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Branka Ahlin

Mateja Drnovšek

Robert D. Hisrich

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EXPLORING MODERATING EFFECTS OF PROACTIVITY ON THE RELATIONSHIP BETWEEN MARKET INFORMATION AND INNOVATION PERFORMANCE

BRANKA AHLIN¹
MATEJA DRNOVŠEK²
ROBERT D. HISRICH³

ABSTRACT: *The purpose of this study is to test relationship between entrepreneur's proactivity and effectiveness of market information use to address the question of why some entrepreneurs use market information better than others. Results of our conceptual model, tested on SMEs from the United States and Slovenia, indicate that entrepreneurs who are more proactive are more responsive to new information than others; which has a positive influence on SMEs innovation performance, product innovation in specifics. Implications for practitioners and future research avenues are discussed.*

Keywords: *Proactivity, market information, moderating effect, innovation performance, SMEs*

JEL Classification: L26 – Entrepreneurship, L25 - Firm Performance: Size, Diversification, and Scope

1 INTRODUCTION

Due to the important role SMEs play in economic and technological development, their innovation performance has received much interest in literature (Rosenbusch, Brinckmann & Bausch, 2010, p. 4). The vast research effort devoted to understanding innovation in SMEs reflects both the importance of the issue and the controversy that still surrounds the nature of the phenomenon (Tether, 1998). Literature suggests that SMEs innovate in specific ways, different from the innovation process in large firms (Kaufmann & Tödting, 2002, p. 147). As several scholars argue, SMEs have limited resources and capabilities for conducting in-house R&D activities (e.g. Hausman, 2005; Massa & Testa, 2008). Innovation in SMEs is associated with entrepreneurial features and the capabilities of the workforce (Romijn & Albaladejo, 2002, p. 1054). Small firms seldom innovate in iso-

¹ Tomplast d.o.o., Mirna, Slovenia, e-mail: branka.ahlin@gmail.com

² University of Ljubljana, Faculty of Economics, Ljubljana, Slovenia, e-mail: mateja.drnovsek@ef.uni-lj.si

³ Thunderbird School of Global Management, Glandale, USA, e-mail: robert.hisrich@thunderbird.edu

lation and rely heavily on external sources of information (Avermaete et al., 2004, p. 474). Yet, in the knowledge-driven economy the determinants of successful innovation are ever changing (Bullinger, Auernhammer & Gomeringer, 2004, p. 3337). The complexity of innovation processes has intensified with increasingly riskier odds of commercial success due to frequent changes in customers' demands, »first to the market» pressure, and other technology related challenges (Kaminski, de Oliveira & Lopes, 2008, p. 29). In such circumstances, researchers (e.g. Keh, Nguyen & Ng, 2007) emphasize that market information, specifically information pertinent to a firm's customers and competitors is as a powerful knowledge resource (Narver & Slater, 1990). Many researchers (e.g. Kawakami, MacLachlan & Stringfellow, 2012) emphasize that acquiring market information is a challenge for SMEs due to limited resources and market research capabilities they avail. With more and more information being freely available, the decision regarding what information should be utilized and what should be ignored has become more complicated (Varis & Littunen, 2010, p. 129).

Information processing by entrepreneurs has been investigated by economists ever since Adam Smith's 'invisible hand' (Vaghely & Julien, 2010, p. 74). Gardner (1994) describes entrepreneurial behaviour as vision focused on innovations that meet market needs more effectively (Kickul & Gundry, 2002). Kirzner (1973) advocates a theory of entrepreneurial alertness; defining alertness as an individual's ability to identify opportunities which are overlooked by others (Tang, Kacmar & Busenitz, 2012, p. 77) and posits information and information-seeking behaviour as the central tenants of entrepreneurial alertness (Busenitz, 1996, p. 35). According to Gaglio and Katz (2001, p. 97) comparisons of how alert and non-alert people behave in the marketplace suggest that behaviour may not necessarily depend upon information gathering efforts or upon cues inherent in the information. Kirzner (1980) maintains that the crucial difference between opportunity finders (aka entrepreneurs) and non-finders can be found in their relative assessment of the market event or situation (Gaglio & Katz, 2001).

Despite the growing knowledge on the impact of market information on innovation in SMEs, we identified the following literature gaps. *First*, there is still little published research directly investigating the impact of market information on innovation performance in SMEs despite the seminal work by Brush (1992) and Mohan-Neill (1995) that underscored the importance of scanning the marketing environment and researchers (e.g. Low, Chapman & Sloan, 2007; Soh, 2003) that highlight importance of market information for innovation. Several studies (e.g. Keh, Nguyen & Ng, 2007; Parry & Song, 2010; Song, Wang & Parry, 2010) have explored the impact of market information on other aspects of SMEs performance (e.g. sales growth, market share, profitability). A review of the literature demonstrates that existing empirical evidence has not yet indicated a clear relationship between market information generation and SMEs innovation performance; findings from existing research are somewhat ambiguous. While some studies (Keh, Nguyen & Ng, 2007) conclude that information generation and firm's new product performance are not significantly correlated, others (e.g. Brockman & Morgan, 2003; Soh, 2003) find significant and positive relationship between these two variables. *Second*, availing market information is a necessary but not a sufficient condition for in-

novation performance (Song, Wang & Perry, 2010), information needs to be productively used. While Kickul and Walters (2002, p. 296) stress that proactivity is the personal trait that may serve as a critical link in determining whether the firm uses new opportunity information for innovations they do not go as far as to provide empirical evidence about specific influence of entrepreneur's proactivity on the relationship between market information generation and innovation. Grant and Ashford (2008, p. 20) emphasize that to gain a full understanding of effects of proactive behaviour, researchers need to explore its moderating role. *Third*, while the bulk of empirical studies focus on innovation performance of large-scale organizations in western/developed countries, less is known about effectiveness of use of market information in SMEs (Keskin, 2006) and innovative performance of SMEs in transition economies.

In order to address these research gaps identified, the objectives of present research are twofold. *First*, we aim to examine the moderating role of entrepreneur's proactivity on the relationship between market information generation and SMEs product and process innovation. We use term market information generation to refer to processes of acquisition, collection and gathering of market information (Harmancioglu, Grinstein & Goldman, 2010). These variables were selected for inclusion on the basis of the prior research, which strongly suggests their relevance to SMEs. In our study, we are mainly interested in the size of the firm (small- to medium-sized) and simple model of governance (entrepreneurial/owner-managed). Our respondents in the empirical study were entrepreneurs that we define as those individuals who have started or purchased a small business, and are still managing the business they started or purchased (Becherer & Maurer, 1997). The *second* goal of this paper is to explore the extent to which these relationships vary in different cultural contexts.

