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Networking of Copreneurs and Small Firm Growth: Personal Sub-networks Analysis

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Abstract: The focus of this study is on the examination of the structural characteristics of the entrepreneur's network. We made a contribution to the theory of entrepreneurial networking by focusing on the structural characteristics of the entrepreneur's personal network with regard to the activity of both the entrepreneur and his or her spouse (the copreneurial team) in the family firm networking, and how does this affect the firm's growth. Through a thorough analysis of these network characteristics we disclosed the impact of specific structural characteristics on firm growth. The research results show that the involvement of both the entrepreneur and her or his spouse is beneficial in the process of family firm networking and contributes to firm growth.

Keywords: entrepreneurship, copreneurship, copreneurs, networking, family firm

JEL Classification: L26

Introduction

Networking as a valuable component of the entrepreneur's social capital, and as an important tool for gaining resources in the process of new venture creation received many attention in the past decades (Johannisson, 1986; Birley, 1985; Aldrich and Zimmer, 1986; Aldrich et al., 1987). A network can be define as the total sum of all persons that are connected to each other by a certain type of relationship, and is considered to be more than the sum of the individual connections that form the network (Aldrich and Zimmer, 1986). The ability to facilitate or constrain the actions of entrepreneurs who are embedded in social networks is recognized as one of the most important characteristic of social networks. Relational ties provide to entrepreneurs and their firms the access to many valuable resources, opportunities

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and advices. Therefore networking is beneficial for small firm growth (Larson, 1991; Coviello and Munro, 1995; Zhao and Aram, 1995; Aldrich et al., 1987).

Past research showed that entrepreneur's relatives are considered to be the most trustworthy network members (Anderson et al., 2005; Klyver, 2007). Network ties with family members and friends are referred to as strong ties (Granovetter, 1973), and provide important resources and information to entrepreneurs. There is evidence that family members have an important role in family firm networking, especially in the start-up process when informal contacts are crucial for assembling the elements of business (Birley, 1985, Anderson et al., 2005; Klyver, 2007). Family members are considered to be prepared to work, to support the entrepreneur, to have the necessary skills, and to be willing to invest their capital in the firm. By having family members in the personal network, the risk of doing the business is reduced, and also the transaction costs are lower. Stewart (2003) cited high commitment, reliability, access to information, the understanding of the business and preparedness to work long hours as the main benefits of having family members in the personal network. Anderson et al. (2005) found in their sample that about one-quarter of the entrepreneurial network ties were kin. These ties were also established with family members that were not formally connected with the firm, and provided to the entrepreneur affective support and professional resources. Anderson et al. (2005) further affirmed that the main reason for the crucial role of family members, in particular in the star-up process, is the absence of the entrepreneur's track record, which makes difficult for the entrepreneur to establish contact with persons outside the firm.

Copreneurship as the sharing of the ownership and management of a business between spouses represents an evolving research area within family business (for example Smith, 2000; Tompson and Tompson, 2000; Fisher, 2003; De Bruin and Lewis, 2004). After the literature review we identified a research gap in the research of copreneurial networking, in particular the involvement of copreneurs in family firm networking. Based on the research gap the purpose of this study is to analyze the structural characteristics of the copreneurs' personal network with regard to the activity of both spouses (the copreneurial team) in the family firm networking, and how this affects the firm's growth.

Theoretical Background

In the past decade there have been done many studies about family business (Reid et al., 1999; Perez de Lema and Durendez, 2007; Brunninge and Nordqvist, 2004; Kotey, 2005; Reid and Adams, 2001; Ibrahim et al., 2004; Kreiser et al., 2006) mainly because it represents a substantial economic segment in the economy of

almost every nation. With regard to the involvement of both husband and wife in entrepreneurship, a new research area has been developing, which is copreneurship. Several authors directed their research interest to copreneurship, which can be defined as the sharing of the ownership, management and responsibility for a business (e.g. Barnett and Barnett, 1988; Marshack, 1994; Davies, 1998; Smith, 2000; Tompson and Tompson, 2000; Fisher, 2003; De Bruin and Lewis, 2004; Millman and Martin, 2007). Copreneurs are couples that share a personal and a work relationship (Fitzgerald and Muske, 2002). Therefore, copreneurial firms are often called 'Mom and Pop' firms (Millman and Martin, 2007). The definitions of copreneurs vary depending whether the couple is married or not, and whether they are both employed in the firm or not. In our study we define copreneurs as couples that are both married and employed in the firm. The proprietorship is thus jointly owned by the husband and the wife. One characteristic of copreneurial teams is the strong relationship based on commitment and trust. The latter represents an essential element for an efficient resource and information exchange inside a personal network. Research suggests that spouses are considered to be a significant source of support (Gordon and Whelan-Berry, 2004). Therefore, spousal support can be a source of competitive advantage.

Millman and Martin (2007) explored the role of females in small copreneurial companies and found that females in copreneurship have equal need for achievement as their partners, have great self confidence, and take the strategic role in firm development. Further, they manage both life at home and life at work. While both male and female bring critical resources for business development, females are the ones who bring drive into the business. Some empirical research suggests that the sharing of tasks and responsibilities between spouses in copreneurial firms is not necessary equal (Smith, 2000; Marshack, 1994). Women besides organizing business assume also the traditional role of the household manager, while men are mainly engaged in the firm, and are responsible for the decision making process. The respondents argued that such sharing of responsibilities prevent the work-family conflict and improve the relationship between the spouses.

In the existent literature there is evidence of the growing number of copreneurs as a segment of family business (Marshack, 1998). Most workers are faced with the problem of balancing their family responsibilities and duties that arise from their employment. As a result many people decide to combine both work and personal life by establishing a family firm with their spouses (Smith, 2000). Being copreneurs allows spouses to combine work and home duties more flexibly and effectively (Smith, 2000). The interweave between family and work in copreneurship is very strong, so instead of using the terminology work-life balance it is often used work-life mix (Duff, 2005). Besides the flexibility in the balancing of work and family responsibilities, Smith (2000) emphasized also other reasons for

copreneurship, like the 'glass ceiling' effect, downsizing, redundancy and the availability of franchise. Extended working hours and travel demands in the corporate world were indicated as the most frequent reasons for entering in copreneurship (Smith, 2000).

