in-depth analysis of selected parameters is very important. This applies particularly to emerging economies such as Turkey as they are exposed to a variety of uncertainties, which means that in those countries firms are facing challenges which are completely different to those companies are facing in advanced economies (Hoskisson *et al.*, 2000). Therefore, it would be interesting to know whether the factors that have predominantly been studied in developed economies also apply to the Turkish context with its specific social economic environment and culture.

2.1 Leadership

Leadership and the existence of an innovation strategy are important factors for companies to become (and remain) successful in a competitive environment (Graner and Mißler-Behr, 2013). In the case of leadership, studies have shown that most managers perceive leadership as critical for both profitability and competitive advantage (Moxley, 2000; Miller and Shamsie, 2001). Although leadership has been extensively discussed in the literature, there is no single accepted definition of leadership. Elenkov *et al.* (2005, p. 666) defined leadership as "the process of forming a vision for the future, communicating it to subordinates, stimulating and motivating followers, and engaging in strategy-supportive exchanges."

Leaders intensively seek out new business opportunities and focus on making decisions that affect innovation activities in their companies (Finkelstein and Hambrick, 1996; Kam Sing Wong and Tong, 2012; Liu *et al.*, 2015). Therefore, leaders should have the capacity to recognize new opportunities as well as the exploitation of new ideas to accelerate companies' income (Yukl, 1999; Naranjo Valencia *et al.*, 2010). In line with Yukl (1999), Papadakis *et al.* (1998) emphasized that strategic decision making and organizational innovation performance are influenced by the decisions of companies' top managers. Jung *et al.* (2003) and Elkins and Keller (2003) also emphasized the role of leadership in innovation. One reason for this emphasis is that accelerating innovation largely depends on the leaders'

ability to create a good dialog among colleagues, and a workplace atmosphere that understands the needs, desires, and skills of individual employees. Leaders may also identify informal leaders or champions to foster innovation in the organization (Pattikawa *et al.*, 2006). This allows leaders to show their peers or employees how to achieve targets, produce deliverables, and motivate them to successfully conduct NPD (Bass and Stogdill, 1990; Ridge *et al.*, 2017).

In the context of NPD, it is assumed that successful leaders will put an emphasis on developing and implementing innovation strategies to reach the desired objectives (Lu and Yang, 2004). As NPD is characterized by high uncertainty, successful leaders make sure that the entire company is aware of this fact and learn to accept the downside consequences such as mistakes and failure (Alegre and Chiva, 2008; Fey *et al.*, 2016). Another important issue is that leaders have a clear and continued commitment to NPD (Fey *et al.*, 2016). The majority of research interested in studying the relationship between leadership and NPD in general and the commercialization stage, in particular, have been conducted in developed countries (Elkins and Keller, 2003; Jung *et al.*, 2003; Schulze and Hoegl, 2008). Given the differences between advanced economies and emerging economies, we argue that leadership should be studied from an emerging economy point of view when addressing the exploitation stage. Therefore, we propose that:

H1. Leadership has a positive impact on the commercialization of new products both in domestic and international markets.

2.2 Human capital

Human capital refers to individuals with skills that enable innovation and improvements in economic activities (Dakhli and De Clercq, 2004; Dalziel *et al.*, 2011). Earlier studies have emphasized the relevance of company-specific human capital to company competitiveness since this intangible asset is difficult to transfer to other companies (De Brentani and Kleinschmidt, 2004). Regarding industry-specific human capital, it can be said that it is derived from specific industry experience, and earlier research has suggested that industry-specific human capital can play a pivotal role in generating and accelerating innovation activities (Bianchi, 2001).

Shane (2003) marked that the professional experience of an employee is very important not only for invention but in the exploitation of new goods and services as well. According to Shane, working experience can help people to develop new knowledge, to improve skills, and to positively influence a companies' overall performance. The reason behind this argument is that experience and knowledge accumulation increase staff's skills and abilities not only to discover opportunities but also to reduce potential risks. Formal education has also been identified as one of the factors that are significantly related to radical innovation in a company (Marvel and Lumpkin, 2007). Marvel and Lumpkin (2007) further stressed that the level of education and knowledge, which are the accumulated results of a long period of experience, are very important factors for innovation activities and thus NPD.

Hsu and Fang (2009) suggested continuous investment in human capital by practical training and further education since they are the main factors in accelerating innovation, increasing productivity, and raising the level of competition of companies. In terms of internationalization, this training and further education should be oriented to language skills and international mindset building (Fey *et al.*, 2016). Mangematin and Nesta (1999) discussed that well educated and skillful staff contributes to knowledge growth through their daily work. Moreover, these types of people are most likely to have the capability to encourage others to build relationships with others with similar capabilities outside the companies, as this will lead them to access external knowledge (Mol and Birkinshaw, 2009). According to Kato *et al.* (2015), employees who have a high level of education are the main

contributors to develop know-how, as the knowledge they possess puts them in a better position to recognize and access new external knowledge. Well-trained human capital is also necessary to produce new goods and services which, in turn, makes these individuals indispensable assets in the process of new product and service development (Marvel and Lumpkin, 2007). The content and quality of education vary between countries. For instance, the education level is lower in emerging countries than in developed economies (Global Entrepreneurship Index, 2016). Thus, companies in emerging economies, which aim to commercialize competitive products in domestic and international markets, have to invest more heavily in human capital (Ridge *et al.*, 2017). Therefore, we propose that:

H2. Well-trained human capital has a positive impact on the commercialization of new products both in domestic and international markets.