The remainder of this paper is organized as follows. After reviewing the relevant literature, we provide theoretical grounds for moderation effects of proactivity on the relationship between market information generation and innovation performance and present our theoretical model and research hypotheses. We then describe our sample, methods and measures used, and results. We conclude by discussing implications of our findings for theory and practice, limitations and suggestions for possible directions for future research.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Market information and innovation

Researchers (e.g. Avermaete et al., 2004, p. 476) emphasize that SMEs need external sources of information because of limited availability of their internal resources. De Propris (2000) goes so far to define external information as a 'missing input' that explains small firm's innovation performance. Practical and research evidence suggests that many SMEs are interested in information on their customers and competitors in order to differentiate their offerings and positioning (Keh, Nguyen & Ng, 2007, p. 593). Empirical studies (e.g. Low, Chapman & Sloan, 2007; Prodan, Ahlin & Slavec, 2010; Varis & Littunen, 2010)

argue that both new products and services success and firm innovation performance are increasing functions of the degree to which firms collect and utilize market information. Meanwhile Madrid-Guijarro, Garcia & Van Auken (2009) in their research of 294 Spanish SMEs find that lack of market information is a barrier for innovation in SMEs.

When examining the direct effects of market information on SME's innovation performance, several researchers (e.g. Prodan, Ahlin & Slavec, 2010; Varis & Littunen, 2010) have focused on types and source of information. Prodan Ahlin & Slavec (2010) in their study of 497 Slovenian SMEs find that customer and competitor's information have a positive influence on product and process innovation. Varis and Littunen (2010) in their study of 264 SMEs in Finland find that different freely accessible sources of information (such as fairs, exhibitions, media, Internet, etc.) were positively associated with the introduction of novel product innovations in firms. In the case of the introduction of novel process innovations (production methodology/technology), an association was found between the information acquired from the different financial organizations (Varis & Littunen, 2010). Yet, findings have been mixed. While Brockman and Morgan (2003) and Soh (2003) find that acquiring information could result in greater new product performance, a result of a study by Moorman (1995) shows that information acquisition is not related to new product performance.

Researchers (e.g. De Luca & Atuahene-Gima, 2007; Harmancioglu, Grinstein & Goldman, 2010) have recognized that the impact of market information on innovation performance is not direct but is influenced by other variables. For example, Harmancioglu Grinstein & Goldman (2010) in their study among 97 Israel business-to-business firms find that impact of top management team involvement in market information collection on firm innovativeness is moderated by firm size and industry context (i.e., high-technology versus low-technology) and is stronger for small firms than for large ones and for high-technology firms than for low-technology ones (Harmancioglu Grinstein & Goldman, 2010). Results of De Luca and Atuahene-Gima (2007) study show that market knowledge depth has an indirect effect (through knowledge integration mechanisms) on product innovation performance. However, no prior empirical study has directly investigated potential moderators of the impact of market information on SEMs innovation performance.

In circumstances when a weak or inconsistent relationship between a predictor and outcome (e.g., a relation holds in one setting but not in another, or for one subpopulation but not for another) occurs, Baron and Kenny (1986, p. 1178) propose that it is appropriate to search for moderators. Given the mixed findings on the relationship between market information and innovation performance and guided by the methodology of Baron and Kenney (1986), we expect that the relationship between market information and innovation performance in SMEs might be moderated by other variables.

2.2 The proactive entrepreneur and the small firm

Proactive personality is important in entrepreneurship. Proactivity captures the idea of individuals taking an active role within their environments by initiating and creat-

ing changes as opposed to simply reacting and acquiescing to the demands of their surroundings (Bateman & Crant, 1993). Entrepreneurs have to be self-starting and influence their environment by founding new organizations and by identifying and acting upon opportunities (Rauch & Frese, 2007). Rauch et al. (2009) describe proactivity as an opportunity-seeking, forward-looking perspective characterized by the introduction of new services and products ahead of the competition and acting in anticipation of future demand. Proactive behaviour is future-focused (Frese et al., 1997). Individuals are thinking, deliberating, planning, calculating, and acting in advance with foresight about future events before they occur (e.g. Bandura, 2006; Gollwitzer, 1999; Grant & Ashford, 2008; Karniol & Ross, 1996; Little, Philips & Salmela-Aro, 2007).

Although Bateman and Crant (1993) explicitly state that not all proactive behaviours are beneficial, the majority of research focuses on the benefits that proactivity accrues to individuals, groups, and organizations (Grant & Ashford, 2008, p. 21). Empirical evidence suggests that individual's proactivity is related to entrepreneurial intentions and entrepreneurial action in terms of their firm's ability to compete and grow (José Acedo & Florin, 2006, p. 53). Crant (1996) examined the relationship between the proactive personality scale and entrepreneurial intentions. Results of his study show that proactive personality is positively associated with entrepreneurial intentions. Becherer and Maurer (1999) in their study find significant relationships between the small firm president's proactivity and the firm's competitive posture and growth in sales. Kickul and Gundry (2002) find a significant relationship between proactive disposition of small business owners and the level of innovation of their implemented strategies. Proactive individuals anticipate and envision a future outcome, and select and modify situations in order to create that outcome (e.g. Aspinwall & Taylor, 1997; Buss, 1987; Grant & Ashford, 2008; Gross, 1998).

Only a few scholars (e.g. Allen & Weeks, 2005; Grant, Gino & Hofmann, 2011; Kickul & Walters, 2002) have so far recognized the moderating role of proactivity. Allen & Weeks, 2005 propose that proactivity moderates the relationship between employee turnover intentions and turnover such that the relationship is stronger for more proactive individuals than it is for less proactive individuals (Allen & Weeks, 2005, p. 982). The results of their research are not significant and do not support their hypothesis. Recently Grant, Gino & Hofmann (2011) shows that employee's proactivity moderates the effect of leader extraversion on employees' perceptions of leader receptivity in such a way that employees only perceive highly extraverted leaders as less receptive under conditions of high proactivity (Grant, Gino & Hofmann, 2011). Kickul and Walters (2002, p. 296) in their research of 107 SMEs in the United States find that the relationship between new ideas and opportunities and e-commerce innovations is moderated by the proactive personality of the Internet entrepreneur. But no empirical evidence exists so far about the influence of entrepreneur's proactivity on the relationship between market information generation and innovation. This existing research on proactivity suggests that proactivity can explain how challenging situations in the innovation process are overcome.