Trust, respect, commitment, loyalty, affect and work-life balance are recognized as the main benefits of copreneurship (Roha, 1990; Duff, 2005). An advantage that can result from the involvement of both spouses in the family business is the entrepreneurial environment in which are raised the children (Smith, 2000). Children of copreneurs are often involved in the business activities of their parents, which enables them to get familiar with the family business. The latter can be seen as an important element in the succession of the family firm. Compromise is seen as a crucial condition for a successful partnership at work and at home (Smith, 2000). Copreneurs in comparison with noncopreneurs are more likely to view business as a way of life rather than a way of earning money. Fitzgerald and Muske (2002) found on a sample of copreneurs and noncopreneurs that noncopreneurial business managers are slightly more educated (in years of education) than copreneurial business managers, and further that noncopreneurial firms are more successful in financial terms than copreneurial firms. Copreneurs in the sample were located more in rural areas, while noncopreneurs in urban areas. On the other hand, they did not find any differences in the involvement of family members in the firm. Noncopreneurial firms in comparison to copreneurial firms were found to be bigger in size in terms of number of employees.

Muske and Fitzgerald (2006) investigated whether copreneurial businesses have a dynamic nature or not. In a longitudinal study they found a high level of dynamics; 44 out of 211 copreneurs discontinued their copreneurial relationship in the period of three years, 28 copreneurs were not in the business any more, and 42 couples out of 462 that at the beginning of the research were not classified as copreneurs became copreneurs. The research results suggest that spouses usually join the business after it is successful enough to assure a safe future.

Although the role of the entrepreneur's spouse in family firms attracted the research interest of many scholars, very few studies have explored the role of the copreneurs' relationship on family business performance. De Bruin and Lewis (2004) stressed that familial entrepreneurship represent an under-researched area and therefore there does exist the need for future research. Fitzgerald and Muske (2002) emphasized the lack of empirical research on copreneurs. In particular, research of networking activities of copreneurs has not received adequate attention (De Bruin and Lewis, 2004).

Research Focus

Through an in-depth analysis of copreneurial networking the present study aims to provide an insight in the copreneurs' involvement in the family firm networking. The focus of this research is on three types of copreneurs' sub-networks which are the resource acquisition network, information acquisition network and network of friends. We also analyzed the combinations of these three sub-networks, thus we could operate with four additional sub-networks (resource-information acquisition network; resource acquisition network and network of friends; information acquisition network and network of friends; resource-information acquisition network and network of friends). The latter enabled us to make a thorough analysis of the network activities of copreneurs.

We will make a contribution by focusing on the structural characteristics of the copreneurs' network with regard to the activity of both spouses (the copreneurial team) in the family firm networking, and how this affects the firm's growth.

Research questions:

- Which is the role of the copreneurial team in the firm networking?
- Which are the structural characteristics of copreneurs' networks?
- Which are the differences in network structural characteristics between high-growth copreneurial firms and low-growth copreneurial firms?

Methodology

The focus of this study is on the following structural characteristics of the copreneurs' personal networks: density, reachability, centrality, and cliques. Through the analysis of these network characteristics we will disclose the networking activities of copreneurial teams, and the role of both spouses in the family firm networking.

Research Setting

The research is based on data collected from two Slovenian copreneurial firms. In terms of industry, number of employees and amount of sales in the past three years the firms are comparable. The copreneurial firms have more than 11 and less than 50 employees, operate in whole and retail trade industry, and have an average of EUR 400,000 to 800,000 of sales per year. In order to obtain rich information about the network structure of copreneurs, we selected two firms that are different in

performance (in terms of growth and profit). Firm B11 can be classified as a high-growth firm, while firm B22 as a low-growth firm. The latter enabled us to make a comparison of structures of copreneurial networks between high and low-growth firms. The characteristics of copreneurial firms that are under investigation in this research are summarized in Table 1.

Table 1: Characteristics of the copreneurial firms under investigation

Characteristics/Firm	B11	B22
Industry	Wholesale & Retail trade	Wholesale & Retail trade
Firm type	Family firm	Family firm
Firm size (in terms of number of employees)	Smal firm (11-50)	Smal firm (11-50)
Firm size (in terms of amount of sales)	Eur 400,000-800,000	Eur 400,000-800,000
Growth (in terms of number of employees)	20-35%	0-4%
Growth (in terms of amount of sales)	35-50%	5-9%
Growth (in terms of market share)	Moderate growing	Somewhat growing
ROS	20-35%	5-9%
ROA	20-35%	10-19%
ROE	More than 35%	10-19%
Competitive position in comparison to other firms in the industry	Considerably better than the competition	Approximately the same as the competition
Number of persons in the network (without copreneurs)	8	15

*Scale from 0 to 7; 0- not satisfied, 7- very satisfied.

Data Collection

We collected the data about the copreneurs' resource acquisition networks (material, financial, and/or human resources), information acquisition networks and networks of friends. The key informant was one of the copreneurs from each firm. Data was collected with a face-to-face interaction-based semi-structured questionnaire. The questionnaire had two parts. In the first part of the questionnaire the copreneur was asked to list up to ten persons for each network with whom he had direct personal relationships and have been most important for the copreneurial firm. Both copreneurs and these persons were used as rows and columns for the composition of a relationship matrix for each of the sub-networks. The copreneur was further asked to evaluate on a scale from 0 (not important) to 10 (very important) each person's

importance as resource provider, information provider and as a friend, as well as the perceived importance of each person for all other persons in the matrix. In the second part of the questionnaire the copreneur was further asked to provide some additional information about himself or herself (mostly demographic data), about the firm (age, size, industry, growth), and about each person in the network (frequency of interaction, friendship). Further, the copreneur was asked to evaluate on a scale from 0 (not satisfied) to 7 (very satisfied) his or her satisfaction with the firm's level of sales, firm's profit and his or her satisfaction in general.