2.3 Networks

Networks can be defined as a linking of firms with different assets and competencies in response to or in anticipation of new market opportunities (Norman and Ramirez, 1993; Lii and Kuo, 2016). In nowadays' increasingly complex and competitive business environment, networks fulfill a number of different tasks. Networks provide access to new knowledge resources and skills (Vanhaverbeke and Cloodt, 2006), thereby helping organizations to reduce resource constraints and uncertainty (Segal-Horn and Faulkner, 2010), successfully execute large projects (Akgün *et al.*, 2005), and support new market entries. In addition, networks increase the partners' flexibility (Macpherson, 2005) and provide the basis for knowledge creation and innovation (Du Plessis, 2007). Research has also shown that different partners are involved in different tasks. For example, firms collaborate with universities to get access to recent knowledge in different fields (e.g. technological knowledge, managerial knowledge) (Alegre and Chiva, 2008). Additional advantages of collaborating with universities could be finding the right expertise in one place, or benefiting from the use of laboratories and equipment at reasonable costs (Temel *et al.*, 2013). Guerrero *et al.* (2017), who investigated the motivation of Mexican companies to collaborate with universities, showed, among other things, that Mexican companies assign universities a greater role in the exploration phase than in the exploitation one.

Firms in emerging countries also seek to establish relationships with government agencies (Wang and Lestari, 2013) as they may support the exploitation efforts of these firms. In Turkey, for example, government agencies provide financial support grants for R&D and innovation activities of firms inside. Therefore, having close contacts with government agencies may help firms to be informed about calls for new funding opportunities.

In the context of networks, a distinction between institutional networks and business networks appears useful (Yiu *et al.*, 2007). The former comprises networks, for example, with government officials and agencies, universities, and trade associations; whereas the latter refers to networks with customers, suppliers, competitors, or consultants which are entered to develop innovation capabilities (Poon and MacPherson, 2005). Pattikawa *et al.* (2006), who investigated the performance of new product projects, demonstrated the relationship between performance, communication, and information exchange. Chang *et al.* (2006) showed the role of business groups in facilitating innovation in environments when institutional infrastructures are weak. This preparedness for exchange can be expected for the maintenance of both business and institutional networks. Consequently, we propose that:

H3. Business and institutional networks have a positive impact on the commercialization of new products both in domestic and international markets.

Todeva and Knoke (2005) stress that the establishment of networks is not a reactive decision but a strategic one that targets the improvement of the firm's future standing in particular

and the network in general. Successful networking has sophisticated communication skills among in place to make it a dynamic construction that all network partners can benefit from (Torres, 2002). Consequently, the existence of successful networks requires the fulfillment of a number of qualifications from the actors involved, such as trust, long-term commitment, willingness to transfer tacit knowledge and to solve problems, and the dedication of resources, such as time, money, and know-how (Uzzi, 1997; Van Laere and Heene, 2003). In comparison to western culture, the business environment in emerging economies is strongly affected by relationships (Cavusgil *et al.*, 2013), thus different approaches to networks and their maintenance are required. Against this backdrop, we propose that:

H4. Leadership has a positive impact on the existence and execution of business and institutional networks.

H5. Human capital has a positive impact on the existence and execution of business and institutional networks.

In line with the findings of Zhou *et al.* (2007), it is expected that networks play a mediating role in both the relationship between leadership and the commercialization of newly developed products as well as human capital and the commercialization of newly developed products, as the bridging ties that networks provide may act as the main facilitator for exploiting market opportunities. Thus, while leadership and human capital may be helpful to the NPD process as a whole, commercialization-oriented networks are expected to boost the later stage of the NPD process (Lu *et al.*, 2010). Therefore, we propose that:

H6. Business and institutional networks positively mediate the relationship between leadership and the commercialization of new products both in domestic and international markets.

H7. Business and institutional networks positively mediate the relationship between human capital and the commercialization of new products both in domestic and international markets.