2.3 Hypotheses development

Given that customer needs and expectations continually evolve over time (Kohli & Jaworski, 1990) product lifecycles are becoming increasingly short. Consequently, firms are forced to bring new products and services to the market frequently (Hoffmann & Soyez, 2010, p. 778). Market scanning and interpreting environment enables firms to act innovatively (Day & Nedungadi, 1994; Sinkula, 1994; Slater & Narver, 1995; Wei & Wang, 2011). Firms that generate more information have a better chance of identifying market opportunities and implementing innovation actions (Wei & Wang, 2011, p. 270). As Sinkula, Baker & Noordewier (1997, p. 308) state market information generation is the most important element of market information processing because without it there is no opportunity for the firm to keep abreast of its customer and competitor environments. This generated market information is not automatically converted into positional advantages (Harmancioglu, Grinstein & Goldman, 2010, p. 34). Market information can increase the number of decision options (Song, Wang & Parry, 2010), but unless the generated information is used, it does not provide any tangible benefit (Keh, Nguyen & Ng, 2007, p. 594). Also, the outcomes of information generation are uncertain as they depend on many other influencing factors (Keh, Nguyen & Ng, 2007, p. 597); for example, Song et al. (2010, p. 557) emphasize that generated information is often discounted or ignored by decision makers.

The literature (e.g. Kaufmann & Tödtling, 2002, p. 147) suggests that the dynamics of innovation processes in SMEs differs from that in large firms. Schumpeter (1935) early emphasized the existence of a strong link between innovation and entrepreneurs. Therefore, researchers (e.g. Marcati, Guido & Peluso, 2008; Morris et al., 2009) suggest that we should focus on entrepreneurs when we are investigating innovation in the context of SMEs, due to the entrepreneur's role in fostering innovation. As an illustration of the pivotal role of the entrepreneur, North and Smallbone (2000) report that for 85 percent of the firms in their study, the owner played a central role in the initiation and development of innovations and in many cases they were the only persons involved in the innovation process. Furthermore, small firms seldom innovate in isolation but, instead, rely heavily on external sources of information (Avermaete et al., 2004, p. 474). Empirical studies (e.g. Brockman & Morgan, 2003; Soh, 2003) have emphasized the importance of market information. Supporting evidence comes from several scholars (e.g. Lei, Dan & Tevfik, 2004; Mohan-Neill, 1995) who argue that SMEs are often faced with constraints in terms of available human and financial resources for market information and knowledge acquisition. While large firms typically have the resources to conduct extensive market research to gather such information (Keh et al., 2007, p. 594), small firms usually do not have marketing specialists (Verhees & Meulenber, 2004, p. 137). Sarasvathy (2001) also argues that formal market information collection processes are not the primary focus of entrepreneurs. This implies that in SMEs entrepreneurs must take initiative in order to collect market information. As Crant (2000, p. 437) suggests, proactive people actively seek information and opportunities for improving things; they do not passively wait for information and opportunities to come to them.

SMEs often do not have a formal process for using market information for decision making (Appiah-Adu & Singh, 1998) like many of their larger counterparts. In SMEs, the role of the entrepreneur in decision-making processes is central. As researchers (e.g. Song, Wang & Parry, 2010) stress, information alone is not enough, as it does not ensure that it will be used; namely, two individuals in the same role can behave in quite different ways (Bateman & Crant, 1993, p. 103). On the other hand, researchers from broader organization literature (e.g. Moorman, 1995; Ottum & Moore, 1997) also suggest that if firms do not have a formalized process for market information utilization, acquired market information cannot be used properly on a regular basis and should lower performance (Kawakami, MacLachlan & Stingfellow, 2012, p. 277). In SMEs it can be expected that it depends on the entrepreneur whether generated market information is used or not. Results of Kickul and Walters's (2002, p. 296) study show that one such personal attribute that serves as a critical link in determining whether the firm uses new opportunity information to develop and integrate e-innovations is the proactivity (i.e. proactive personality) of the entrepreneur.

In dynamic environments a heavy reliance on established routines can limit the organizational search for new cognitive pathways (Levitt & March, 1988) and constrain the ability to promptly react to any environmental changes (Magni et al., 2009, p. 1045). Innovation requires the vision to predict what the market may become (Baker & Sinkula, 1999) and fewer adherences to established routines. In other words, innovation requires understanding of latent market needs (Morone, 1993). Therefore proactiveness (acting in advance of a future situation) rather than reactivity is needed (Grant & Ashford, 2008, p. 8).

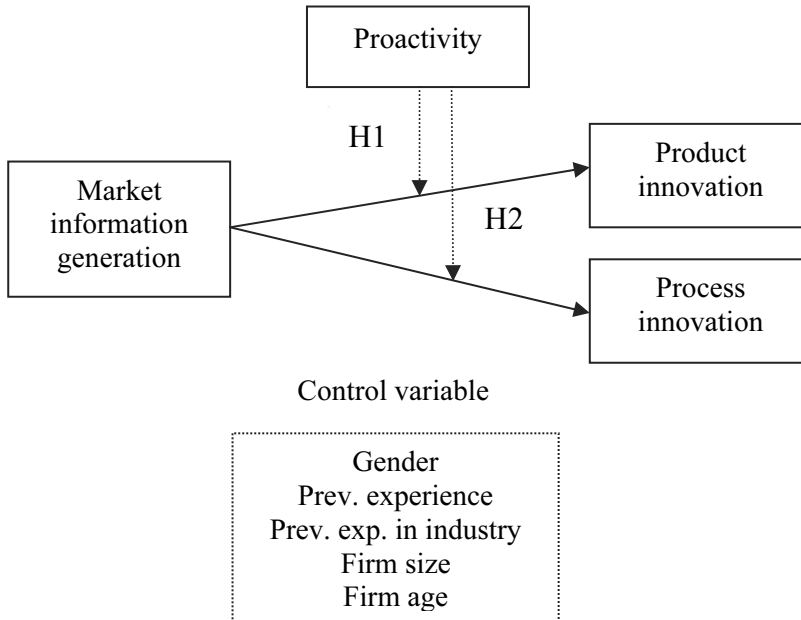
Based on this discussion, we think that entrepreneur's proactivity could play an important role in explaining why some entrepreneurs use market information better than others for the purpose of innovation. While innovation requires information about competitors and customer needs, entrepreneurs also need to forecast ongoing trends. Drawing from existing studies, we suggest that the link between market information and innovation performance is moderated by entrepreneur's proactivity. Bearing in mind that research by Fritsch and Meschede (2001) shows that SMEs allocate more resources to product than process innovations and results of Nieto and Santamaria's (2010) study show that the impact of collaboration in SMEs is more significant for product than process innovations, we will analyze the moderating impact of proactivity separately for product and process innovations. By not having types of innovation outcomes divided, these could confound results. We propose the following hypothesis:

