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The Influence of Network Effects on SME Performance

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Abstract

The notions that firms are embedded within complex networks, and that managers spend time actively networking, have long been accepted by scholars within the Industrial Marketing and Purchasing (IMP) Group. However, an issue that has not received the same attention is an assessment of how these two facets; network structure and external networking behaviors affect SME performance. In assessing their antecedents, in this research we move beyond the traditional IMP literature, using emotional intelligence and entrepreneurial style to assess CEOs' managerial style. Network structure was assessed by the extent to which structural holes and degrees of centrality were present. Data was collected from 227 CEOs of small Iranian information technology companies. To test our hypotheses, we combined the use of structural equation modeling and social network analysis – a dual methodology that has not been adopted before. The results show that emotional intelligence drives entrepreneurial style, network structure and external networking behavior. SME performance is influenced by both network structure and external networking behavior. The mediating role of network structure is also discussed. Here our results show that entrepreneurial style does not influence external networking behavior. Several managerial implications of these findings are discussed.

Keywords

entrepreneurial networks; emotional intelligence; networking behaviors, network structure; social network analysis

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1. Introduction

A cornerstone of recent research in the Industrial Marketing and Purchasing (IMP) Group has been the recognition that, externally, firms are embedded in complex networks, and that this requires an internal response in the form of active networking behavior. These network structures can be argued to exist in different forms (Möller et al., 2005; Kowalkowski, et al., 2013) which also change over time (Håkansson et al., 2009). How best to identify and categorize different external networking behaviors has been explored in the recent literature by authors such as Ford et al. (2003) and Thornton et al. (2013). However, given the IMP Group's traditional expertise in case study research, empirical work that attempts to determine the extent to which network structure and/or external networking behavior determines company performance is rare. Recent innovative attempts have used aspects such as simulation (e.g. Følgesvold and Prenkert, 2009; Forkmann et al., 2012). This lack of data on empirical outcomes is perhaps surprising, given the extent to which it dominates much of the mainstream marketing literature (e.g. Palmatier et al., 2007; Jap and Anderson, 2003).

The importance of networks and networking for small and medium sized enterprises (SMEs) has been noted by a number of authors, given SME's need to gain access to other organizations' resources (Cova et al., 1994; Tikkanen, 1998; Partanen et al., 2008). In today's economy, the importance of SMEs and entrepreneurial activities has become even more prominent (Carree and Thurik, 1998). These companies are expected to play a vital role in helping nations rebuild their economies after the recession (Soininen et al., 2012). Within this megatrend, SMEs have attracted widespread research interest in the IMP Group (see for example Easton et al., 2002; Westerlund and Svahn, 2008). A number of scholars working from other perspectives have examined the factors influencing the profitability of SMEs (e.g. Hughes and Morgan, 2007; Qian and Li, 2003). Evidence from these studies suggests that entrepreneurial style (Soininen et al., 2012; Wiklund, 1999), emotional intelligence (Li and Sheng, 2011; O'Boyle et al., 2011), innovation capability (O'Dwyer et al., 2009; Weerawardena et al., 2006), as well as social capital and networking activities (Westerlund and Svahn, 2008; Partanen et al., 2008) can all impact the

performance of SMEs. Building on this literature, the main aim of our research is to shed light on those entrepreneurs' characteristics that influence SME performance by examining the mediating role of both network structure and external networking behavior.

Our study makes a number of contributions to the literature. First, we recognize that the importance of external networking behavior on performance has been highlighted by a number of studies on organizational behavior (Forret and Dougherty, 2004; Wolff and Moser, 2010). However, to our knowledge, no studies exist that investigate this association in the context of the way in which SMEs are more widely embedded, or with the specific focus on the CEOs' external networking behavior. Our research contributes to the existing studies on understanding the role of networks and networking by investigating the impact of CEOs' external networking behavior on SMEs' performance.

Second, the effect of the CEO on performance has long been studied in the strategic management and organization studies literature (for a comprehensive review see for example Blettner et al., 2012). In recent years, the contribution of brain research to strategic management research and practice has coined the term *"neurostrategy"* (Powell, 2011). In the neurostrategy research, a particular stream focuses on the role of the CEO's "*emotional intelligence"* and "*external networking behavior*". The current study benefits from this [*neurostrategy*] literature, and uses both ["*emotional intelligence"*] and ["*external networking behavior*"] in developing the conceptual model. It is worth noting that the majority of the earlier studies examining the independent impact of emotional intelligence and entrepreneurial style on performance underestimate the factors that may mediate the strength of relationships between the latter and the former. Our research adds to the existing contributions by examining how [network structure] and [external networking behavior] mediate the association between SMEs' performance and some of their antecedents [(emotional intelligence and entrepreneurial style)].

Finally, while recent research on SMEs has contributed considerably to our understanding, the primary focus of this work has been on single drivers of SME performance. Our study adds to the literature by providing a holistic overview of the factors impacting on SME performance. Building on the IMP Group's network theory, as well as on emotional intelligence and entrepreneurship theories, we examine concurrently the impact of emotional intelligence, entrepreneurial style, network structure and external networking behavior on performance.

The remainder of the paper is structured as follows. First, we provide a review of the relevant literature and then we formulate our hypotheses. We then describe the research methodology and go on to outline the results. The paper concludes with a discussion of the managerial implications and suggests directions for future research.

2. Research background and hypothesis development

The role of external networking for SMEs has become a major research theme (Tikkanen, 1998; Gilmore et al., 2006; Partanen et al., 2008; Westerlund et al., 2008). However, most of these studies emphasize social capital and networking activities, with little empirical focus on identifying the drivers of SME performance (e.g. Li et al., 2009; Merrilees et al., 2011). Grounded on the IMP literature and resource-based view of the firm regarding network structure and its impact on SME performance, and considering aspects of the emergent [neurostrategy] literature, the main aim of the current study is to examine the direct and indirect roles of CEOs' emotional intelligence and their entrepreneurial style on external networking behavior, network structure and SME performance.

It is widely recognized that networks and business relationships can considerably impact firms' ability to sustain and improve their competitive advantages (Ford et al., 2006). The IMP literature and the resource base view of the firm highlight the importance of accessing the resources that are not directly available to the firm, but are available through the network in which the firm is embedded (Håkansson and Snehota, 1989; Ford et al., 2006; Zaefarian et al., 2011). The role of networks becomes even more critical within the context of SMEs. While the survival of SMEs depends heavily on their ability to develop new knowledge, many suffer from the lack of resources essential for such activities (Partanen et al., 2008). The results of studies on SMEs suggest that only through building and maintaining a network of partners can SMEs innovate and thus effectively grow their business (Westerlund and Svahn, 2008; Cantù et al., 2010). Grounded on Social Network Theory (SNT), in this research we examine the association between network characteristics of CEOs and SME performance. In particular, we focus on two network characteristics: network structure and external networking behavior.