2.4 Marketing capabilities

Marketing capabilities refer to "the integrative processes designed to apply collective knowledge, skills, and resources of the firm to the market-related needs of the business, enabling the business to add value to its goods and services, adapt to market conditions, take advantage of market opportunities and meet competitive threats" (Vorhies *et al.*, 1999, p. 1175). These capabilities are positively associated with the success of new product commercialization (Heirati and O'Cass, 2016). To successfully launch their products, companies of all sizes need to develop marketing capabilities (Poon and MacPherson, 2005) to get closer to their customers and markets. This, in turn, enables companies to react more quickly to changing requirements. Prior studies have also underlined the impact of marketing capabilities on market success (Salomo *et al.*, 2008; Wang and Lestari, 2013). Sophisticated marketing capabilities also help companies to better deal with a possible negative country image (Fey *et al.*, 2016). This applies to new product commercialization in international markets in particular as signaling the product's quality might be critical. Companies from advanced economies often take advantage of a strong brand when introducing new products to the market (Hultink *et al.*, 2000), which, among other aspects, gives them the opportunity to charge premium prices. Companies from emerging markets can only seldom fall back on established brands. Thus, one can assume that organizations from emerging markets who are in possession of sophisticated marketing capabilities will have an incentive to develop strong brands for both domestic and international markets. These capabilities may also include the understanding of selecting and/or developing

suitable distribution channels to increase the success of new product commercialization (Wang and Lestari, 2013), as proper distribution channels increase the availability of products and make possible a matching with the target groups' buying behavior (Hultink *et al.*, 2000). Therefore, we propose that:

H8. Marketing capabilities have a positive impact on the commercialization of new products both in domestic and international markets.

Figure 1 displays the conceptual model which assumes that both leadership and well-trained human capital can influence the development of business and institutional networks. These networks and the marketing capabilities of firms from emerging economies are then expected to positively influence commercialization in both domestic and international markets.

3. Data and method

3.1 Research setting

Turkey is one of the fastest growing economies in the world and its focus has been shifted from sole production toward the development and production of innovative goods and services. Having pursued an import substitution-based development strategy from the early 1950s until 1980, Turkey switched to a more export-oriented country from 1980 onward (Pamukcu, 2003). With the introduction of liberalization policies in 1980, the basis for foreign direct investments (FDI), export and innovation activities was established in Turkey. This had disruptive effects on the economic policy regimes toward the liberalization of trade, domestic goods, financial markets, and international finance (Atiyas and Bakis, 2015). This was followed by the liberalization of the capital account in 1989, the customs unions with the European Union in 1996, the introduction of new governmental programs and incentives for innovation activities as well as the establishment of several organizations such as the Directorship for Small and Medium-Sized Enterprises (KOSGEB), the Technology Development Foundation of Turkey (TTGV), or TÜBİTAK Technology and Innovation Support Directorship (TÜBİTAK-TEYDEB) to support and encourage firms (mostly SMEs) to become more innovative. Over the last years, R&D expenditures of Turkey have almost doubled from 0.52 percent of the gross domestic product (GDP) in 2004 to 1 percent in 2015 (TÜBİTAK-TEYDEB, 2016). Additionally, FDIs have rapidly increased from USD2.785 billion to USD16.8 billion over the same period (TurkStat, 2016).

All these activities contributed to the overall economic growth and performance of Turkey, not only immediately but also in recent years. For instance, the Turkish GDP grew by 5.21 percent on average between 2010 and 2015, while the average growth rate of the

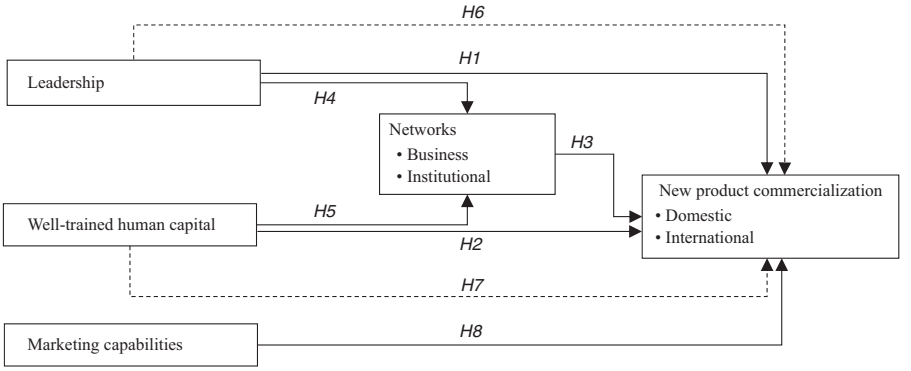

Figure 1. Conceptual study model

world was 2.76 percent. However, the transition to a more liberalized economy has not only influenced macroeconomic indicators but also the innovation activities carried out in Turkish companies. R&D projects submitted to TÜBİTAK-TEYDEB accelerated rapidly from 1,183 projects between 1995 and 1999 to 10,733 projects between 2000 and 2010. The number of exporting Turkish companies (mainly located in the sectors gold and jeweler, plastic, automotive, machinery, and iron products) has dramatically increased as well – from 29,909 companies in 2001 to 65,107 companies in 2015 – which boosted the value of Turkish exports from USD31.0 billion in 2001 to USD143.8 billion in 2015 (Turkish Exporter Association, 2016). However, because of the liberalization, Turkish companies have also faced increased international competition, which is why the Turkish government has been trying to increase the competitiveness of its organizations by fostering the establishment of university-industry relations to foster R&D and innovation. From 2006 to 2015, Turkey has increased the share of R&D spending in GDP by 1.7 times. In the same period, while the private sector increased its spending on R&D and innovation by 3.7 times, the governmental sector increased by 2.4 times and universities almost by 2 times. In addition, the number of FTE R&D staff per 10,000 employees increased from 27 to 46 from 2006 to 2015.