H1: the relationship between market information and product innovation is moderated by entrepreneur's proactivity, such that more proactive individuals will use market information better which will have a positive impact on the innovation output.

H2: the relationship between market information and process innovation is moderated by proactivity, such that more proactive individuals will use market information better which will have a positive impact on the innovation output.

The proposed relationships are depicted in Figure 1.

Figure 1: *Moderating effect of proactivity*



We controlled for five variables that might have affect on product and process innovation performance: gender, previous experience, business tenure, firm size and firm age. Research findings on the effect of gender on innovation are not conclusive (Higón, 2012). For example while DiTomaso and Farris (1992) found that women R&D engineers tend to rate themselves lower than men do on innovativeness, Damanpour and Schneider (2006) found that gender does not significantly affect adoption decisions and implementation phases of the innovation adoption process. Prior research show that knowledge gained from individual experiences contributes to innovation. For example, Shane (2000) found that in seven out of the eight companies he studied, ideas for the commercialization of the 3D technology came from prior experience. Additionally, researchers (e.g. Shepherd & DeTienne, 2005) emphasize that industry-specific experience can have a strong influence on their development of entrepreneurial knowledge. Firm size was included into model since Martinez-Ros (1999) found that firm size affects much more the decision to innovate in process than in product innovation, since large firms have more facilities (internal resources and capabilities) and incentives for this type of innovation (Nieto & Santamaria, 2010). With respect to company age, prior research found that younger companies are more innovative. For example Huergo and Jaumandreu (2004) found that entrant firms tend to present the highest probability of innovation while the oldest firms tend to show lower innovative probabilities.

3 CROSS-CULTURAL DIFFERENCES

As stated by Linan & Chen (2009), cross-cultural studies are needed to better understand the effect of different cultures and values on entrepreneurs' behaviour.

In this study, two quite different countries are considered (United States and Slovenia). Slovenia differs significantly from the U.S. in terms of its level of economic development, entrepreneurship practice and size, suggesting the possibility of differences in the entrepreneurial context between these countries. The World Bank data show that GDP/capita in 2010 in the U.S. was more than twice higher than in Slovenia (U.S. 47,199 \$, Slovenia 22,851 \$). The U.S. in 2010 to 2011 ranked as 4th on the Global Competitiveness Index (GCI) while Slovenia as 45th (Schwab, Sala-i-Martin & Greenhill, 2010). Comparative analysis of innovation performance conducted by the European Commission (2010) shows that the innovation performance of the European Union and Slovenia still lag behind the United States in the field of exploiting innovation potentials. The U.S. has been widely recognized as a country with a high reputation for entrepreneurship (Kawakami, MacLachlan & Stingfellow, 2012) and with a long tradition in entrepreneurship practice (Antončič & Hisrich, 2001). On the contrary, Slovenia has a relatively short entrepreneurship tradition. After the end of the 1980s, Slovenia moved from a state-controlled economic system towards a market-based economy (Antončič et al., 2007), which allowed private companies to operate. From the 1990s, the number of SMEs has increased (Duh, 2003). Finally, Slovenia with less than 2 million inhabitants differs from U.S. in size. By making our empirical analysis country-specific, we allow cultural characteristics to shed specific light on the differences between SMEs in the United States and Slovenia.

4 METHODOLOGY

4.1 Questionnaire development, sampling, and data collection process

Hills and La-Forge (1992) stress the importance of conducting entrepreneurship research in international contexts. For the purpose of cross-cultural generalization of our findings, we collected survey data in 2 countries: the United States and Slovenia. The same data-collection procedure (mail survey and online version of the questionnaire) was used in both countries by the same researchers to secure measurement equivalence across cultures (Antončič & Hisrich, 2001; Sekaran, 1983; Sekaran & Martin, 1982). Dillman's (2007) tailored design method was applied during data collection process.

Questionnaires were mailed to 3,400 firms with 5 to 249 employees in the U.S. and 4,000 firms in Slovenia. To minimize the chance of selecting dormant firms from a massive database, we only selected firms that have more than 5 employees. Inclusion of dormant firms that exist just for purposes other than regular business (Nishimura, Nakajima & Kiyota, 2005) could lead to seriously biased results on a firm's innovation. A variety of industries were included (e.g. manufacturing, professional, scientific and technical, electricity, gas, steam and air conditioning supply, information and communication,

construction, etc). Firms and top executive names for the U.S. sample were randomly selected from the Reference USA research database. Firms for the Slovenian sample were randomly selected from the Business Directory of the Republic of Slovenia (PIRS), which includes addresses of all Slovenian businesses. To improve the response rate, follow-up e-mails were sent to remind and encourage participants of completing the questionnaires. For those participants who preferred to complete the questionnaire online, the e-mail also contained the Internet link and personal access code for the online survey, which was posted on a special web site.

Of the original 4,000 intended survey recipients in the U.S., 60 (1.5%) questionnaires were undelivered, reducing the sample population to 3,940. No systematic pattern was observed in the undelivered surveys. There were 108 (2.7%) blank questionnaires returned by respondents who were unwilling to participate. Two questionnaires were excluded due to the high proportion of missing data (20 % or more). To focus exclusively on entrepreneurs and the entrepreneur-led firms, only respondents who had started or purchased their businesses were included in this study, which excluded 47 questionnaires. During the 2-month process of collecting the questionnaires, 314 useful representative responses were obtained, yielding a 12% overall response rate and 8% valid response rate. This response rate is comparable to other studies conducted among SMEs in the U.S., such as Patel and Cardon (2010) with 5% response rate, Ozgen and Baron (2007) Internet survey with 6.5% and Sullivan and Marvel (2011) with 10.3%. Researchers (e.g. Dennis, 2003; Patel & Cardon, 2010) emphasize response rates around 10% are typical for SMEs in U.S.