[Network structure] is an important factor in the acquisition of resources (Waluszewski, 2006) that can considerably impact SME performance (Mehra et al., 2001). Burt (1995) argues that the structure of the actor's network can result in higher rates of return. In this research, network

structure is considered as a multidimensional construct comprising structural holes and centrality (Burt, 1995; Wang and Fang, 2012). "A structural hole is defined as the absence of a link between two contacts who are both linked to an actor" (Brass et al., 2004, p 799). A structural hole between two groups of actors in a network does not mean that actors operating in different groups are unaware of each other, but that they tend to focus only on their own activities (Burt, 1992). While the information resources existing in groups of firms with structural holes vary considerably, actors within each group tend to have access to the same and thus redundant sources of information. The entrepreneur brokering the flow of information between two groups has more bargaining power and can also control and exploit opportunities better than others (Pitt et al., 2006).

Another network structure dimension that this research focuses on is the centrality. Centrality refers to the degree to which a firm is connected, either directly or indirectly, to other firms (Hardy et al., 2003). CEOs that are central in their network are likely to perform better, since they are in better position to not only tap into the strategic resources (Bond III et al., 2008) but also to recognize the potential of and absorb knowledge existing in their network (Borgatti and Halgin, 2011).

External networking behavior is one of the CEOs' behavioral characteristics. Literature suggests that firms can benefit from relationships derived from social networking (Morlacchi et al., 2005). The results of studies on organizational behavior indicate that external networking behavior is related to job performance (Thompson, 2005). [External networking behavior] in this research is defined as attempting to build, develop, maintain and use contacts (Ford et al., 2003). While external networking behavior is different from network structure (Michael and Yukl, 1993), surprisingly, to our best knowledge, there is no empirical study examining the association between external networking behavior and SME performance. In addressing this gap, we conceptualize external networking behavior as a multidimensional construct comprising building, maintaining, and using contacts (Wolff and Moser, 2006).

In addition to network characteristics, the neurostrategy literature suggests that emotional intelligence and entrepreneurial style can considerably influence SME performance (Li and Sheng, 2011; Soininen et al., 2012). Following the emotional intelligence theory, individuals' intelligence quotient (IQ) alone cannot explain the variation in their job performance, and thus the effects of other factors such as emotional intelligence should be also considered (Jamali et

al., 2008; Suliman and Al-Shaikh, 2007). Although no consensus exists on the definition of emotional intelligence, scholars agree that it is a strong predictor of performance both at the individual and organizational levels (Koman and Wolff, 2008). Following Van Rooy and Viswesvaran (2004), we define emotional intelligence as "the set of abilities (verbal and nonverbal) that enable a person to generate, recognize, express, understand, and evaluate their own, and others, emotions in order to guide thinking and action that successfully cope with environmental demands and pressures" (p.72). We also treat emotional intelligence as a higher order construct comprising emotional appraisal of self, others' emotional appraisal, regulation of emotion, and utilization of emotion (Wong and Law, 2002).

Finally, being more proactive than competitors, autonomous and motivated to innovate are all parts of entrepreneurial style (Li et al., 2009; Lumpkin and Dess, 1996). Entrepreneurial style, which is the driving force behind the organizational pursuit of entrepreneurial activities, is considered as organizational decision making inclined towards favoring entrepreneurial activities (Lumpkin and Dess, 1996; Covin and Wales, 2011). Advocates of resource advantage theory (Hunt and Morgan, 1996) consider entrepreneurial style as an organizational resource that can result in the creation of competitive advantages through not only increasing firms' ability to identify and explore market opportunities (Wiklund and Shepherd, 2003), but also improving firms' responsiveness in uncertain environments (Lumpkin and Dess, 1996). Researchers studying entrepreneurs have used different terms to describe orientations towards entrepreneurial activities such as entrepreneurial style, entrepreneurial orientation, intensity, style, posture and proclivity (Covin and Wales, 2011). In this vein, Basso et al. (2009) argue that Covin and Slevin's (1988) definition of "entrepreneurial style" is very similar to the definition of "entrepreneurial orientation". We thus use the term entrepreneurial style to refer to entrepreneurial activities and do not distinguish between these different labels. Entrepreneurial style in this research encompasses three dimensions, namely risk-taking, innovativeness, and proactiveness (Covin and Slevin, 1988).

Overall, building on the earlier contributions, this research focuses on how network structure and external networking behavior mediate the association between SMEs performance and its antecedents – here emotional intelligence and entrepreneurial style (see figure1).

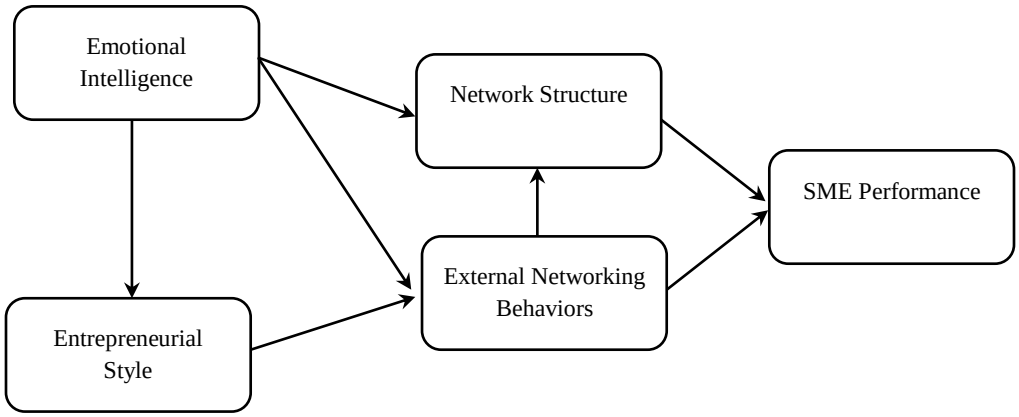


Figure1: Conceptual model

2.1. Emotional intelligence and entrepreneurial style

According to Covin and Slevin (1988), entrepreneurial style is composed of three aspects; risk-taking, innovativeness and proactiveness. Risk-taking refers to entrepreneurial decisions without full knowledge of the consequences (Vandekerckhove and Dentchev, 2005). It reflects a willingness to commit resources in high-risk and high-return businesses (Lee et al., 2001). Innovativeness reflects "*a firm's tendency to engage in and support new ideas, novelty*, experimentation, and creative processes that may result in new products, services, or technological processes" (Lumpkin and Dess, 1996, p. 142). Proactiveness is defined as being forward-looking, pursuing new opportunities and participating in emerging markets (Lee et al., 2001).