Methods of Data Analysis

In this study we adopted the approach of entrepreneur's ego-centered network. As Anderson et al. (2005) stated entrepreneurs' networks are composed from a mixture of formal-business, friendship, and kin ties. The latter is known as multiplexity. Therefore, we analyzed also the combinations of copreneurs' sub-networks (resource acquisition network, information acquisition network and network of friends). Thus, we considered in our research the concept of multiplexity of entrepreneurial networks, which is considered to be beneficial for firm growth.

Once the data was collected we elaborated the combinations of all three copreneurs' sub-networks (resource acquisition network, information acquisition network, network of friends, resources and information acquisition network, resource acquisition network and network of friends, information acquisition network and network of friends and resources, information acquisition network and network of friends). Therefore, we could operate with seven different copreneurs' sub-networks. Each sub-network was analyzed with methods of social network analysis using the program Ucinet 6 for Windows (Borgatti et al., 2002). All sub-networks and their combinations were thoroughly analyzed for both copreneurial firms. The estimations were made for both binary network data and valued network data. Further, we made the estimations also for networks in which the copreneurs were not included. Altogether 56 network structures were examined. Using methods of social network analysis we disclose the structural characteristics of each copreneurs' network. Table 2 shows the structural characteristics under investigation and their meaning.

Table 2: Structural characteristics

Structural characteristics	Meaning
Density	Density can be defined as the proportion of lines that are actually present in the graph relative to the total number of possible lines. Density gives information about how cohesive and homogeneous the network is as a whole. The higher the density, the more connected are the members in the network with each other (Martino and Spoto, 2006). In order to measure density, it is necessary to estimate the actual number of lines in the graph and the theoretical maximum number of lines that could be present if each point were connected with all other points in the graph (Wasserman and Faust, 1994). Then the two values must be compared. Thus, the interval of possible values of density is (0,1).
Centrality	The centrality of a point gives us information about its structural importance. Thus, the purpose of analyzing centrality was to identify the most important person in the network. The assumption is that the most central person is the most powerful and has the most strategic position in the network (Izquierdo and Hanneman, 2006). There are different measures of point centrality that vary by the criteria used to measure point centrality. The three approaches to measuring point centrality are based on degree, closeness and betweenness. The approach based on the point degree supposes that actors with a higher degree, meaning that they have more direct ties, are more powerful. On the other hand, the approach based on the concept of closeness, affirms that those actors who can reach other actors at a shorter path distance and at the same time are also reachable by other actors at shorter path distances have more power. The third approach is based on the concept of betweenness and affirms that the one who is between a pair of persons can take advantages of being a broker of information (Izquierdo and Hanneman, 2006).
Clique	A clique is defined as a sub-set of points in which every possible pair of points is directly connected by a line (Scott, 1991). Each point is in a reciprocal relation with all other points in the subgraph. If the number of points in a graph is n, then the number of lines in a clique is n (n-1) (Scott, 1991).
Reachability	A person is reachable by another person when there is a set of connections through which we can move from the 'source' person to the 'target' person. The number of intermediary points is meaningless (Hanneman, 2006). In the program Ucinet 6 the algorithm finds for each pair of points whether there exists a path of any length that connects them.

Findings

The research results will be firstly discussed for each of the copreneurial firms separately, and then a comparison between both copreneurial networks will be presented. Due to the length limit of the paper the results will be presented only for the overall copreneurs' networks. In order to find out the most important person amongst members of the copreneurs' networks, we also computed the estimations for network characteristics for networks, in which the copreneurs are not taken into consideration. The calculations were made for binary network data. Each

copreneurs' network is complemented with two figures; the first one represents the network with both copreneurs, while the second one represents the network without the copreneurs. The estimations were made for four fundamental network characteristics which are centrality, clique, density and reachability. In Appendix 1 the numeric results for the overall copreneurs' personal network B11 (networks with copreneurs) are presented. Tables of results of other estimations are not shown due to the large extent.

Copreneurs' Network B11 (High-Growth Firm)

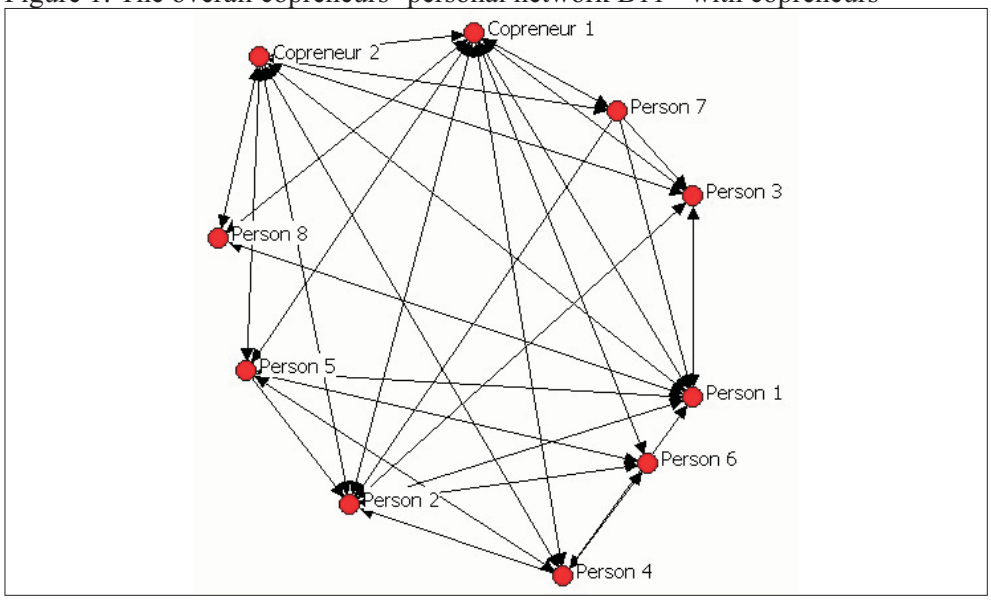
Beside the two copreneurs there are eight persons in the overall network (see Figure 1 and 2). Five of these eight people are marked as being formally connected to the firm (Person 1, Person 3, Person 4, Person 5, Person 8), which means they are employed in the copreneurial firm. Two network members are firm's suppliers (Person 2, Person 6), and one network member is a competitor (Person 7). Two network members are copreneurs' relatives (Person 1, Person 2), while other network members are not connected to the copreneurs. Five out of eight network members form the copreneurs' resource acquisition network (Person 1, Person 2, Person 4, Person 5, Person 6). Four persons are recognized as crucial in the information acquisition process (Person 1, Person 2, Person 3, Person 7). The network of copreneurs' friends also comprehends four network members (Person 1, Person 2, Person3, Person 8). Both copreneurs are present in all three sub-networks (resource acquisition network, information acquisition network and network of friends). There was an overlap in the listing of people; Persons 1 and 2 were named three times. Thus, they are present in all three sub-networks. While Person 3 was named two times; she was named the first time as an information provider for the firm, and the second time as a friend. Copreneur 1 has the longest relationship with Person 1. The length of the relationship is 45 years. In the next paragraph structural characteristics (density, centrality, clique and reachability) of the overall copreneurs' network are described. Because the ego-centered network methodology, Copreneur 1 is the most central person in the network when both copreneurs are present.