From 3,400 sent questionnaires in Slovenia, 24 (0.7%) questionnaires were undelivered. There were 1,194 questionnaires returned by respondents; 152 questionnaires were returned blank, 5 questionnaires had a high proportion (more than 20%) of missing data and were therefore excluded, 124 questionnaires were excluded since the SMEs were not entrepreneur-led; 913 representative responses were obtained. This represents a 35.4% overall response rate and a 27% valid response rate. This response rate is comparable to other surveys conducted in Slovenia, such as Antončič and Hisrich (2001) with a response rate of 29%, Prodan, Ahlin & Slavec. (2009) with 24% response rate and Markič et al. (2011) with 10%.

4.2 Operationalization and measure validation

To measure the constructs in our model, we adopted existing measures in the literature. The English version of the questionnaire was first designed and then translated into Slovenian. The Slovenian version was then back-translated according to the steps suggested by Brislin (1970) and Sekaran (1983). The back-translated English version was checked against the original English version for accuracy (Feng, Sun & Zhang, 2010). To further ensure the content and face validity of the measures (Zheng Zhou, 2006, p. 397), the survey instrument was pre-tested on a sample of 20 top executives of selected Slovenian small firms to collect their feedback and experience of filling in the questionnaire. Their comments were incorporated in designing the final questionnaire.

Proactivity. We used Seibert, Crant & Kraimer (1999) 10-item version of Bateman and Crant (1993) of proactive personality scale. Respondents were asked to indicate their degree of certainty on a seven-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"), how strongly they agree or disagree with items: (1) "I am constantly on the lookout for new ways to improve my life", (2) "Wherever I have been, I have been a powerful force for constructive change", (3) "Nothing is more exciting than seeing my ideas turn into reality", (4) "If I see something I don't like, I fix it", (5) "No matter what the odds, if I believe in something I will make it happen", (6) "I love being a champion for my ideas, even against others' opposition", (7) "I excel at identifying opportunities", (8) "I am always looking for better ways to do things", (9) "If I believe in an idea, no obstacle will prevent me from making it happen" and (10) "I can spot a good opportunity long before others can".

Market information generation. We adapted the market information generation scale by Wei and Wang (2011). Market information generation were measured with four items: (1) "Our firm gets to know changes in customers' needs in a timely manner", (2) "Our firm frequently asks for customers' opinions on our products and services", (3) "Our firm pays constant attention to changes in the industry (competitive, technological, legislative, etc.)" and (4) "Our firm regularly investigates the potential effects of market conditions (e.g., legislative and economic situations) on our customers". A seven-point Likert scale was used.

Product and process innovation. We measured two major areas of innovation: product and process, on the basis of the criteria which were conceptualized and used in previous empirical studies regarding innovation (e.g. Prajogo & Ahmed, 2006; Yang, Wang & Cheng, 2009, Jiménez-Jiménez, 2011). Conceptually, product innovation is concerned with generating ideas or the creation of something entirely new that is reflected in changes in the end product or service offered by firm, while process innovation represents changes in the way firms produce end-products or services through the diffusion or adoption of an innovation developed elsewhere or new practices developed internally (e.g. Prajogo & Ahmed, 2006; Yang, Wang & Cheng, 2009).

Product innovation were measured with 3 items adopted from Yang, Wang & Cheng (2009) and include the number of new products/services a firm has introduced to the market (new for the firm), the number of the firm's new products that are first-to-market (or early market entrants) and the speed of the firm's new product/services development. For process innovation, we used Jiménez-Jiménez and Sanz-Valle (2011) 3-item measure. Process innovation include number of changes in processes introduced (new for the firm), introduction of new processes that are first-to-market, and clever response to new processes introduced by other companies in the same sector. Like in recent studies (e.g. Jiménez-Jiménez & Sanz-Valle, 2011; Yang, Wang & Cheng, 2009), we ask respondents to evaluate the firm's innovation performance against the major competitor in the industry in last three years. This approach, as affirmed by Kraft (1990) and Prajogo and Ahmed (2006), was used to minimize a bias from subjective answers. Answers were given on a seven-point Likert scale ranging from 1 ("much worse than competitors") to 7 ("much better than competitors").

Control variables. Several control variables were included in analysis to ensure proper model specification and to take into account possible alternative explanations for innovation performance variations (De Clercq, Dimov & Thongpapanl, 2010). At the individual level, entrepreneurs' gender, previous experience, and business tenure were controlled. Previous experiences were measured with the total number of years of employment. Business tenure was measured by means of the number of years the respondent has been working in the current business. At the firm level, firm size and firm age were included as control variables. Firm size was measured by the number of current employees in the firm and firm age was measured as the number of years since the firm had been established.

4.3 Data analyses

To examine the possible non-response bias and the representativeness of the participating firms, we compared the early and late responses on number of employees (Feng, Sun & Zhang, 2010), firm size and firm age (Song, Wang & Parry, 2010). The results were not statistically significant, suggesting that non-response bias is not a concern in the data.

In order to test presence of common method bias in our results, we adopted Harman's one-factor test (Podsakoff et al., 2003). All items were entered into an unrotated exploratory factor analysis to determine whether a single factor emerges or a single factor accounts for the majority of the variance. The unrotated principal component factor analysis, principal component analysis with Direct Oblimin rotation, and principal axis analysis with Direct Oblimin rotation all revealed the presence of four distinct factors with eigenvalue greater than 1.0, rather than a single factor for both samples. The four factors together accounted for 61% of the total variance for the Slovene sample and 62% for the U.S. sample. The first (largest) factor did not account for a majority of the variance (22% for both samples). Thus, no general factor is apparent. Moreover, the confirmatory factor analysis showed that the single-factor model did not fit the data well (SLO sample: $\chi^2(189) = 5155.05$, $p = 0.000$, NFI = 0.57; NNFI = 0.53; GFI = 0.59; CFI = 0.58; SRMR = 0.12; RMSEA = 0.16; US sample: $\chi^2(189) = 2980$, $p = 0.000$, NFI = 0.53; NNFI = 0.51; GFI = 0.57; CFI = 0.55; SRMR = 0.13; RMSEA = 0.16). Results of these analyses suggest that common method variance is not of great concern and, thus, is unlikely to confound the interpretations of results.