The question then arises as to what the link is between the various facets of the managers' emotional intelligence and how they behave in terms of their management style. There is evidence in the literature that emotional intelligence is related to different aspects of entrepreneurship research such as entrepreneurial behavior (Zampetakis et al., 2009), and also to entrepreneurial action (Brundin et al., 2008), both of which are analogous to entrepreneurial style. In this regard, Mair (2005) argued that the emotional intelligence of managers is related to

differences in entrepreneurial behavior. This is echoed by the work of Jones and Crompton (2009) and more particularly by Goss (2007), who argues that the extent to which opportunities are sought out – evidence of entrepreneurial style – is based upon an individual's emotional intelligence. Piperopoulos (2010) posited that managers with high emotional intelligence have more innovative and creative power. Such managers use emotional intelligence to communicate with others in better ways to enable and support creativity (Zhou and George, 2003). In addition, Rhee and White (2007) found that entrepreneurs try to decrease the feelings of risk taking in pursuing opportunities by utilizing their emotional intelligence. Recent work by Home (2011) has also focused on the extent to which values and attitudes (aspects of emotional intelligence) guide the managerial style and activities of entrepreneurs. Therefore, it seems that the higher the level of managers' emotional intelligence, the more they might be expected to act entrepreneurially. We therefore hypothesize with regard to the entrepreneurial style of managers:

H_1: Emotional intelligence is positively related to entrepreneurial style.

2.2. Emotional intelligence and SME performance: the mediating role of network structure

Earlier studies have indicated that entrepreneurship is an emotional process (Cardon et al., 2012). However, a number of scholars argue that the importance of emotional intelligence is neglected in entrepreneurship research (Cross and Travaglione, 2003; Piperopoulos, 2010). Emotional intelligence refers to the ability of expression of emotion in oneself and others, and also, discriminates among them (Salovey and Mayer, 1990). Previous studies suggest certain associations between emotional intelligence and performance both at the individual and organizational level (e.g. Akgün et al., 2007; Lam and Kirby, 2002; Wong and Law, 2002). For instance, following Wong and Law (2002), individuals with high levels of emotional intelligence are in a better position to adjust their response tendencies and thus, they interact with others in a more effective manner. Furthermore, it has been shown that emotional capabilities can significantly impact performance through facilitating group tasks (O'Boyle et al., 2011). Akgün et al. (2007) argue that emotional intelligence improves performance since it facilitates learning capabilities and product innovativeness.

We argue that the impact of emotional intelligence on organizational performance is mediated by the network structure. On one hand, emotional intelligence is expected to be an antecedent of

network structure. The underlying logic is that network structure is a function of an individual's people skills (Partanen et al., 2008). As an example, an individual occupying a central position in a network should have better opportunities to develop and maintain relationships with others. Moreover, while there are many reasons behind the existence of structural holes (e.g. age diversity) (Balkundi et al., 2007), it is self-evident that such disconnections between team members may emerge as a results of managers' lack of people-focused emotional intelligence.

On the other hand, empirical evidence suggests that network structure can significantly influence the performance of the firm (Burt, 1992; Wang and Fang, 2012). As mentioned earlier, we focus on two dimensions of network structure: structural holes and centrality. Following Burt (1995), networks rich in having no redundant contacts are rich in structural holes, and therefore they have more entrepreneurial opportunities, information and control benefits. Moreover, there is evidence that the number of structural holes is positively related to idea identification and the recognition of opportunities (Singh et al., 2000). In addition, Gassenheimer et al., (2007) argue that actors who know how to regulate structural holes can positively impact the network's performance through enhancing cooperation. Centrality is another structural characteristic of the network. Individuals occupying a central position in networks can acquire non-redundant and diverse information more quickly than others (Hirunyawipada et al., 2010), which leads to innovative performance in companies. Occupying a central position in a network generates competitive advantage since it increases the accessibility of unique sources of knowledge and information (Tsai, 2001).

Overall, given the close association between emotional intelligence and network structure on one hand, and network structure and performance on the other, we anticipate that network structure mediates the association between emotional intelligence and SME performance. We can thus formulate the following hypothesis:

> **H_2:** Network structure mediates the joint relationship between emotional intelligence and SME performance.

2.3. Emotional intelligence and SME performance: the mediating role of networking behavior

Prior studies mostly examine the consequence of networking and have paid less attention to antecedents of external networking behavior (Gilmore et al., 2006; Chetty and Agndal, 2008).

Evidence suggests that emotional intelligence is significantly related to network building, which is a key political skill (Welch et al., 1996; Ferris et al., 2005). According to Freshman and Rubino (2004), emotional intelligence is a skill that can be acquired by appropriate managerial training, and it can have a positive effect on networking. In this vein, O'Neill (2009) discussed the potential influence of emotional intelligence on the success rate of networking, and considers it as a challenging area in network research which should be taken into account in future research. Thus, it is anticipated that CEOs with higher levels of emotional intelligence are associated with enhancing external networking behavior.

In addition, it is expected that external networking behavior is related to SME performance. External networking behavior is a set of strategies and tactics to connect to others (Ford and Mouzas, 2013; Thornton et al., 2013). Prior studies use different terms related to external networking behavior in different contexts (Äyväri and Möller, 2008; Ritter and Gemünden, 2003). Mort and Weerawardena (2006), for instance, use "networking capability" in the context of born global firms. They find that networking is associated with exploration and exploitation of market opportunities and also firm's international market performance. The main goal of external networking behavior is to build relationships that enhance work performance (Wolff, Moser, and Grau, 2008). Networking with other people allows managers to access new resources, opportunities and information, which can lead to desired SME performance. We thus formulate the following hypothesis:

> **H_3:** External networking behavior mediates the joint relationship between emotional intelligence and SME performance.

2.4. Entrepreneurial style and SME performance: the mediating role of network behavior

The association between entrepreneurial style and performance has been highlighted by many studies over the past decades (Li et al., 2009; Zahra and Covin, 1995). Entrepreneurial aspects such as innovativeness, proactiveness and risk taking carry valuable rewards in terms of organizational performance, since they represent the firm's philosophy of how to conduct a business especially in hostile or technologically sophisticated environments (Lisboa et al., 2011). Furthermore, empirical results suggest that entrepreneurial style improves the performance of a firm through promoting service, product and process innovations (Zahra, 1991; Zahra, 1993; Li et al., 2009). However, the results of some of the prior studies indicate that the relationship

between entrepreneurial style and organizational success is not as straightforward as often expected (Hughes and Morgan, 2007). Researchers such as Wiklund and Shepherd (2005) and Li et al., (2009) argue that studies that merely investigate the direct association between the former and the latter provide an incomplete picture by ignoring the factors that may mediate the impact of entrepreneurial style on firms' performance. Similar to Barney's (1991) rationalization, we believe that while entrepreneurial style is crucial for SME success, it is not sufficient for value creation on its own.