These numbers show that especially the private sector in Turkey has increased its spending on R&D to develop new products and/or services, to improve current products and/or services, and to increase the number of value-added products and its share in total export to strengthen the competitiveness of the country. Consequently, this background makes Turkey a very interesting emerging economy to study how these efforts have contributed to new product commercialization in domestic and international markets.

3.2 Data collection and sample

Data were collected from general directors, R&D, and product managers of organizations operating in five key industries in the Izmir region (Turkey), such as information and communication technologies (ICT), biomedical, machinery, chemical and plastic, and food and beverage companies. These industries were identified as key sectors for regional growth by the Izmir Development Agency. The Izmir region was identified as an appropriate setting for this study, as it was the first Turkish region that has introduced a regional innovation policy.

The instrument for data collection was a standardized questionnaire to make the responses comparable and to test the developed hypotheses. Before sending the questionnaire to the respondents, a pre-test with 35 organizations familiar with new product commercialization was executed to check the order of questions, its comprehensibility, and appropriateness (Brandenburg and Thielsch, 2009).

The Turkish Statistical Institute (TurkStat, www.tuik.gov.tr) was in charge of executing the survey to 1,000 high-level representatives of the targeted companies. To assure the quality of data, only fully completed questionnaires entered the analytical stage, which resulted in a final set of 671 questionnaires (= 67 percent response rate). Out of the 671 companies, 293 (43.6 percent) organizations are family businesses. Some other characteristics of the sample are presented in Table I.

3.3 Measures

In their meta-analysis on new product success, Henard and Szymanski (2001) noted that producing and selling new products can significantly differ when serving domestic and international markets. To address this issue, the present paper measures new product commercialization with two separate questions to gather data about whether organizations commercialize products in domestic and international markets. The response scale ranged from 1 (strongly disagree) to 5 (strongly agree).

Characteristic	Dimension	No	%
Industry	ICT	266	39.6
	Biomedical	91	13.6
	Machinery	82	12.2
	Chemical & plastic	141	21.0
	Food & beverage	91	13.6
Size	Micro (< 10)	434	63.7
	Small (< 50)	156	22.9
	Medium (< 250)	69	10.1
	Large (≥250)	12	1.8
Age	0 to 4	210	31.3
	5 to 9	186	27.7
	10 to 19	167	24.9
	20 to 49	105	15.6
	50 and above	3	0.4

Note: $n = 671$

Table I. Distribution of sample firms across industries, size and age classes

The independent variables measure the application of a series of elements of leadership, human resources, network, and marketing activities (see Table I). Respondents were asked to rate each item on a five-point Likert scale ranged from 1 (strongly disagree) to 5 (strongly agree). To create the variables, we follow previous research (e.g. Dakhli and De Clercq, 2004) and averaged the values over all items in each construct.

Leadership was addressed using six items to measure the level of leadership support, such as "our management encourages the development of innovative strategies, knowing well that some will fail," "our management commits both financial and emotional support to innovation," and "our management ensures that structured methodology/systems are set in place so that each innovation goes through a careful screening process prior to actual implementation" (Ernst, 2002) as well as the level of informal leadership, such as "our management promotes innovation through champions and advocates for innovation" and "our management ensures realistic and accurate assessment of the markets for the planned innovation" (Barczak *et al.*, 2009). Hence, leadership in this study affords an indication of leadership support.

To measure the level of well-trained human capital, three items from previous research were taken to address the educational level of employees, the availability of effective internal education and training activities (Ardito *et al.*, 2015). In addition, the item "application of new ways of problem-solving" (based on Kaya and Patton, 2011) was used to gain insight into how the organization is trying to address the business challenges ahead by striking new paths.

To measure the marketing capabilities of organizations, five items based on Wang and Lestari (2013) were used. Respondents were asked to rate the level of product design abilities, quality, delivery, and uniqueness as well as the overall innovativeness of their marketing abilities compared to their competitors. Thus, marketing capabilities in the present paper are an indication of the competitiveness of the organizations' marketing abilities.

To measure networks, three variables following Yiu *et al.* (2007) were applied. The construct business network indicates the intensity of relationships with different business partners that are considered relevant in the exploitation stage, such as customers, competitors, and suppliers. To measure the level of institutional networks, respondents were asked to rate their level of cooperation with universities regarding product development or improvement, problem solving and recruitment as well as other public institutions concerning governmental support and financing. Thus, the variable networks in this paper provide an indication of the intensity of cooperation in different networks.