Copreneur 1 has the highest indegree (9) and outdegree (9) centrality in the network. Thus, he interacts directly with all nine network members, while Copreneur 2 interacts with all network member except Person 6 (indegree=8, outdegree=8). Copreneur 1 also achieves the highest closeness centrality (incloseness=100.00, outcloseness=100.00) and betweenness centrality (16.50) in the network. Copreneur 2, Person 1 and Person 2 occupy the second position regarding incloseness centrality (90.00) in the network. Copreneur 2 also achieves the second highest outcloseness

centrality (90.00) and betweenness centrality (8.50) in the network. Four cliques have formed in the network in which the copreneurs are present:

1: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 3 Person 7
2: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 4 Person 5
3: Copreneur 1 Copreneur 2 Person 1 Person 8
4: Copreneur 1 Person 2 Person 4 Person 5 Person 6

Figure 1: The overall copreneurs' personal network B11 - with copreneurs



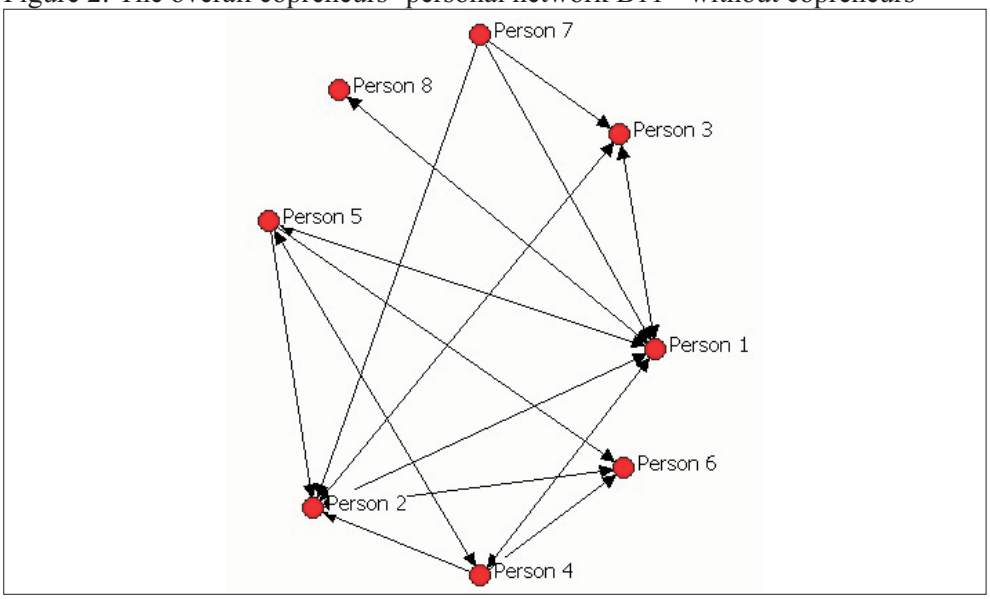
The network density is 0.83 (max. 1, min. 0). Therefore, the overall connectedness of the network is very strong; each person in the network can be reached by any other member of the network.

When excluding the copreneurs from the network, Person 1 becomes the most central person in the network. She achieves the highest degree centrality (indegree=6, outdegree=5). Thus, she receives information and resources from six persons, and at the same time provides information and resources to five persons in the network. Further, Person 1 has the highest betweenness centrality (20.00), which allows her to be information broker for other network members. The highest outcloseness centrality (46.67) is also achieved by Person 1. The latter means she can reach other network members over shorter path distances, which improve the process of communication and transmission of resources between her and other people. Both Person 1 and Person 2 achieve the highest incloseness centrality (87.50). Thus, they

can be reached over shorter path distances. Three cliques have formed in the network without the copreneurs in which Person 2 is always present:

1: Person 1 Person 2 Person 3 Person 7
2: Person 1 Person 2 Person 4 Person 5
3: Person 2 Person 4 Person 5 Person 6