The entrepreneurial style of CEOs, which is the orientation of the managers towards entrepreneurial activities, has a critical role in building external relationships. Extant literature suggests that the personal network of CEOs is a vital resource for SMEs (Johannisson, 1995). In entrepreneurial SMEs, personal networks become critically important because they are the main determinant of the network size of those SMEs. This is due to the fact that at the early stage of growth, the firm's network is relatively small and develops mainly through the personal contacts of the CEO (Lechner and Dowling, 2003). Entrepreneurs tend to exploit their personal network as much as possible to develop their organizational networks. In this way, these owner-managers (i.e. CEOs) are able to get access to more of the strategic resources that are available in their embedded networks. We can therefore argue that entrepreneurs who score highly in pioneering and innovative orientation tend to utilize more external networking behavior in order to acquire more critical resources (Ramachandran and Ramnarayan, 1993).

External networking behavior enables SMEs to achieve a more strategic position within their embedded network. Hence, based on the IMP view and aspects of the resource dependence theory, we envisage that those CEOs who utilize more fully their external networking behaviors are in a better position to acquire those strategic resources that are crucial to the success of their firms (Ford and Mouzas, 2013; Thornton et al., 2013). As a result, external networking behavior could act as a facilitator that can enhance the strategic position of the SME, which then consequently leads to higher performance. In the same vein, Brauckmann and Pashiardis (2011) suggest that entrepreneurial style positively influences external networking and resource acquisition of the firm. Entrepreneurial style can therefore be considered as conducive to the development of the external network. In addition, firms with strong networks are more likely to achieve superior performance since they are better able to anticipate new customers' preferences and competitors' actions (Walter et al., 2006). We thus put forward the following hypothesis:

H_4: External networking behavior mediates the joint relationship between entrepreneurial style and SME performance.

2.5. External networking behavior and network structure

External networking behavior in the IMP literature refers to "the conscious attempts of an actor to change or develop the process of interaction or the structure of relationships in which it is directly or indirectly involved*"* (Ford and Mouzas, 2013, p. 433). External networking behavior, from this view, is seen as a sequential process of actions, reactions and re-reactions by all actors involved in the network. From this viewpoint, networking is the process through which actors in an embedded network interact with each other, consequently influencing the structure of the network (Ford and Mouzas, 2013; Thornton et al., 2013).

In the entrepreneurship literature, the view on networking behavior is not fundamentally different from the view of the IMP Group. de Janasz and Forret (2008) believe that external networking behavior is one of the key components of social capital. An entrepreneur who has expertise in external networking behavior is more likely to find, develop and maintain effective relationships with rich, powerful and authoritative persons who have non-redundant relationships with other contacts in the entrepreneur's network (Batjargal, 2010b). In other words, an entrepreneur with superior external networking behavioral skills is seen as a master chess player who tries to select, build and use relationships with others to achieve a better strategic position in the network to facilitate access to more strategic resources. According to Ferris et al. (2007), networking ability is the craft of developing and using diverse networks of people.

Prior studies also suggest that the networking skill of the entrepreneur significantly impacts on the structure of the network as measured via structural holes (Cova et al., 1994; Batjargal, 2010b). Similarly, the study carried out by Wolff and Moser (2006) stated that the external networking behavior of individuals can considerably influence the network structure. Owner-managers (i.e. CEOs of SMEs) utilize external networking behavior with the aim of influencing the structure of the personal and non-personal networks within which they are embedded. Such activities help managers to gain a more strategic position in their network by having a higher betweenness centrality and control of a higher number of structural holes. By achieving a more

strategic position, the managers of these SMEs gain access to more critical resources that are vital in enhancing SME performance. We therefore assert the following hypothesis:

> **H_5:** External networking behavior is positively related to network structure.

3. Methodology

3.1.Survey Procedure and Sample

The participants for this study were drawn from a list of over 1,700 CEOs of small Iranian information technology companies, which were identified as entrepreneurial companies in the High Council of Informatics[1] all of whom were located in Tehran. Information technology companies have constituted a rapidly growing segment of the economy in Iran in recent years, and for this reason have significant potential to reshape the economy (Albadvi, 2004). The share of Gross Domestic Product (GDP) generated by Information Technology in Iran is expected to reach 2% in the current fifth 5-year national development plan (IT share of GDP, 2012). Information technology can be considered as one of the fastest sources of job creation and financial turnover, which can help developing countries like Iran. Information technology is thus an effective tool for leading rapid economic and social growth. In this regard, Iran allocated 2% of the national budget for research in Information Technology Asemi (2006). We selected only those companies with fewer than 50 staff and which had also been in existence for less than 10 years. We limited our sample to these firms to ensure that the companies were relatively young and entrepreneurial in nature. For these reasons, our sample pool dropped to 528 companies. We then randomly selected 390 companies with complete contact information for inclusion in the study.

We made initial telephone contact with the CEOs of these companies to explain the purpose of the study and assure them of the confidentiality of the data. We also made sure that the companies were entrepreneurial in nature by enquiring as to how often they actively searched for new opportunities and/or introduced new products compared to their main competitors, and

[1] The High Council of Informatics is a governmental council established in 1980 in order to regulate the informatics industry in Iran

actively not selecting those that did not engage in such activities. The initial telephone contact approach has been practiced before and proved to increase response rates (Fang et al., 2008).

In the next step, we arranged for a face-to-face meeting with these CEOs to further explain the questionnaire and assure them of anonymity. The original English version of the questionnaire was translated into Farsi, and then translated back to English to ensure translation equivalence. A total of 227 questionnaires were collected giving a 58.2% response rate. Of the 227 respondents, 97.8% were male, and 2.2% were female. Some 89% of respondents had a higher education qualification; 64% had been CEOs for less than 5 years, while 32% had been CEOs for between 5 and 15 years. On average, these CEOs had 4 years of work experience before taking up their current position.

3.2.Measures

We adapted existing scales to our context to reduce concerns regarding the validity and reliability of our measurement scales. All the constructs, except for network structure, are reflective, and use a five-point Likert scale, ranging from "strongly disagree" (1), to "strongly agree" (5). To measure network structure, we used a separate social network analysis survey (see Appendix A). The operationalization of our measurement scales is explained below (the purified measurement items are listed in the Appendix B).