Control variables: this study controlled for internal and external variables that were identified as relevant in similar studies (Cormican and O'Sullivan, 2004; Alpay *et al.*, 2008). To control for firm size and firm age influences, the number of current employees and the years since the establishment of the organization were assessed. Ownership concentration was measured using a binary variable that represents whether the organization is a family business (coded as 1) or not (coded as 0). Finally, this study controlled for competition as an external control variable measured by the number of substitutes available.

3.4 Analytic strategy

The study's analytic strategy followed the recommendations of Creswell (2014). First, the descriptive statistics of the underlying sample are presented in Table I. Second, the bivariate analysis consisted of a correlation analysis of the studied variables. Finally, as this underlying conceptual model of this study implies an evaluation of a construct consisting of more than two variables and includes intervening variables (mediators) as well, multivariate analysis techniques were required (Bryman, 2008).

A three-step hierarchical regression model was applied to carry out a mediation analysis following the procedure proposed by Baron and Kenny (1986). This approach allows controlling for conditional effects while enabling the investigation of multiplicative interaction models (Ignatius *et al.*, 2012) to analyze not only the main effects on the dependent variable but also the interaction effects among the independent variables (Huta, 2014).

Therefore, in the first step, the mediator is regressed on the independent variable. Second, the dependent variable is regressed on the independent variable and, finally, the dependent variable is regressed on the independent and on the intervening variable simultaneously. According to Baron and Kenny (1986), a mediation effect exists if the independent variable significantly influences the mediator (step 1), the mediator influences the dependent variable (step 2), while the influence of the independent variable on the dependent variable in step 3 either diminishes (partial mediation) or completely disappears (full mediation). To check for problems with multicollinearity, variance inflation factors (VIF) as suggested by Bagozzi (1994) were calculated. VIF statistics below a threshold of 3.0 indicated that multicollinearity does not seem to be a problem. To check whether autocorrelation is likely to be a problem, Durbin-Watson-tests were calculated. According to Takhtaei *et al.* (2014), variables are uncorrelated if test statistics are between 1.5 and 2.5. Finally, in order to assure normal distribution of firm size and firm age, the natural logarithmic was calculated as suggested by Kimberly (1976). Finally, to ensure that modeling errors are uncorrelated, heteroscedasticity by means of scatter plots were evaluated for each model.

4. Results

Table II presents the means, standard deviations, and correlations among the variables. The control variables are not significantly associated with new product commercialization neither in domestic markets nor in international ones. This is surprising against the findings of prior research, which showed the high relation between the exploitation phase and human or financial capital of the organization, which, in turn, is affected by the age and size of an organization (Nellore and Balachandra, 2001; Perry-Smith and Vincent, 2008; Revilla and Rodríguez, 2011). However, due to the interrelation of the control variables and their strong relation to the independent factors, we controlled for their effects when applying multiple hierarchical regression analysis.

Concerning the dependent variables, all predictor and mediator variables are related to both, confirming the relevance of the variables under investigation. Moreover, new product commercialization in domestic markets is highly related to new product commercialization in international markets ($r = 0.662$, $p < 0.001$), which indicates that for companies from

Table II.
Means, standard deviations, and correlation

Variable	*M*	SD	1	2	3	4	5	6	7	8	9	10	11
1. Firm age (log)	2.01	0.87	1										
2. Firm size (log)	1.88	1.59	0.444***	1									
3. Family business[b]	0.42	0.49	0.204***	0.172***	1								
4. Competition	3.01	1.20	0.044	0.008	0.066	1							
5. Leadership	3.35	1.02	0.017	0.227***	0.076*	0.259***							
6. Human capital	3.50	0.70	0.030	0.162***	0.005	0.106***	0.603***	1					
7. Business networks	2.50	1.16	−0.006	0.198***	0.084*	0.103***	0.439***	0.364***	1				
8. Institutional networks with universities	1.32	0.78	0.031	0.179***	−0.047*	−0.017	0.309***	0.265**	0.298***	1			
9. Institutional networks with public institutions	2.97	0.90	0.030	0.172***	0.072	0.254***	0.588***	0.491**	0.303***	0.270***	1		
10. Marketing capabilities	3.45	0.87	0.068	0.156***	0.062	0.317***	0.676***	0.624***	0.425***	0.267***	0.396***	1	
11. Domestic new product commercialization	2.70	1.13	−0.059	−0.030	−0.062	0.009	0.413***	0.413***	0.324***	0.274***	0.320***	0.518***	1
12. International new product commercialization	2.33	0.97	−0.049	−0.013	−0.027	0.023	0.357***	0.337***	0.295***	0.218***	0.364**	0.431***	0.662***

Notes: Binary variable indicating whether the organization is a family business (coded as 1) or not (coded as 0). *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

emerging markets the introduction of new products to international markets goes hand in hand with a product launch in the domestic market, even though the predicting influences are likely to differ.

To test these influences based on the hypotheses and on the approach by Baron and Kenny (1986), the mediator was regressed on the independent variables in the first step (Table III).