Figure 2: The overall copreneurs' personal network B11 - without copreneurs



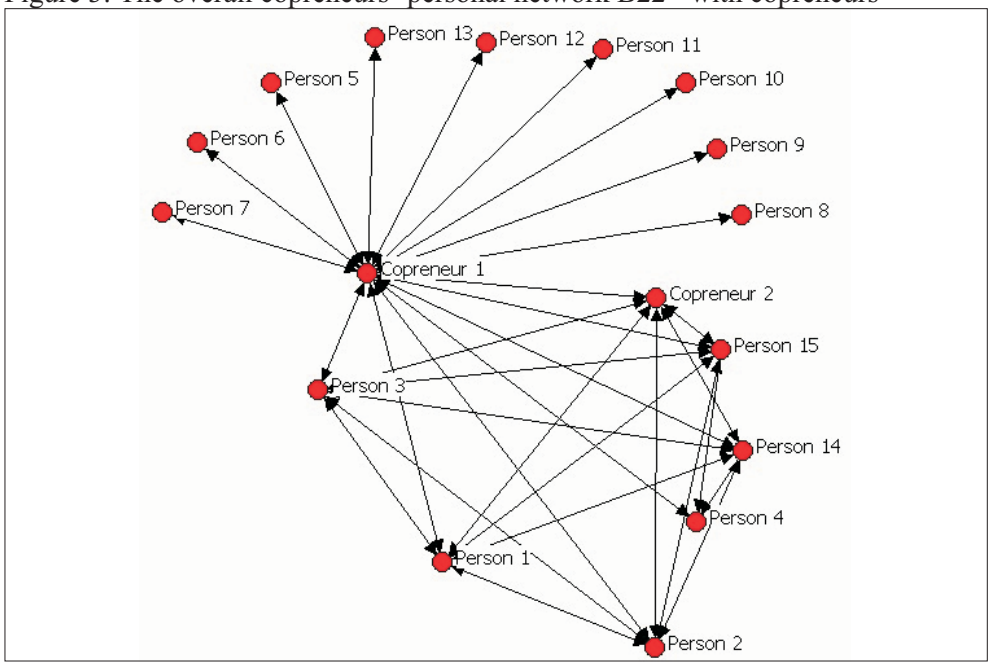
Even when the copreneurs are not present in the network, the connectedness among the network members is still good (density=0.697). Except Person 7, every person in the network can be reached by all other members.

The research results indicate that beside the copreneurs Person 1 is the most central person in the network (see Table 3). She is a relative of the copreneurs, and is employed in the copreneurial firm. She is an important resource and information provider for the firm, and at the same time is also a friend of the copreneurs. The length of the relationship between Copreneur 1 and Person 1 is 45 years (the longest relationship among the network members and the copreneurs). Her central position gives her the advantage to reach the other people over shorter distances, and to influence the decision-making process within the network. She also has the highest number of direct contacts in the network.

Copreneurs' Network B22 (Low-Growth Firm)

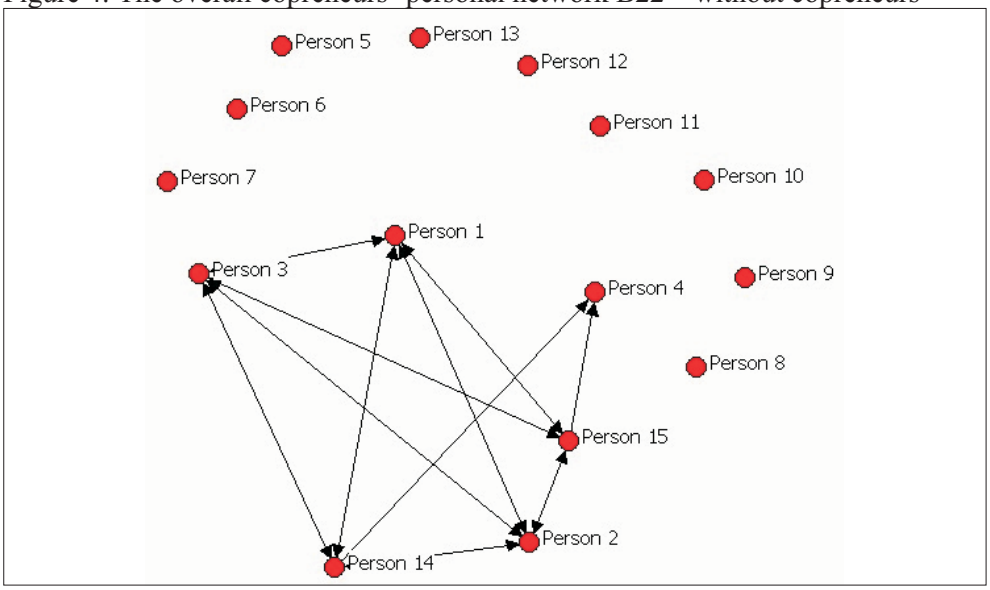
Beside the two copreneurs fifteen persons form the overall copreneurs' network (see Figure 3 and 4). Five out of these fifteen people are employed in the copreneurial firm (Person 1, Person 2, Person 3, Person 14, Person 15), while the other ten network members are connected to the copreneurial firm either as suppliers or as customers; there are five firm's suppliers (Person 4, Person 5, Person 6, Person 7, Person 8) in the copreneurs' network, and five customers (Person 9, person 10, Person 11, Person 12, Person 13). Only one network member is a relative of the copreneurs (Person 2). Copreneur 1 is present in all three sub-networks (resource acquisition network, information acquisition network, network of friends), while Copreneur 2 is present only in the information acquisition network and network of friends. Therefore, Copreneur 1 is the one that is responsible for the resource exchange process in the firm. The resource acquisition network comprehends ten people (Person 4, Person 5, Person 6, Person 7, Person 8, Person 9, Person 10, Person 11, Person 12, Person 13). As information and advice providers, Copreneur 1 listed five people (Person1, Person 2, Person 3, Person 14, Person 15).

Figure 3: The overall copreneurs' personal network B22 - with copreneurs



The third personal network, which is the network of copreneurs' friends, comprehends three people (Person1, Person 2, Person 3). There was an overlap in the listing of people; Persons 1, 2, 3 were named two times. They were named the first time as information providers for the copreneurial firm, and the second time as friends. Copreneur 1 has the longest relationship with Person 2. The length of the relationship is 40 years. In the next paragraph structural characteristics (density, centrality, clique and reachability) of the overall copreneurs' network are described.