Network structure:

Network structure has been a major focus of research within the IMP Group (e.g. Ford et al., 2003). An actor in a network is linked to other actors in the network through their interaction with each other. Researchers often use structural holes and centrality to describe the structure of a network. We therefore operationalize network structure as a reflective construct made up of these two dimensions. To measure the network structure of a focal CEO, we asked participants to complete a specifically designed matrix that captured both the link and the strength of the link among a total of 11 individuals that the focal CEO (i.e. the participant) recognized as their embedded network. We then used social network analysis to calculate the "structural holes" and "centrality" dimensions of the network structure for any given CEO (see Appendix A).

Structural holes: Structural holes are measured as the number of distant ties in the ego-centered network of each respondent. The measurement for structural holes was operationalized using the constraint approach of Burt (1995). In this approach, the constraint of the network refers to the

extent to which a person's contacts are redundant. In other words, an actor's level of constraint is his/her inability to span structural holes. The level of constraint of the whole network is high if the contacts of actors are directly connected to one another or indirectly connected through a central actor (Burt, 2000).

Centrality: The interaction between two actors who are not adjacent is often facilitated by other actors embedded in the same network, particularly by those actors that lie on the paths between these nonadjacent actors. The literature argues that these intermediary actors might potentially have or develop control over the interaction between these nonadjacent actors. Thus centrality of an actor within the embedded network becomes a source of competitive advantage. An actor is central when he/she resides in between the direct path of many actors. This notion gives rise to the concept of betweenness, which is a useful way to measure network centrality (Wasserman and Faust, 1994). Betweenness centrality is the shortest path between any two randomly chosen actors (Wasserman and Faust, 1994). The betweenness score is a useful indication of the extent to which individuals can control communication (Freeman, 1979) and resource flows between actors (Swaminathan and Moorman, 2009).

Entrepreneurial style

Entrepreneurial style in this study was measured with six items adopted from Covin and Slevin (1988) to capture the orientation of the entrepreneurial activities (i.e. the entrepreneurial style) of the focal CEO. Several previous studies including Sadler-Smith et al., (2001), Chaston (2008), Jogaratnam and Tse (2006), and Brockman and Morgan (2003) have also utilized this measurement scale and have confirmed its validity and reliability.

Emotional intelligence

We used the WLEIS scale, which is a self-reported scale to measure emotional intelligence (Wong and Law, 2002). This scale is consistent with Mayer and Salovey's (1997) definition of emotional intelligence. In line with its original conceptualization, the WLEIS scale in this study was operationalized as a higher order construct that consisted of four second order factors, namely self-emotional appraisal (SEA) (4 items), others' emotional appraisal (OEA) (4 items), regulation of emotions (ROE) (4 items), and utilization of emotions (UOE) (4 items). The

WLEIS scale is frequently used in the literature to measure emotional intelligence (e.g. Kong and Zhao, 2013; Wong and Law, 2002; Zampetakis et al., 2009).

External networking behavior

Networking behavior is defined as building, maintaining and using relationships (Wolff and Moser, 2006) and has two facets, namely internal and external networking behavior. According to Michael and Yukl (1993), internal and external networking refers to networking within and outside the organization. Because of the nature of SMEs, internal networking within the company is of little interest to studies focusing on the embedded network of a firm (Wolff and Moser, 2006). Therefore, we used solely external networking behavior with 9 items adopted from Wolff and Moser (2006) to reflect the extent of networking of CEOs with others outside the company. In line with its original conceptualization, external networking behavior in this study was operationalized as a higher order construct that was comprised of three first order constructs that captured building, maintaining and using relationships.

Performance

Performance, like many other constructs in the marketing discipline, is a complex multidimensional construct that has a multi-faceted nature. Consequently, it can be measured using a variety of dimensions (Olson et al., 2005). Ittner and Larcker (1997, p. 17) argued that performance should "*encompass not only the organization's performa*nce on the preceding dimensions, but also any other financial and nonfinancial goals that may be important to the organization". Based on their argument, several studies have introduced different financial and nonfinancial goals as measures of performance. Furthermore, it has been shown in the literature that objective performance data and subjective assessment of performance through key informants have a strong, positive correlation (Morgan et al. 2004). Despite the wide range of performance scales that exist in the literature, many studies have utilized Jaworski and Kohli's (1993) global measure of firm performance "because of its relevance despite the nature of the contextual influences" (Olson et al., 2005, p 55). Utilizing the same measure, SME performance in this study was comprised of three items. These measured the overall performance of the SME last year, the overall performance relative to major competitors last year, and top management's

satisfaction with overall performance last year. These scales were adapted from those of Jaworski and Kohli (1993).

Control variables

We used two control variables in our analyses. First, we controlled for company size by including only those companies with fewer than 50 staff. Secondly, we also controlled for the length of time that the company had been in operation, which was under 10 years in all cases.

4. Analysis and results

4.1. Measurement model

After the surveys were collected, the data on ties among the actors was entered into the matrix. We used a name generator to collect data from the network. The name generator is the most commonly used method in the network literature (Marsden, 2005). We asked participants to generate a total of 10 names with whom they had discussed issues about their job/company/industry over the previous six months. We then asked them to assess the strength of the relationship between the various people listed in their matrix. This was done by asking them to identify the strength of relationships between contacts, scoring 1.0 for especially close, 0.4 for neither distant nor especially close, and 0 for distant relationships. This approach is in line with Burt's (2004) suggestion of scoring 1.0, 0.4 and 0 for contacts classified as often, some, and rare, respectively. These numbers were entered into the relevant matrix cells. We used UCINET (Borgatti et al., 2002), [version 6.347] to calculate network centrality and structural hole scores from the individual self-reported data (see Appendix A).

The first step of the analysis was to assess the measurement model through utilizing confirmatory factor analysis (CFA), using Amos 18. We used maximum likelihood (ML) for the estimation procedure. This method has been a widely used estimation procedure for CFA (Byrne, 1998). After removing two items that performed poorly (one from the SME performance construct and one from the entrepreneurial style construct), the purified overall confirmatory measurement model comprising all reflective constructs indicated a good fit (Byrne, 1998): $\chi^2_{(df=513)} = 686$, p = .000, goodness of fit index (GFI) = .85, incremental fit indices (IFI) = .93, comparative fit index (CFI) = .93, root mean square residual (RMSR) = .04, and root mean square error of approximation (RMSEA) = .039. These criteria collectively confirmed that all the

constructs utilized in our model satisfied the requirements of unidimensionality. Although the chi-square statistic was significant, this is acceptable because as the sample size increases, so too does the chance of rejecting a valid model (Bagozzi and Yi, 1988). Factor loadings for the remaining 34 items were significant, ranging from .60 to .86, supporting the convergent validity (see Appendix B for item loadings).