The results show that leadership is positively related to business networks (Model 1b; $\beta = 0.308$, $p < 0.001$) and institutional networks with both, public institutions in general (Model 3b; $\beta = 0.401$, $p < 0.001$), and universities in particular (Model 2b; $\beta = 0.241$, $p < 0.001$). Hence, *H4* is supported. Well-trained human capital is positively related to business networks (Model 1b; $\beta = 0.157$, $p < 0.001$) as well as to institutional networks both with public institutions (Model 3b; $\beta = 0.232$, $p < 0.001$) and with universities (Model 2b; $\beta = 0.112$, $p < 0.05$). Thus, *H5* is supported as well.

For the regression analysis of domestic and international markets, three models were calculated for each. In the first step, the control variables were entered in Models 4a and 5a, respectively. The independent variables were entered in a second step (Models 4b and 5b). Finally, the mediator variables were integrated into Models 4c and 5c in step 3 as suggested by Baron and Kenny (1986).

While an influence on the control variables is not existent in the first models (as already illustrated by the correlation analysis), they become significant when integrated with the predictor variables. Thus, the independent variables act as suppressor variables increasing the predictive validity of the control variables, which is likely to occur if these variables are correlated (Conger, 1974). Thus, we checked whether multicollinearity is likely to be a problem, but did not find any support for this, indicating that the influence of the integrated control variables is more of an indirect nature as illustrated in Table IV.

Models 4b and 5b show that marketing capabilities are highly and positively related to new product commercialization in domestic ($\beta = 0.424$, $p < 0.001$) and international ($\beta = 0.352$, $p < 0.001$) markets, supporting *H8*. A positive, but albeit weaker associations with both dependent variables were also found for leadership ($\beta = 0.119$, $p < 0.05$, and $\beta = 0.132$, $p < 0.01$, respectively) supporting *H1*. Additionally, results show only partial support for *H2* as the influence of well-trained human capital is only found to be significant on new product commercialization in domestic markets ($\beta = 0.137$, $p < 0.01$) but not in international markets ($\beta = 0.069$, $p > 0.05$).

			Institutional networks with			
	Business networks		Universities		Public institutions	
Variables	1a	1b	2a	2b	3a	3b
Control variables						
Firm age (log)	−0.123**	−0.086*	−0.044**	−0.014	−0.076	−0.015
Firm size (log)	0.231***	0.132**	0.215***	0.126**	0.199***	0.047
Family business	−0.064	−0.054	−0.073	−0.078*	0.035	0.026
Competition	0.102*	0.000	−0.012	−0.082*	0.249***	0.126***
Predictor variables						
Leadership		0.308***		0.241***		0.401***
Well-trained human capital		0.157***		0.112*		0.232***
Adjusted R^2	0.056	0.213	0.036	0.124	0.097	0.383
Δ F-value	10.992***	67.182***	7.353***	35.137***	17.760***	158.306***
Δ R^2		0.157		0.092		0.291

Table III.
Results of multiple hierarchical regression analysis on business and institutional networks

Notes: VIF-statistics between 1.005 and 1.734; Durbin-Watson statistics 1.803, 1.978 and 1.824. Heteroscedasticity does not seem to be a problem. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Variables	Domestic market 4a	4b	4c	International markets 5a	5b	5c
Control variables						
Firm age (log)	−0.042	−0.015	−0.011	−0.043	−0.031	−0.014
Firm size (log)	0.010	−0.122**	−0.153***	0.017	−0.089*	−0.122**
Family business	−0.056	−0.059	−0.058	−0.022	−0.026	−0.032
Competition	0.015	−0.160***	−0.155***	0.026	−0.124***	−0.132***
Predictor variables						
Leadership		0.119*	0.048		0.132**	0.034
Well-trained human capital		0.137**	0.106*		0.069	0.024
Marketing capabilities		0.424***	0.377***		0.352***	0.294***
Mediator						
Business networks			0.106**			0.119***
Institutional networks						
with universities			0.092**			0.053
with public institutions			0.090*			0.181***
Adjusted R^2	0.000	0.328	0.350	0.000	0.222	0.247
Δ F-value	0.931	108.724***	8.440***	0.474	61.914***	10.710***
Δ R^2		0.328	0.022		0.222	0.027

Notes: VIF-statistics between 1.057 and 2.394; Durbin-Watson statistics 2.073 and 1.833. Heteroscedasticity does not seem to be a problem. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table IV. Results of multiple hierarchical regression analysis on new product commercialization

Finally, in Models 4c and 5c the dependent variables were simultaneously regressed on the independent and mediator variables. Results show that business networks are highly related to new product commercialization in domestic ($\beta = 0.106$, $p < 0.01$) and international ($\beta = 0.119$, $p < 0.001$) markets. Likewise, institutional networks with public institutions in general are positively influencing NPI in domestic and international markets ($\beta = 0.092$, $p < 0.01$ and $\beta = 0.181$, $p < 0.001$, respectively). Relationships with universities, however, do only have a significant impact when introducing new products in domestic markets ($\beta = 0.092$, $p < 0.01$) but not in international markets ($\beta = 0.053$, $p > 0.05$). Thus, only partial support for *H3* was found.