Figure 4: The overall copreneurs' personal network B22 – without copreneurs



The highest degree centrality is achieved by Copreneur 1 (indegree=16, outdegree=16). He has 16 direct contacts, while Copreneur 2 interacts only with six network members (indegree=6, outdegree=6). The latter indicates a much lower involvement of Copreneur 2 in the network activities. Copreneur 1 also has the highest closeness centrality (incloseness=100.00, outcloseness=100.00), while Copreneur 2, Person 1, Person 2 and Person 3 share the same degree of closeness centrality (incloseness=26.00, outcloseness=26.00). Copreneur 1, having the highest betweenness centrality, can take advantage of being a mediator within the network. He is an information and resource broker for Persons 5, 6, 7, 8, 9, 10, 11, 12 and 13. Therefore, his betweenness centrality is very high (205.73). The second highest betweenness centrality that is achieved by both Copreneur 2 and Person 15 is considerably lower (1.33). The network members are organized in four cliques:

1: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 3 Person 14
2: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 3 Person 15
3: Copreneur 1 Person 4 Person 14
4: Copreneur 1 Person 4 Person 15

The network density is 0.408 (max. 1, min. 0). Although the density is not high, the network connectedness is good; each person in the network is directly or indirectly connected to all other members. When analyzing the network without the copreneurs, Persons 1, 2 and 3 have the highest degree centrality (indegree=4, outdegree=4). They have reciprocal contact with four people. Persons 14 and 15 have the same outdegree centrality (4). The level of degree centrality in the network is quite low, since they interact directly only with four out of fifteen people. The highest incloseness centrality is achieved by Person 4 (9.79), while Persons 1, 2, 3, 14 and 15 have the most central position regarding outcloseness centrality (9.93). They can reach others across shorter path distances, which improve their communication within the network. Person 14 and 15 achieve the highest betweenness centrality (1.50), although it is very low. When the copreneurs are excluded from the network, the network members are still organized in two cliques:

1: Person 1 Person 2 Person 3 Person 14
2: Person 1 Person 2 Person 3 Person 15

The density in the network, in which the copreneurs are not considered, is very low (0.182). The main reason is the mediating role of Copreneur 1, who represents the connection among the network members. When Copreneur 1 is excluded from the network, Persons 5, 6, 7, 8, 9, 10, 11, 12, 13 remain isolated. Therefore, the network connectedness is very weak; nine persons cannot be reached by any person in the network.

The research results for the copreneurial firm B22 indicate that it is impossible to determine a single most important member in the network. With regard to the sub-network that is under investigation Persons 1, 2, 3, 4, 14 and 15 interchange the role of the most central person in the copreneurs' network.

Comparison of Copreneurs' Networks

The research results indicate some differences in the network characteristics between the high-growth firm (B11) and the low-growth firm (B22) (see Table 3). Beside the differences in the number of people in each copreneurial network, the main difference results in the network density. The density of the overall network is higher

in the high-growth firm (0.833) than in the low-growth firm (0.408). The difference is even more evident in the networks in which the copreneurs are not included. When the density in the high-growth firm is still pretty high (0.697), the density in the low-growth firm is extremely low (0.182). The latter indicates a better connectedness among network members in the high-growth firm. The latter facilitate the communication within the network, because it enables a more fluent transmission of resources and information from one network member to other network members. The high-growth firm differs from the low-growth firm also in the number of cliques that have formed in the network (in terms of share). The network of the high-growth firm comprehends eight people that are organized in four cliques, while the network of the low-growth firm is formed by 15 people that are still organized in only four cliques. Therefore, the share of cliques in the low-growth firm is lower then in the high-growth firm. A higher number of cliques can result in a better collaboration within the network members. Members of a clique more fluently and frequently exchange information and resources. Therefore, the dynamics of exchange inside a network with a higher number of cliques is higher than in the one with a smaller number of cliques. Another significant difference between the high-growth firm and low-growth firm is the degree of involvement of the copreneur's spouse (in both cases named as Copreneur 2) in the firm's networking. In the high-growth firm Copreneur 2 is present in all three sub-networks (resource acquisition network, information acquisition network, and network of friend), while in the low-growth firm Copreneur 2 is present just in the information acquisition network and network of friends. Therefore, she is excluded from the resource acquisition network. Figure 3 shows that Copreneur 1 from the low-growth firm is an information and resource broker for at least nine network members (Person 5, Person 6, Person 7, Person 8, Person 9, Person 10, Person 11, Person 12, Person 13). When Copreneur 1 is removed from the network, these persons remain isolated and disconnected from the other network members (see Figure 4). Consequently, the flow of information and resources is interrupted which could lead to a less efficient network. Further, Copreneur 2 from the high-growth firm has eight out of nine possible direct contacts in the network. On the other hand, Copreneur 2 from the low-growth firm has only six out of 16 possible direct contacts in the network. Consequently, Copreneur 2 from the low-growth firm is less involved in the network activities then Copreneur 2 from the high-growth firm.

Table 3 shows a comparison between the copreneurial firms B11 (high-growth firm) and B22 (low-growth firm).

Table 3: A comparison of the copreneurial firms

Characteristics of the overall network/Firm	B11 (high-growth firm)	B22 (low-growth firm)
Number of people in the network	8	15
Number of relatives in the network	2	1
Number of employees in the network	5	5
Density	0.833	0.408
Density in the network without the copreneurs	0.697	0.182
Number of cliques	4	4
Number of cliques in the network without the copreneurs	3	2
i0The most central person regarding degree centrality	Person 1[a]	Person 1[b], 2[c] and 3d
The most central person regarding closeness centrality	Person 1[a]	Person 4[e]
The most central person regarding betweenness centrality	Person 1[a]	Person 14[f] and 15[f]
Number of direct contacts of Copreneur 1	9	16
Number of direct contacts of Copreneur 2	8	6

a) Person 1 is a relative of the copreneurs, and is employed in the copreneurial firm. Person 1 is an important resource and information provider for the firm, and at the same time is also a friend of the copreneurs. The length of the relationship between Copreneur 1 and Person 1 is 45 let (the longest relationship among the network members and the copreneurs).
b) Person 1 is employed in the copreneurial firm, but is not a relative of the copreneurs. He is a network member of the information acquisition network and network of friends.
c) Person 2 is the only copreneurs' relative among the network members. He is employed in the copreneurial firm, and has the longest relationship with Copreneur 1 among the network members (40 years). Person 2 is present in both the information acquisition network and network of friends.
d) Person 3 is employed in the copreneurial firm, and is an important information provider and friend for the copreneurs.
e) Person 4 is a firm's supplier and is a network member of the resource acquisition network.
f) Persons 14 and 15 are employed in the copreneurial firm, and are important as information providers.