We confirmed the reliability of our measurement model in three different ways. First, we calculated the average variance extracted (AVE) for each construct in our model. The value of AVE that is generally recommended in the literature as being acceptable is 0.5 (Bagozzi et al., 1991), however, some researchers have suggested that the minimum acceptable value is 0.4 (e.g. (Diamantopoulos and Siguaw, 2000). All AVEs for our measurement model are 0.41 or above, and so are within the acceptable range (Diamantopoulos and Siguaw, 2000) (Table 1).

Insert Table 1 about here

Secondly, we calculated the composite reliability for the constructs; which ranged from .72 to .82 which exceeded the recommended level of .6 (Bagozzi and Yi, 1988).

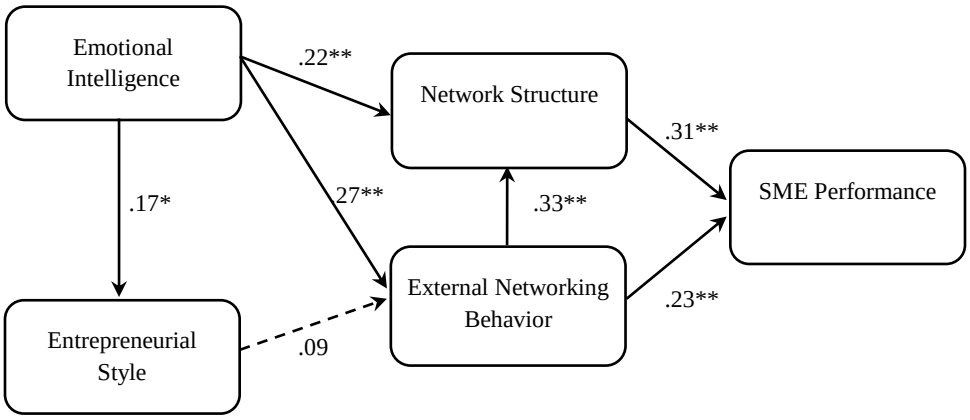
Thirdly, to assess the internal consistency of the scales we calculated the Cronbach alphas for each construct, and compared it against the composite reliability. All Cronbach alpha coefficients were greater than .7, which is acceptable for construct reliabilities (Hair et al., 2010). To evaluate discriminant validity, we utilized the AVE scores calculated earlier, all of which are higher than the squared correlations for any possible pair of constructs they represent (see table 1), thereby supporting the discriminant validity of the constructs in our model.

4.2. Structural model

As the model contained both direct and indirect effects, we used Structural Equation Modeling (SEM) to assess all relationships simultaneously. Fit indices indicate an adequate fit for the structural model: $\chi^2_{(df=513)} = 680$, p = .000, GFI = .85, IFI = .94, CFI = .93, RMR = .04, RMSEA = .038. We therefore conclude that the model fit is acceptable for hypothesis testing.

As shown in Figure 2, all paths are significant except for the impact of entrepreneurial style on external networking behavior (β =0.09, P>0.05). In particular, the impact of emotional intelligence on entrepreneurial style is positive and significant (β= 0.17, P< 0.05). This result gives support to our first hypothesis. In addition, the results indicate that external networking

behavior positively influences network structure (β = 0.33, P< 0.01), confirming our fifth hypothesis.



*: P<0.05
**: P<0.01

Figure 2: Path analysis results

4.3. Mediating test results

To test our mediating hypotheses, we followed the approach of MacKinnon et al. (2002). They suggest that Z fully mediates the link between X and Y when both direct paths from X to Z and from Z to Y are significant, while the direct path from X to Y is not significant. In cases where this latter path is also significant, Z will be a partial mediator of the path between X and Y.

As shown in Figure 2, we found that entrepreneurial style does not significantly impact on external networking behavior. This finding has a direct implication for hypothesis H_4. Since the direct path from entrepreneurial style to external networking behavior is not significant, H_4 is rejected. The remaining two hypotheses (i.e. H_2 and H_3) meet the first criteria for mediation. For H_2, both direct paths from emotional intelligence to network structure (β= 0.22, P< 0.01) and from network structure to SME performance (β= 0.31, P< 0.01) are significant. For H_3, the path from emotional intelligence to external networking behavior is significant (β= 0.27, P< 0.01) and external networking behavior to SME performance (β= 0.23, P< 0.01) is significant. Having demonstrated this, we can move on to test the second criteria i.e. to test whether the

direct path from emotional intelligence to SME performance for H_2 and H_3 is significant. In doing so, we used the chi-square difference test, which is a common approach in structural equation modeling (Hair et al., 2010). Mediation tests can be done through comparing two rival nested models using the chi-square change technique.

In testing each hypothesis, we compared the chi-square for two rival models: model (a), in which the exogenous variable is linked to the endogenous mediator variable and subsequently the mediator variable is linked to the criterion variable; and model (b), which is the same as model (a) but we also added the direct link from exogenous variables to the criterion variable. The mediating hypothesis is supported when the changes in the two nested models' chi-square exceeds the minimum requirement of 3.84, which is the level of significance for chi-square with one degree of freedom.

Comparing the change of models' chi-square from the SEM test revealed that $\Delta\chi^2$ between model (a) and model (b) for H_2 and H_3 is 0.664, which is below the accepted cut-off point of 3.84 (Table 2). This indicates that the direct path from emotional intelligence to SME performance is not significant. Thus our Hypothesis Two and Hypothesis Three are supported, i.e. network structure fully mediates the link between emotional intelligence and SME performance. In addition, external networking behavior fully mediates the link between emotional intelligence and SME performance.

Insert Table 2 about here

Since we used the same source to measure both dependent and independent variables in our model, we needed to examine whether common method variance (CMV) may have artificially inflated the beta coefficients of the paths in our model. To assess the potential impact of this bias, we re-estimated our structural model with the addition of a new first-order construct we named "common method". All items in our model were added to this first-order construct in addition to their pre-identified theoretical construct, as suggested by Podsakoff et al., (2003). We examined the significance of the structural parameters both with and without the latent first-order common method factor. Those paths that were significant when we did not control for the CMV remained significant when we added this ["common method"] factor, and the path from [entrepreneurial style] to [external networking behavior], which was not significant, remained

insignificant when we added the common method factor. This result suggests that CMV does not have a significant effect on the results of our study.