Questionnaire items were analyzed in terms of missing values. Because there was no pattern in the missing data spread across variables, we considered the missing data to be missing completely at random and not to be influential (Hair et al., 2010; Rubin, 1976). The following combined imputation was used: person mean substitution for each case if there were less than 30% missing values within a particular construct, otherwise mean item score (item mean imputation).

For each of the measures discussed, we assessed reliability using Cronbach's alphas and composite reliability. We performed all empirical evaluations of the measurement scales

on both samples for cross-national comparison according to procedures suggested by Singh (1995). Exploratory factor analysis was performed using SPSS Version 16.0 for Windows and using the Maximum Likelihood extraction method and Direct Oblimin rotation. Confirmatory factor analysis was performed using Lisrel 8.51, the covariance matrix and model parameters were estimated using the maximum likelihood method.

5 RESULTS

5.1 Empirical evaluation of measurement scales

Internal consistency was examined using Cronbach's alpha-value. All constructs exhibited an α -value greater than 0.7, thus satisfying the criteria for internal consistency and reliability (Hair et al., 2010) (for details see Table 1). The composite reliability values ranged from 0.80 to 0.92 and thus exceeded the generally accepted value of 0.70 (Diamantopoulos & Siguaw, 2009).

Table 1: *Measurement scales: number of items, sources of items and reliability*

Construct	Num. of items	Source	Cronbach α		CR	
			US	SLO	US	SLO
Proactivity	10	Bateman and Crant (1993)	0.90	0.90	0.92	0.91
Market information generation	4	Wei and Wang (2011)	0.76	0.76	0.80	0.80
Product innovation	3	Yang, Wang & Cheng (2009)	0.83	0.83	0.82	0.84
Process innovation	3	Jiménez-Jiménez and Sanz-Valle (2011)	0.87	0.87	0.88	0.90

Notes: CR = composite reliability

Proactivity. As expected, exploratory factor analysis found only one factor to explain the variance in the data. All factor loadings were above 0.4. The Kaiser–Meyer–Olkin measure of sampling adequacy ranged from 0.89 for U.S. sample to 0.90 for Slovene sample, which provides evidence of the appropriateness of the data for factor analysis. Bartlett's test of sphericity was significant for both samples, indicating overall significance of the correlations within the correlation matrix (Hair et al., 2010). The explained variances for both samples ranged from 51.3% (Slovenia) to 52.5% (U.S.).

Market information generation. Exploratory factor analysis found only one factor to explain the variance in the data. All factor loadings were above 0.4. The Kaiser–Meyer–Olkin measure of sampling adequacy ranged from 0.72 for the U.S. sample to 0.77 for the Slovene sample, which provides evidence of the appropriateness of the data for factor analysis. Bartlett's test of sphericity was significant for both samples, indicating overall significance of the correlations within the correlation matrix (Hair et al., 2010). The explained variances for both samples ranged from 58.1% (U.S.) to 62.4% (Slovenia).

Product and process innovation. In order to verify the accuracy of the distinction between product and process innovation, we conducted exploratory factor analysis. The re-

sults (shown in Table 2) confirmed the existence of two innovation factors. Moreover, the scales were validated with a confirmatory factor analysis. We first formed a one-factor and a two-factor model. Then we examined the model fit of each and tested chi-square differences to determine which model provided better fit to the data. Results showed that the 2-factor model (reflecting product and process innovation) fitted the data better than the one-factor model. Additionally, the square root of the average variance extracted (AVE) for each of the 2 variables was calculated (Fornell & Larcker, 1981). According to the AVE method, constructs are different if the square root of AVE for a given construct is greater than the absolute values of the standardized correlations of the given construct with any other construct in the analysis (Baron & Tang, 2011). Results indicated that the square root of the AVE values (U.S. sample: 0.78 for product innovation and 0.84 for process innovation, Slovene sample: 0.80 for product innovation, 0.81 for process innovation) were greater than all corresponding zero-order correlations. Together, the CFA and AVE results indicated that product and process innovation have discriminant validity and could be treated as distinct variables.

Table 2: *The innovation dimension's item factor loadings*

Construct / Items	U.S. sample		SLO sample	
	Product innovation	Process innovation	Product innovation	Process innovation
Product innovation				
Number of new products/services introduced	0.99		0.69	0.31
Pioneer disposition to introduce new products/services	0.67	0.31	0.99	
The speed of development of new products/services	0.60	0.53	0.60	0.45
Process innovation				
Number of changes in process introduced	0.57	0.63	0.55	0.66
Pioneer disposition to introduce new process	0.51	0.72	0.45	0.65
Response to new processes introduced by others companies	0.46	0.66	0.52	0.56

Notes: Extraction method: maximum likelihood. Rotation method: Oblimin with Kaiser Normalization (absolute factor loadings higher than 0.25 displayed). U.S. sample: N=314. Kaiser-Meyer-Olkin measure of sampling adequacy: 0.87. Variance explained: 76.2%. Slovene sample: N=913. Kaiser-Meyer-Olkin measure of sampling adequacy: 0.87. Variance explained: 79.6%.

The resulting model's goodness-of-fit indices indicated good model fit in the multisample analysis ($\chi^2=462$, d.f.=164, NFI=0.91, NNFI=0.92, CFI=0.93, GFI=0.92, SMRM=0.04, RMSEA=0.05).

5.2 Findings related to the moderating effects of proactivity

Our conceptual model suggests that proactivity moderates relationship between market information and innovation performance (Figure 1). To test our moderation hypotheses,

we followed the moderated regression procedures recommended by Aiken and West (1991) and Cohen et al. (2003). The hierarchical procedure allows us to examine whether adding the predictor variables and the interaction terms increased the statistical power of the model (Kotabe, Jiang & Murray, 2011). In the first step, the control variables were entered. In second step, market information generation and proactivity were added. Before testing the moderating effects of proactivity, we centred the independent variables to increase the interpretability of the interaction variable (Aiken & West, 1991). In the final step, the interaction terms of proactivity with market information generation was added. The descriptive statistics and inter-correlations of the variables that were used in the study are presented in Table 3. Table 4 exhibit results of moderated regressions for product and process innovations.