Conclusion

The study makes some important contributions. It fills the research gap still present in the research area of family entrepreneurship, and particularly in the research area of copreneurial networking. We discovered important differences in network activities

between copreneurs from the high-growth firm and the low-growth firm. The research results are relevant to copreneurial teams for their decision-making choices on firm network activities.

In past research high commitment, reliability and affective support were recognized as important benefits of having family members in personal networks (Stewart, 2003; Anderson et al., 2005). Further, it was found that the resource and information exchange within network members can be reinforced by developing strong relationships based on commitment and trust. The analysis of the two copreneurs' personal networks confirmed that spouses of both copreneurial teams were substantially involved in the firm networking activities. Although the involvement of the copreneurial team in the firm networking was found lower in the low-growth firm, both copreneurial teams were found to contribute to the process of acquiring resources and information necessary for firm growth. The personal network analysis showed that both copreneurial teams interact with other network members, acquire information from different sources and are present in several cliques. Since, there is a high knowledge of each others' needs between spouses of a copreneurial team, the affective and professional support between copreneurs can be even greater. On the basis of past research and our research findings we argue that the involvement of the copreneurial team in the firm networking is beneficial for firm growth.

The comparison between the two copreneurial firms indicated a much lower involvement in the network activities of the entrepreneur's spouse (Copreneur 2) in the low-growth firm than in the high-growth firm. The differences in the involvement of the entrepreneurs' spouses in each copreneurial firm are considerable. First, Copreneur 2 in the low-growth firm is not present in the resource acquisition network. Therefore, only one of the copreneurs (Copreneur 1) participates in the resource exchange process. Further, Copreneur 2 has considerably less direct contacts than her spouse. While Copreneur 1 reciprocally interacts with sixteen people within the network, his spouse interacts with only six people. The latter does not allow her to receive diverse type of information. She is also present in only two out of four cliques that have formed in the network. Advantages that results from being a member of a clique are many. For example, a better communication and collaboration with other members, and a more fluent transmission of resources. Copreneur 2 from the low-growth firm can only partially take advantage of these benefits. The research results indicate that network density is also significantly different between the copreneurial firms. The network members in the high-growth firm are considerably better connected than the network members in the low-growth firm. Even when the copreneurs are not included in the network, every person except Person 7 can be reached by any other person. Therefore, the flow of information and resources is uninterrupted. On the other hand, the network connectedness in the

low-growth firm is very weak. The flow of information and resources largely depends on Copreneur 1. He is a mediator for nine persons, which means that resources of these persons can be exchanged only through Copreneur 1. Therefore, the resource and information exchange in the low-growth firm cannot be as efficient as in the high-growth firm.

The relationship between copreneurs is based on commitment and trust, which is crucial for an efficient resource and information exchange within the network members (Gordon and Whelan-Berry, 2004). Jack, Drakopoulou Dodd and Anderson (2004) found that strong ties provide to entrepreneurs a specific kind of support and an appropriate use can facilitate the firm performance. Besides, strong ties represent ties in which members have high knowledge of each others' needs (Verbrugge 1979). Based on these research findings we argue that the entrepreneur's spouse better understands and recognizes the firm's needs and therefore can be considered an important source of support for the entrepreneur. Consequently, the involvement of both copreneurs in the networking activities can have a positive influence on the efficacy of the network, and can significantly contribute to the firm's growth. The research results are relevant to copreneurs and entrepreneurs in small family firms for their decision-making choices on network activities. For example, based on the research results it may be possible to give advice to copreneurs how to form an efficient network. A thorough analysis of various relationships embedded in personal networks allows copreneurial couples to acquire important information about the structural characteristics of their personal networks. Thus, eventual weaknesses in the network structure could be identified and removed with appropriate network activities. For example, a network analysis could indicate the presence of mediators in the network. Therefore, the flow of resources and information between the network members largely depends on them. Therefore, in order to acquire diverse resources copreneurs should develop strong relationships with their mediators (in terms of frequency of interaction). Understanding the type and content of each relationship is thus very important in the process of selecting which network ties should be maintained or otherwise be interrupted.

Although the research results contribute to the theory of copreneurial networking, some limitations of the research can be recognized. First, the in-depth analysis was made on a sample of two copreneurial firms which does not allow generalizability. Therefore, in order to gain additional information on copreneurial networking, we selected a high-growth copreneurial firm and a low-growth copreneurial network. Through the comparison between the two copreneurial firms we gained additional information. Second, the study is based on perceptual data, because the data are the result of the estimations of the copreneurs. Further, we interviewed only one copreneur from each firm. Therefore, in future research we should take into consideration the estimations of both copreneurs about the structure of relationships

inside the network. Third, we conducted a cross-sectional study, therefore different stages in the firm's life cycle were not considered. Consequently, the evolution of the copreneurs' network and the dynamics in the copreneurial relationship were not investigated. The literature suggests that family members are differently involved in the family firm's networking in different stages of firm's life cycle, hence a longitudinal study could provide additional information on copreneurial networking.

Despite these limitations the study provides important contributions to the theory of copreneurial networking, as a growing segment of family business, and provides few directions for future research on copreneurship.