5. Discussion and conclusion

This research aims to further our knowledge about SME performance by investigating the information technology sector in Iran. We suggest that prior research has focused mostly on the consequences of network structure and external networking behavior on SME performance, with less attention having been paid to the antecedents of these two constructs. For this reason, based on our reading of the relevant literature, we proposed emotional intelligence and entrepreneurial style as antecedents of network structure and external networking behavior, both of which consequently impact upon SME performance. Although this involved incorporating literature that is not typically utilized in IMP-type studies, the results do seem to vindicate our approach.

Our data analyses indicates the strong overall impact of emotional intelligence on both external networking behavior and network structure, as well as a positive and significant impact of network structure and external networking behavior on SME performance. In addition, our analyses suggest that there is no significant relationship between entrepreneurial style and external networking behavior. A number of important issues arise from these findings.

The first relates to the identification of the overall importance of emotional intelligence, which has an impact on both network structure and external networking behavior. The implication of this finding is that CEOs are more likely to occupy brokerage positions by bridging "structural holes" when they are high in emotional intelligence. In addition, the findings reveal that network structure mediates the impacts of emotional intelligence on SME performance. In other words, the study's findings show the mechanism through which emotional intelligence is related to SME performance.

Our analyses revealed that network structure, which comprises "structural holes" and "network centrality", positively impacts on SME performance. The importance of position in network structure is well documented in network research (Batjargal, 2010b; Burt, 1995) and here, our findings are consistent with these previous studies (Batjargal, 2010a; Mehra et al., 2001). Treating these two dimensions together, one can argue that actors who can maneuver themselves into a network position where they occupy a structural hole, in effect acting as an intermediary in connecting two actors in the network, and who, at the same time, are highly connected to others

(i.e. score well on network betweenness centrality) gain a double advantage. The first accrues because of the valuable information flow that they potentially control, being able to manage selectively what information is passed on to whom in the network. However, the study's results confirm that being high in emotional intelligence significantly influences entrepreneurial networking behavior (Mair, 2005; Zampetakis et al., 2009).

Contrary to our expectations, the relationship between entrepreneurial style and external networking behavior was not significant. For the CEOs in the information technology sector where our data was collected, it seems that their entrepreneurial style is not very important in influencing their external networking behaviors. A possible explanation for this finding could come from considering the context. The market in Iran is turbulent and access to resources is very limited. As a result, market opportunities are also limited, and lobbying plays an important role in grasping these opportunities. In such situations, what brings success to the firm is the ability of its top management to strategically position themselves in embedded networks in ways that provide them with some competitive advantage. It seems that CEOs are being judged to be higher performers when they engage in external networking behavior as a strategy to explore and exploit opportunities, and also when they obtain a central position in the network structure or span their structural holes to arbitrage information. In this vein, managers with high emotional intelligence levels can use their skills to have broader networks.

Further, the study shows that external networking behaviors significantly impact the network structure. This is consistent with existing evidence indicating that external networking behavior is a significant antecedent of network structure (Thompson, 2005; Wolff and Moser, 2006). Thus one can conclude that Iranian CEOs in the information technology sector prefer to use emotional intelligence rather than to act entrepreneurially: how they utilize their emotions in interacting with others is more important than their entrepreneurial actions in manipulating their networks, which consequently leads to better SME performance.

5.1. Theoretical contribution

The question of what constitutes a theoretical contribution is raised by Corley and Gioia (2011), who argue that the dimensions of both originality and utility need to be assessed, with the former being either revelatory or incremental, and utility being regarded as either scientifically or practically useful. They accept that "incremental improvement is arguably a necessary aspect of

organizational research" (p. 16), and we would see our contribution as being in this field, rather than revelatory. We argue however that this research has made a contribution two ways. The first is in a practical way: for we offer insights into how managers need to focus on improving both their network structure and networking behaviors to improve performance. The second is in terms of methodology, for we have shown how two different research methods, structural equation modeling and social network analysis, can be combined to produce insightful results.

Social network theories have mainly focused on the consequences of network structure (Borgatti and Foster, 2003; Hoang and Antoncic, 2003). The results of this study reveal that emotional intelligence can be considered as an antecedent to structural holes and centrality in entrepreneurial networks. This study's findings contribute to network theories, explaining why some entrepreneurs can obtain a central position in a network structure or span structural holes, while others do not. Previous studies have tested the relationship between emotional intelligence and SME performance (e.g. Akgün et al., 2007; Lam and Kirby, 2002; Wong and Law, 2002), but the mechanism through which this occurs was not clear. This study suggests that network structure fully mediates the relationship between the emotional intelligence of CEOs and their firms' performance.

In addition, this study adds to the literature on emotional intelligence theory by showing that emotional intelligence can enhance entrepreneurial style. A final contribution of this study is to shed light on the fully mediating role of external networking behavior in the relationship between emotional intelligence and SME performance.

5.2. Managerial contribution

These findings have clear implications for the practicing manager. Our results reveal that the emotional intelligence of CEOs provides an explanation for their occupying a particular position in the network. From this we concur with the findings of O'Neill (2009), that higher levels of emotional intelligence can lead to better networking. Our findings indicate that CEOs who have high levels of emotional intelligence have more chance of spanning structural holes and of moving towards a central position in their network. However, the important managerial implication here is that emotional intelligence is a skill that can be acquired by appropriate managerial training (Goleman, 1995; Freshman and Rubino, 2004). This suggests that a firm's

network position is not necessarily ‘given’ – proactive training can lead to higher levels of emotional intelligence, which, in turn, can lead to a better network position.

Our results also show that managers who have inherently high levels of emotional intelligence, or who acquire it, seem to be better at both managing themselves into a good network position and of exploiting it once they are in position. It would appear that having a good network structure comes from interacting with as many other people as possible (high betweenness centrality), but somehow, at the same time, preventing them from interacting with each other (structural holes).

This study can be used to encourage managers of SMEs to enhance their emotional intelligence which, through proactive management, can lead to a better position in the network structure. Findings also reveal that emotional intelligence provides an explanation for the entrepreneurial style of managers. Top managers can promote emotional intelligence by training to enhance their entrepreneurial orientation. In addition, managers should be aware that external networking behavior significantly relates to emotional intelligence. Therefore, improving the level of emotional intelligence can enhance external networking behavior. The results also provide insights for those CEOs in the information technology sector who want to extend their entrepreneurial ability. In other words, this study provides important information for the manager to choose appropriate networking strategies to enhance SME performance.