Additionally, the Models 4c and 5c show that when networks are integrated in the multiple regression analysis, the effects of leadership completely disappear (= full mediation) for both domestic ($\beta = 0.048$, $p > 0.05$) and international ($\beta = 0.034$, $p > 0.05$) market introduction. Moreover, the influence of well-trained human diminishes (= partial mediation) in the case of new product commercialization in domestic markets ($\beta = 0.106$, $p < 0.05$). However, as institutional networks and well-trained human capital are not found to be significant predictors of new product commercialization in international markets, only partial support for *H6* and *H7* proposing the mediating effect of networks was found.

5. Discussion

The aim of this paper was to provide an empirical investigation of how a number of organizational factors of Turkish companies affect the exploitation stage of the NPD process. More precisely, we were interested in empirically testing the influence of leadership, well-trained human capital, marketing capabilities, and networks on new product commercialization in different markets from the perspective of firms from an emerging economy.

Not surprisingly and confirmed by the results, as summarized in Table IV, new product commercialization in international markets (explaining 24.7 percent of the variance) is a far more complex process than that in domestic markets (explaining 35.0 percent of the variance).

This is in line with earlier research that studied this stage of the NPD process in companies from advanced economies (Yelkur and Herbig, 1996; Henard and Szymanski, 2001) and appears to hold true for Turkey as well.

This study has identified two main factors that directly influence new product commercialization in domestic and international markets. First, and in line with Wang and Lestari (2013), marketing capabilities in terms of product design, quality, uniqueness, and delivery compared to its competitors are identified as a central element for new product commercialization in both markets. This confirms that just focusing on the NPD process is not sufficient. Instead, firms also need to be market-oriented, independently of the target market. Previous research showed that marketing capabilities significantly influence the launch of newly developed products as they contribute to the realization of the firm's strategy (Salomo *et al.*, 2008); our results suggest that this applies to companies from emerging markets such as Turkey as well. Additionally, as firms from emerging economies can only seldom rely on the advantages of a strong brand, the development of sophisticated marketing capabilities is needed to increase the success of the exploitation stage. Our results imply that Turkish organizations are aware of this fact and work on a reduction of this disadvantage.

Second, networks were identified to highly influence new product commercialization, even though their influence varies across target markets. The results reveal a relatively higher importance of networks when introducing new products in international markets (explaining additional 2.7 percent of the variance in NPI) compared to products in domestic markets (explaining additional 2.2 percent). This is in line with previous research that indicates that networks can help in offsetting the disadvantages of underdeveloped external markets, know-how, or capital in emerging economies (Khanna and Palepu, 1997, cited in Yiu *et al.*, 2007).

In contrast to previous research suggesting that institutional networks are a critical factor for entrepreneurial activities (e.g. Yiu *et al.*, 2007), this study finds only mixed support for this assumption, indicating that the importance of institutional networks varies across different emerging markets. Cai (1999, cited in Yiu *et al.*, 2007), for example, stressed the importance of government permissions and financial resources for the international product launch of Chinese companies, which hold true for Turkish organizations as well. Nonetheless, Turkish companies apparently do not rely on institutional networks with universities for new product commercialization in international markets. This, however, does not necessarily mean that Turkish organizations do not need or want support from universities in general, but that cooperation between these public organizations and Turkish companies is underdeveloped and reveals room for improvement. Given the high correlation of firm size and networks with universities ($r = 0.178$, $p < 0.001$), this seems to apply for smaller Turkish companies, in particular, signaling the need for actions on the part of regional and local policymakers.

Additionally, this study has demonstrated the positive influence for Turkish companies of business networks on new product commercialization in domestic and international markets, which is in line with previous research arguing that externally oriented organizations gain higher levels of successful new product commercialization as they pay more attention to signals from their embedded environment (Zahra *et al.*, 2004). As the development of internal knowledge and expertise is finite, which, in turn, limits the entrepreneurial scope (Zahra *et al.*, 2004), companies are forced to acquire knowledge from external sources, while their external networks consisting of customers, suppliers, and competitors can act as critical contacts (Morris, 1998).

This study confirms the critical role of leadership which contributes to the mediating role of networks regarding new product commercialization. Leadership that provides financial and emotional support ensures realistic and accurate assessment and screening processes of

markets and encourages the development of innovative strategies can foster the establishment of business networks with customers, suppliers, and competitors. This may be related to a leader's ability to promote good dialogues between the employees and the organizations' stakeholders (Elkins and Keller, 2003), which support the employees in acquiring external knowledge from these stakeholders and which, in turn, foster new product commercialization in domestic and international markets.