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APPENDIX 1

The overall copreneurs' personal network: B11

1. Centrality

- Degree centrality

Descriptive statistics

		OutDegree	InDegree	NrmOutDeg	NrmInDeg
1	Copreneur 1	9.000	9.000	100.000	100.000
2	Copreneur 2	8.000	8.000	88.889	88.889
3	Person 1	7.000	8.000	77.778	88.889
6	Person 4	6.000	4.000	66.667	44.444
7	Person 5	6.000	4.000	66.667	44.444
4	Person 2	5.000	8.000	55.556	88.889
9	Person 7	5.000	2.000	55.556	22.222
5	Person 3	4.000	5.000	44.444	55.556
10	Person 8	3.000	3.000	33.333	33.333
8	Person 6	2.000	4.000	22.222	44.444

		OutDegree	InDegree	NrmOutDeg	NrmInDeg
1	Mean	5.500	5.500	61.111	61.111
2	Std Dev	2.062	2.377	22.906	26.411
3	Sum	55.000	55.000	611.111	611.111
4	Variance	4.250	5.650	524.691	697.531
5	SSQ	345.000	359.000	42592.590	44320.984
6	MCSSQ	42.500	56.500	5246.914	6975.309
7	Euc Norm	18.574	18.947	206.380	210.525
8	Minimum	2.000	2.000	22.222	22.222
9	Maximum	9.000	9.000	100.000	100.000

Network Centralization (Outdegree) = 43.210%
Network Centralization (Indegree) = 43.210%

- Closeness centrality

Network in-Centralization = 59.42%
Network out-Centralization = 61.20%

		inFarness	outFarness	inCloseness	outCloseness
1	Copreneur 1	9.000	9.000	100.000	100.000
2	Copreneur 2	10.000	10.000	90.000	90.000
3	Person 1	10.000	11.000	90.000	81.818
4	Person 2	10.000	13.000	90.000	69.231
5	Person 3	13.000	14.000	69.231	64.286
6	Person 4	14.000	12.000	64.286	75.000
7	Person 5	14.000	12.000	64.286	75.000
8	Person 6	14.000	16.000	64.286	56.250
10	Person 8	15.000	15.000	60.000	60.000
9	Person 7	16.000	13.000	56.250	69.231

Descriptive statistics

		inFarness	outFarness	inCloseness	outCloseness
1	Mean	12.500	12.500	74.834	74.082
2	Std Dev	2.377	2.062	15.013	12.830
3	Sum	125.000	125.000	748.338	740.815
4	Variance	5.650	4.250	225.396	164.598
5	SSQ	1619.000	1605.000	58254.922	56526.730
6	MCSSQ	56.500	42.500	2253.958	1645.979
7	Euc Norm	40.237	40.062	241.361	237.754
8	Minimum	9.000	9.000	56.250	56.250
9	Maximum	16.000	16.000	100.000	100.000

- Betweenness centrality

Un-normalized centralization: 130.000

		Betweenness	nBetweenness
1	Copreneur 1	16.500	22.917
2	Copreneur 2	8.500	11.806

3	Person 1	5.500	7.639
4	Person 2	3.500	4.861
7	Person 5	0.500	0.694
6	Person 4	0.500	0.694
5	Person 3	0.000	0.000
8	Person 6	0.000	0.000
9	Person 7	0.000	0.000
10	Person 8	0.000	0.000

Descriptive statistics

		Betweenness	nBetweenness
1	Mean	3.500	4.861
2	Std Dev	5.148	7.150
3	Sum	35.000	48.611
4	Variance	26.500	51.119
5	SSQ	387.500	747.492
6	MCSSQ	265.000	511.188
7	Euc Norm	19.685	27.340
8	Minimum	0.000	0.000
9	Maximum	16.500	22.917

Network Centralization Index = 20.06%

2. Density

Density (matrix average) = 0.8333
Standard deviation = 0.3727

3. Clique

4 cliques found.
1: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 3 Person 7
2: Copreneur 1 Copreneur 2 Person 1 Person 2 Person 4 Person 5
3: Copreneur 1 Copreneur 2 Person 1 Person 8
4: Copreneur 1 Person 2 Person 4 Person 5 Person 6

Clique Proximities: Prop. of clique members that each node is adjacent to

	1	2	3	4
Copreneur 1	1.000	1.000	1.000	1.000
Copreneur 2	1.000	1.000	1.000	0.800

Person 1	1.000	1.000	1.000	0.800
Person 2	1.000	1.000	0.750	1.000
Person 3	1.000	0.667	0.750	0.400
Person 4	0.667	1.000	0.750	1.000
Person 5	0.667	1.000	0.750	1.000
Person 6	0.333	0.667	0.250	1.000
Person 7	1.000	0.667	0.750	0.400
Person 8	0.500	0.500	1.000	0.200

Actor-by-Actor Clique Co-Membership Matrix

		C	C	P	P	P	P	P	P	P
		-	-	-	-	-	-	-	-	-
1	Copreneur	1	4	3	3	3	1	2	2	1	1	1
2	Copreneur	2	3	3	3	2	1	1	1	0	1	1
3	Person 1		3	3	3	2	1	1	1	0	1	1
4	Person 2		3	2	2	3	1	2	2	1	1	0
5	Person 3		1	1	1	1	1	0	0	0	1	0
6	Person 4		2	1	1	2	0	2	2	1	0	0
7	Person 5		2	1	1	2	0	2	2	1	0	0
8	Person 6		1	0	0	1	0	1	1	1	0	0
9	Person 7		1	1	1	1	1	0	0	0	1	0
10	Person 8		1	1	1	0	0	0	0	0	0	1

4. Reachability

		C	C	P	P	P	P	P	P	P
		-	-	-	-	-	-	-	-	-
1	Copreneur	1	1	1	1	1	1	1	1	1
2	Copreneur	2	1	1	1	1	1	1	1	1
3	Person 1		1	1	1	1	1	1	1	1
4	Person 2		1	1	1	1	1	1	1	1
5	Person 3		1	1	1	1	1	1	1	1
6	Person 4		1	1	1	1	1	1	1	1
7	Person 5		1	1	1	1	1	1	1	1
8	Person 6		1	1	1	1	1	1	1	1
9	Person 7		1	1	1	1	1	1	1	1
10	Person 8		1	1	1	1	1	1	1	1