5.3. Limitations and future research

Like all research, the present study has a number of potential limitations. We asked participants to generate a maximum of 10 names to capture their network structure, but this number might be insufficient to fully capture the actual network of participants. Additionally, the CEOs may not have spent sufficient time thinking about the colleagues that best constitute their network, although we would argue that face-to-face data collection would have gone some way to overcome this. The measurement approach for entrepreneurial orientation/style also accounts for another limitation in this research. Researchers have interchangeably used different terms such as entrepreneurial orientation, intensity, style, posture and proclivity to describe orientations towards entrepreneurial activities (Covin and Wales, 2011). [Entrepreneurial style] in this research encompasses three dimensions, namely risk-taking, innovativeness and proactiveness.

Future studies can include other dimensions such as autonomy and competitive aggressiveness to measure entrepreneurial orientation of the companies.

Another limitation is related to culture: this study was conducted in the context of Iranian culture, and different results may arise in other cultures or contexts. Self-report measures were used in this study, which often create concerns about common method variance and problems of social desirability.

While we found that the network structure of CEOs greatly enhances SME performance, we also found that entrepreneurial styles do not have any significant effects on external networking behavior. Future studies could pay attention to other aspects of entrepreneurship. This research was conducted in the context of the information technology sector in Iran. To test the general validity, future research efforts should replicate this study in more heterogeneous contexts. Future lines of research could also explore other dimensions of network structure such as size, density, diversity, etc. Further research could investigate whether business intelligence and creative intelligence are similarly related to network structure. Additionally, they should conduct longitudinal research based on the variables that are explored in this study. Finally, given the gender ratios in the sample used, studies are needed to examine the possible differences between external networking behavior in males and females.

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Appendix A: The matrix for capturing network structure

Name										
	1	1								
	2		2							
	3			3						
	4				4					
	5					5				
	6						6			
	7							7		
	8								8	
	9									9
	10									

Appendix B: Measurement items and confirmatory factor analysis factor (CFA) loadings

Constructs	Factor Loadings
Emotional Intelligence (Wong & Law, 2002)	
Self Emotional Appraisal	
1. I have a good sense of why I have certain feelings most of the time.	.69
2. I have good understanding of my own emotions.	.64
3. I really understand what I feel.	.74
4. I always know whether or not I am happy.	.73
Others' Emotional Appraisal	
5. I always know my friends' emotions from their behavior.	.65
6. I am a good observer of others' emotions.	.65
7. I am sensitive to the feelings and emotions of others.	.72
8. I have good understanding of the emotions of people around me.	.63
Utilization of Emotions	
9. I always set goals for myself and then try my best to achieve them.	.60
10. I always tell myself I am a competent person.	.67
11. I am a self-motivated person.	.65
12. I would always encourage myself to try my best.	.66
Regulation of Emotions	
13. I am able to control my temper and handle difficulties rationally.	.67
14. I am quite capable of controlling my own emotions.	.65
15. I can always calm down quickly when I am very angry. *	.61
16. I have good control of my own emotions.	.66
External networking behaviors (Wolff & Moser, 2006)	
Building Contacts	
1. I develop informal contacts with professionals outside the organization, in order to have personal links beyond the company.	.63
2. I take part in professional association meetings (e.g., trade union, Chambers of Commerce, etc.).	.73
3. I use business trips or training programs to build new contacts.	.73
Maintaining Contacts	
4. When I obtain informal information that might be of importance to acquaintances from other organizations, I pass it on to them.	.68
5. I use my contacts outside my company, to ask for business advice.	.69
6. For business purposes I keep in contact with former colleagues.	.66
Using Contacts	

7. If I meet acquaintances from other organizations, I approach them to catch up on news and changes in their professional lives.	.66
8. I exchange professional tips and hints with acquaintances from other organizations.	.68
9. When I can't solve a problem at work I call acquaintances from other organizations and ask for advice.	.70
Entrepreneurial Style (Covin & Slevin, 1988)	
1. In top level decision-making, the use of the entrepreneurial mode, characterized by active search for big new opportunities; large, bold decisions despite the uncertainty of their outcomes; a charismatic decision-maker at the top wielding great power; and rapid growth as the dominant organizational goal	.68
2. More new products as compared with main competitors.	.67
3. Changes in products have usually been radical as compared with main competitors.	.63
4. Typically we initiate actions to which competitors then respond	.61
5. We are very often the first business to introduce new products	.60
SME Performance (Jaworski & Kohli, 1993)	
1. Overall performance of the business unit last year.	.76
2. Overall performance relative to major competitors last year.	.83
Network Structure(Burt, 1995)	
1. Structural holes	.88
2. Centrality	.78

Table 1: Mean, Standard Deviation, Cronbach's Alpha, AVE, Correlation Matrix and Composite reliability

		M	SD	CR	α	Correlations									
						1	2	3	4	5	6	7	8	9	10
1.	Self emotional appraisal	3.41	.78	.79	.80	**.50**									
2.	Others' emotional appraisal	3.55	.73	.76	.76	.74**	**.45**								
3.	Utilization of emotions	3.59	.65	.74	.74	.72**	.74**	**.42**							
4.	Regulation of emotions	3.58	.67	.74	.74	.69**	.67**	.64*	**.42**						
5.	Building contacts	3.67	.70	.74	.74	.16*	.16*	.15*	.14*	**.49**					
6.	Maintaining contacts	3.71	.64	.72	.72	.14*	.12	.15*	.18*	.60**	**.46**				
7.	Using contacts	3.72	.64	.72	.72	.30**	.24**	.26**	.29**	.51**	.51**	**.46**			
8.	Entrepreneurial style	3.76	.62	.77	.77	.09	.16*	.13*	.14*	.12	.06	.04	**.41**		
9.	Network structure	3.74	.61	.82	.81	.20**	.29**	.23**	.17**	.23**	.23**	.21**	.08	**.69**	
10.	SME Performance	3.57	.66	.77	.77	.13*	.19*	.15*	.13*	.20**	.29**	.13*	.09	.31**	**.63**

Notes:

Bold numbers on the diagonal show the average variance extracted, Lower diagonal represents correlation, **M** represent mean, **SD** refers to standard deviation, **CR** refers to composite reliability, **α** refers to Cronbach's alphas

* P<.05

** P<.01

Table 2: Chi-square difference results

H	Model	Exist relations	Added path	Chi-square (χ^2)	Degree of freedom	$\Delta\chi^2_{(df=1)}$
H	(a)	(EI → NS → PER)	-	680.659	513	0.664
2	(b)	(EI → NS → PER) & (EI → PER)	EI → PER	679.995	512	
H	(a)	(EI → ENB → PER)	-	680.659	513	0.664
3	(b)	(EI → ENB → PER) & (EI → PER)	EI → PER	679.995	512	

Notes:

EI= Emotional intelligence, NS= Network structure, PER= SME performance,
ES= Entrepreneurial style, ENB= External networking behaviors