Well-trained human capital boosts the organizational networks of Turkish companies as well. The importance of training as well as further development and its boosting effect on new product commercialization in domestic markets are in line with previous research such as that by Lau and Ngo (2004) and Kaya (2006), who argue that HRM activities that focus, amongst others, on training and development activities can create an organizational environment that supports new product innovation. However, when it comes to the introduction of newly developed products to international markets, well-trained human capital does not support directly, but indirectly through the creation of organizational networks. This indicates that the mere existence of well-trained human capital might not be productive until they interact, network and share their expertise and knowledge with other individuals outside the firm. To establish an external orientation in terms of networks and to enhance employees' knowledge and skills that are critical to new product commercialization (Lau and Ngo, 2004), intensive training and development have become a means to an end.

6. Conclusion

The contributions of this paper are manifold. Using the constructs of human capital, networks, leadership, and marketing capabilities, this paper provides an empirical investigation of the exploitation phase of the NPD process in Turkish firms. Thus, the paper aims to contribute to the slowly growing research that studies innovation by companies in emerging markets (Zeschky *et al.*, 2011). In addition, using primary data from Turkey, this paper contributes to the study of the later stages in the NPD process taking the perspective of an emerging economy other than China (Subramaniam *et al.*, 2015), India and Russia (Fey *et al.*, 2016) and thus, offers the opportunity to expand our understanding of the topic in different parts of the world. The findings show some particularities of Turkey, which might be extrapolated to other countries at a similar stage of experience regarding new product commercialization. Finally, by having data that comprises both large and small companies the study goes beyond existing research that normally investigates multinational corporations from emerging markets (Ignatius *et al.*, 2012; Subramaniam *et al.*, 2015; Fey *et al.*, 2016; Kotabea and Kothari, 2016). In sum, we believe that our study contributes to the further development of the NPD literature by focusing on the later stage of this process addressing firms in emerging markets.

From a policy perspective, this study offers some insights as well. We show that smaller Turkish organizations currently do not rely on institutional networks with universities for new product commercialization in international markets. This is in contrast with previous research that has shown the important role these institutional networks can play in stimulating new product commercialization in countries at this stage of development (e.g. Yiu *et al.*, 2007). As this study gives insight into the different determinants of institutional networks, we believe that policymakers are in the position to develop support programs which are closer to business reality.

For managers, this study highlights the importance of sophisticated marketing capabilities to increase the success of the exploitation stage referring to both domestic and international markets. However, the most significant implication arising from our study is the importance of having extensive networks to enhance the success of this final stage in the NPD process. Thereby, this study gives managers insight into the critical role of leadership and human capital in establishing and developing the company as well as institutional networks with universities or other public institutions.

To conclude, there are several future research avenues that can be derived from the study's limitations. As this study made no differences between international markets, it would be interesting to study whether the influence of the constructs differs between internationally advanced markets and less advanced ones. Also, the study of cross-sector differences as well as other emerging markets could be of interest in this context. The cultural diversity as found in Turkey – integrating both western and eastern cultures – might also be a potential factor for the successful realization of the exploitation phase and could encourage other researchers to do further research on the topic in other parts of Turkey. Finally, future research should also consider differences between small and large companies from emerging markets regarding new product commercialization, different types of products and how the latter is influencing the organizational factors needed in this last stage of the NPD process.

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Appendix

Construct	Item
Leadership	Our management encourages the development of innovative strategies, knowing well that some will fail
	Our management commits both financial and emotional support to innovation
	Our management promotes innovation through champions and advocates for innovation
	Our management ensures realistic and accurate assessments of the markets for the planned innovation
	Our management ensures that innovation goes through a careful screening process prior to actual implementation
	Our management creates a system to analyze and evaluate the project before starting the innovation project
Well-trained Human capital	The educational level of our employees is high (the highest level is considered as a university degree)
	Our enterprise offers internal occupational education and training activities
	Our enterprise cares more for creative and new ideas instead of traditional solutions in problem-solving
Business networks	There is excellent cooperation between R&D and our main suppliers
	There is excellent cooperation between R&D and our main buyers
	There is excellent cooperation between innovation activities and our buyers
	There is excellent cooperation between innovation activities and our suppliers
	There is excellent cooperation between innovation activities and our competitors
Institutional networks with universities	We often cooperate with universities and research centers for test and analysis services
	We often cooperate with universities and research centers for solving a specific technical/design problem
	We often cooperate with universities and research centers for developing a brand new product and system
	We often cooperate with universities and research centers for increasing current products' quality
	We often cooperate with universities and research centers for recruiting new university graduates
Institutional networks with public institutions	It's very important to get in touch with relevant institutions in order to get government support.
	Public institutions play a major role in financing our R&D and innovation activities.
	We have excellent relations with public institutions and associations which provide support
Marketing capabilities	Our marketing abilities are comparatively innovative as to our competitors
	Our product design abilities are comparatively innovative as to our competitors
	Our product quality is comparatively innovative as to our competitors
	Product delivery time is very important to maintain our companies' competitive position
	Uniqueness of products is very important to maintain our companies' competitive positions

Table AI.
Construct items

Note: Items are measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree)

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