To rule out the possibility of any effect derived from multicollinearity, we determined that all values of variance inflation factor were below 2 (Belsley, 1991) (the highest VIF in the U.S. sample was 1.4 and in the Slovene sample 1.6) and all values of tolerance were higher than 0.40 (Allison, 1999) (the lowest tolerance in the U.S. sample was 0.70 and in the Slovene sample 0.52), which indicated no threat to validity of our results (Hair et al., 2010, p. 204).

The base models analysed the effects of the control variables and explained 5% of the variation in product innovation for the U.S. sample and 1% for the Slovene sample (Table 4). As seen in Table 4, control variables explained 3% of variance in process innovation in the U.S. sample and 1% in the Slovene sample. The base model showed that business tenure had a significant negative impact on product innovations. In the Slovenian sample, none of the control variables had a significant impact on product and process innovations. The independent effects model showed both market information and proactivity to be significant and positively related to product and process innovation. This model contributed an increase in the explanation of variance, over and above the base model for both product innovation ($\Delta R^2=0.23$ for both samples) and process innovation ($\Delta R^2=0.20$ for both samples). Finally, the full model incorporated the moderating effect of proactivity on the relationship between market information and innovation performance. Hypothesis 1 stated that entrepreneur's proactivity had a positive moderating effect on the linkage between market information and product innovation. The results of hierarchical regression analysis (see Table 4) showed that the beta coefficients that correspond to the new independent variable (market information \times proactivity) were positive and statistically significant for both samples (U.S.: $\beta=0.12$, $p<0.01$, Slovenia: $\beta=0.13$, $p<0.01$), suggesting that moderating effect was indeed present. Hypothesis 1 was supported. Hypothesis 2 stated that entrepreneur's proactivity had a positive moderating effect on the relationship between market information and process innovation. The results of the hierarchical regression analysis (see Table 4) indicated partial support for Hypothesis 2. The moderating effect of proactivity was positive and significant for the Slovene sample ($\beta=0.14$, $p<0.05$), while beta coefficient for the U.S. sample was positive but non-significant.

Table 3: *Descriptive statistics and inter-correlation matrix*

	Mean	SD	1)	2)	3)	4)	5)	6)	7)	8)	9)
US sample											
1) Product innovation	4.81	1.21	1.00								
2) Process innovation	4.52	1.15	0.74	1.00							
3) Market information	4.82	1.17	0.41	0.41	1.00						
4) Proactivity	5.56	0.84	0.39	0.40	0.43	1.00					
5) Gender	0.18	0.38	0.01	0.02	0.05	0.06	1.00				
6) Prev. experience	35.25	9.44	-0.04	-0.04	-0.03	-0.08	-0.17	1.00			
7) Business tenure	21.92	10.73	-0.13	-0.11	-0.12	-0.12	-0.12	0.48	1.00		
8) Firm size ^a	2.87	1.13	0.16	0.14	0.18	0.11	-0.05	-0.11	-0.01	1.00	
9) Firm age	24.62	19.46	0.01	-0.05	-0.04	-0.13	-0.06	0.22	0.33	0.14	1.00
Slovene sample											
1) Product innovation	4.78	1.13	1.00								
2) Process innovation	4.56	1.08	0.76	1.00							
3) Market information	4.85	1.02	0.37	0.39	1.00						
4) Proactivity	5.55	0.79	0.41	0.41	0.42	1.00					
5) Gender	0.26	0.44	-0.01	-0.02	0.06	0.03	1.00				
6) Prev. experience	25.10	9.87	-0.06	-0.04	0.06	0.01	-0.13	1.00			
7) Business tenure	18.63	8.99	-0.07	-0.02	0.01	0.00	-0.13	0.68	1.00		
8) Firm size ^a	1.88	0.92	0.13	0.18	0.10	0.05	-0.11	0.09	0.10	1.00	
9) Firm age	17.66	11.57	-0.02	0.03	0.02	-0.03	-0.06	0.27	0.33	0.20	1.00

^a Logarithm. Items were transformed because of extreme skew and kurtosis

Note: Correlations higher than 0.14 are significant at the 0.01 level. Correlations higher than 0.10 are significant at the 0.05 level. US sample N=314, Slovene sample N=913

6 DISCUSSION AND IMPLICATIONS

This study makes several contributions to the literature in the field of innovation in SMEs, proactivity and market information by underscoring the importance of entrepreneur's personality characteristics for innovation performance of SME's.

Our first contribution lies in identifying an important boundary condition when market information generation leads to better innovation performance. Results of our study confirmed that a particular group of entrepreneurs (those who are more proactive) use market information better for the purpose of innovation. This finding is interesting since the majority of the previous research has focused on the direct effect of market information on innovation performance without addressing that this effect perhaps depends on the entrepreneur's capability to take an active role by initiating and creating changes. Second, our conceptual model contributes to the literature by investigating individual-level determinants on firm-level innovation. Most research in entrepreneurship fo-

Table 4: Results of the regression

Variable / model	US sample						Slovene sample					
	Base model		Independent effects		Interaction effects		Base model		Independent effects		Interaction effects	
	B	St.B	B	St.B	B	St.B	B	St.B	B	St.B	B	St.B
Product innovation												
Control Variables												
Gender	0.01	0.00	-0.04	-0.02	-0.07	-0.03	-0.01	-0.01	0.05	0.02	0.06	0.03
Prev. experience	0.01	0.06	0.00	0.04	0.00	0.04	0.01	0.01	0.01	0.09	0.01	0.10
Business tenure	-0.02 **	-0.20	-0.01 *	-0.15	-0.01 *	-0.15	-0.01	-0.01	-0.01	-0.11	-0.01	-0.11
Firm age	0.11 *	0.13	0.04	0.05	0.05	0.06	0.00	0.00	0.00	-0.03	0.00	-0.03
Firm size ^a	0.00	0.08	0.01 *	0.12	0.01 *	0.12	0.02	0.02	0.02	0.02	0.02	0.03
Independent variables												
Market information			0.16 ***	0.23	0.15 ***	0.21			0.19 *	0.16	0.18 *	0.15
Proactivity			0.29 ***	0.27	0.31 ***	0.28			0.50 ***	0.36	0.50 ***	0.37
MinxProb ^b					0.11 *	0.12					0.20 *	0.11
Model												
R ²	0.05		0.21		0.22		0.01		0.21		0.23	
Adjusted R ²	0.03		0.19		0.20		-0.01		0.19		0.20	
R ² change			0.16		0.01				0.20		0.02	
Process innovation												
Control Variables												
Gender	0.06	0.02	0.00	0.00	-0.02	-0.01	-0.07	-0.03	-0.02	-0.01	-0.01	-0.01
Prev. experience	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.05	0.00	0.02	0.00	0.04
Business tenure	-0.01	-0.11	-0.01	-0.06	-0.01	-0.06	0.00	-0.01	0.00	-0.04	0.00	-0.03
Firm age	0.12 **	0.15	0.05	0.06	0.05	0.06	0.00	0.01	0.00	0.02	0.00	0.02
Firm size ^a	0.00	-0.04	0.00	0.01	0.00	0.00	0.07	0.09	0.06	0.08	0.07	0.08
Independent variables												
Market information			0.19 ***	0.27	0.17 ***	0.25			0.24 ***	0.21	0.23 ***	0.20
Proactivity			0.30 ***	0.27	0.31 ***	0.29			0.42 ***	0.32	0.43 ***	0.32
MinxProb					0.07	0.08					0.22 **	0.13
Model												
R ²	0.03		0.22		0.23		0.01		0.20		0.23	
Adjusted R ²	0.02		0.21		0.21		-0.01		0.18		0.20	
R ² change			0.19		0.01				0.19		0.03	

a Logarithm; b Market information × Proactivity; * p < 0.05; ** p < 0.01; *** p < 0.001

cuses on within-level effects, such as the impact of individual cognitions on behaviours (Mitchell et al., 2004) or firm-level strategies on firm performance (Edelman, Brush & Manolova, 2005). More recent work has focused on between-level effects, including Hmieleski and Baron's (2009) study of individual optimism and firm performance, and Baron and Tang's (2011) study of the indirect impact of individual affect on venture performance, via individual creativity. In this study we add to the literature by analysing effects of an individual's proactivity on firm's innovation performance. Finally, our study also contributes to the current research on proactivity in entrepreneurship. Even though the role of proactivity has been the subject of interest in the entrepreneurship literature, until now only a few researchers have focused on its moderating role. By investigating the moderating effects, our study addresses recommendations by Grant and Ashford (2008, p. 20) who propose that if we wish to gain a complete understanding what effects proactivity has, researchers can use moderating effects. Our results indicate that entrepreneurs who are more proactive are more responsive to new information than others; which has a positive influence on SMEs innovation performance, product innovation in specifics.

In an increasingly globalizing business world, researchers (e.g. Kawakami, MacLachlan & Stingfellow, 2012; Xie, Song & Stringfellow, 1998) recognize the need to test theories in the contexts of different cultures. Our study shows varied results across cultures. The model of moderating effect was tested on datasets from two very diverse and contrasting economies: the United States and Slovenia. Slovenia differs markedly from the U.S. in terms of its level of economic development, entrepreneurship practice and size, suggesting the possibility of differences in the entrepreneurial context between these countries. The main effects model showed that both market information and proactivity were significantly and positively related to product and process innovation in both countries. When moderating effect of proactivity was added to the model, it was found to be positively and significantly related to product innovation in both samples, while the moderating effect of proactivity was positively and significantly related to process innovation only for the Slovene sample (for the U.S. sample it was not significant). This may be explained by Ornaghi's (2006) finding that product improvements have a larger technological diffusion and may be simpler to learn than process innovations, which are often linked to the skills of individuals. On the other hand, researchers (e.g. Nieto & Santamaria, 2010, p. 47) also emphasize that SMEs tend to concentrate their efforts more on product than process innovations. Results of Wolff and Pett's (2006) research shows that product improvement orientation is positively associated with growth and profitability in SMEs, whereas no relationship was found with process improvement orientation. As Nieto and Santamaria (2010) emphasize product innovations are better instruments for entering markets than process innovations since their characteristics enable them to answer client needs more quickly and capture new markets before competitors. In contrast, process innovations possess advantages that usually lead to productivity gains and cost reductions that indirectly affect market position.

Insights from our study bear several implications for business practitioners. The results of our study show that only proactive use of generated market information increases

innovation of SMEs. Being proactive means thinking and acting ahead - this means using foresight, therefore entrepreneurs should not only take time to scan the competitive environment, more importantly entrepreneurs should vision the future by predicting oncoming trends. However, when visioning the future, entrepreneurs should not neglect the present. The knowledge of the present (e.g. about industry, costumers, competition) is required for forecasting future events. Entrepreneurs can also build a proactive organization within their firm to foster innovativeness of all employees. Building of a proactive organization will enable SMEs to not only to overcome difficulties by proposing innovative solutions, but also of preventing them before their occurrences, thanks to qualities such as mind-openness, long-term vision, and intuition (Marcati, Guido & Peluso, 2008, p. 1588). Entrepreneurs can improve flexibility in their companies by encouraging proactive behaviour of their employees (for example, through giving more delegation of responsibilities or through education) or by recruiting appropriate human resources.

7 LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

We acknowledge several limitations to our study, which open avenues for future research.

First, since this study was conducted in two distinct countries at different stages of development in the United States and Slovenia, it would be interesting to compare the findings of this research to findings in other contextual venues, such as one of the BRIC countries (Brazil, Russia, India and China) which are positioned in the forefront of global growth. *Second*, although the model was carefully designed, it did not examine other potential moderators of the relationship between market information and innovation aside from proactivity. Despite empirical evidence indicating that proactivity moderates the relationship between market information and innovation performance, proactivity may also influence innovation through other mechanisms not specifically investigated here. *Third*, the results show differences between countries. Moderating effect of proactivity on process innovation was positive in the U.S. sample, but not statistically significant, while it was in the Slovene sample positive and significant. Further research can provide more explanations by considering additional country-specific variables that determine SME innovation performance. *Fourth*, future studies should also include type of industry as one of the firm characteristic variables so that one can compare differences across industry types. *Fifth*, longitudinal designs could be used in future research to further establish the linkages of market information and proactivity with the innovation performance. *Finally*, it would be also interesting to examine the relationships for companies operating in consumer markets vs. companies in B2B markets; or by taking turbulence in business environment into account.

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