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INVESTIGATION OF BOTTLENECKS AND SUCCESS FACTORS FOR NETWORKING AS A TOOL FOR INNOVATION IN THE ORNAMENTAL PLANT SECTOR

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Abstract

Networking and innovation are important sources for entrepreneurs to achieve competitive advantage. This paper aims to investigate bottlenecks and success factors for networking of ornamental plant growers. To reach this objective, following research questions are formulated: (1) What kind of innovations are applied?, (2) What kind of networks are used?, (3) What role does networking play in the contribution to the development and implementation of innovations?, (4) What are the main bottlenecks and success factors for networking as a tool for innovation?

The research data are collected by means of in-depth interviews and focus group discussions with ornamental plant growers and network coordinators. The results show that ornamental plant growers have many possibilities in the domain of product, process, market and organizational innovation at their disposal, which are often underutilized. With regard to networking, a high diversity in the intensity of network activity and in the appeal to different network types are determined. Network types include horizontal and vertical networks as well as collaboration with third parties. Actually a link between network activity and innovation is observed, under condition that networking occurs in an effective and efficient way. Important bottlenecks for networking as a tool for innovation are a lack of human and financial resources, a strong competition and conflicts of interest between the network partners, leading to individualism and distrust, a high threshold between growers and research and governmental institutes and a low perceived added value or organized network activities. Some critical success factors for networking are lowering the threshold and enhancing trust and transparency among network members. Growers should take advantage of the underutilized innovation possibilities through enhanced networking. This would increase the farmers' insights into changing markets and consumer needs and the necessary and relevant partners and information as trigger for innovation. This study delivers valuable insights and implications for growers as well as network coordinators. An important recommendation is that growers as well as network coordinators should apply strategies to connect with each other in the most effective and efficient way.

Keywords: innovation, network activity, ornamental plant production, qualitative research, Flanders

1. Introduction and objectives

For farmers, as well as entrepreneurs in general, innovation is widely recognized as an important strategic tool to increase the competitive advantage of their companies (Schumpeter 1934; Nonaka et al. 2000; Gellynck et al. 2007), resulting in a better financial as well as sustainability performance (Diederer et al. 2003; Sporleder 2003; Knudson et al. 2004; Deuninck et al. 2008;

van Galen and Verstegen 2008). Innovation can be defined as an ongoing process of learning, searching and exploring, resulting in new products, new processes, new forms of organisation and new markets (Lundvall, 1995). In this context, several authors state that it is important to specify to whom the innovation is new: the economy, the sector or the farm (Goldenberg et al. 2001; Garcia and Calantone 2002; Mann 2005). In this paper, the focus is on innovations that are new to the farm and to the sector. Furthermore, all degrees of innovation ranging from incremental to radical innovations are considered. The ornamental plant sector in Flanders (northern Belgium) is selected because of its historical geographical concentration and problems with developing and implementing innovations (Taragola et al 2002; Taragola 2003; Van Lierde et al. 2011). These problems are possibly solvable through networking (Fearne and Hughes 1999; Omta 2002; Pittaway et al. 2004; Camps 2004; Thorpe et al. 2005; Röling 2009). In this paper, networking is defined as the exchange of information or services among individuals, groups, or institutions and aims at the cultivation of productive relationships for business (Merriam-Webster 2013). In the next section the link between networks and innovation is outlined in more detail.

2. Conceptual framework

The three key elements from the previous section – farm, innovation and network- are situated within the conceptual framework below. The framework outlines the research questions.

Plenty of recent studies indicate that the locus of innovation is no longer the individual firm, but increasingly the network within which the firm is embedded (Powell et al. 1996; Omta 2002; Pittaway et al. 2004). Approaches considering agricultural innovation as the result of a process of networking and interactive learning among a heterogeneous set of actors, such as farmers, input industries, processors, traders, researchers, extensionists, government officials, and civil society organizations, are increasingly applied (e.g. Hall et al. 2003; Morris et al. 2006; Spielman et al. 2008; Klerkx et al. 2010). The network therefore plays an important role for firms in terms of developing innovation (Figure 1)(Omta 2002; Pittaway et al. 2004). The introduction of innovations through networking can be hampered or facilitated by numerous bottlenecks and success factors, which can be internal or external to the farm (Avermaete et al. 2003; Scozzi et

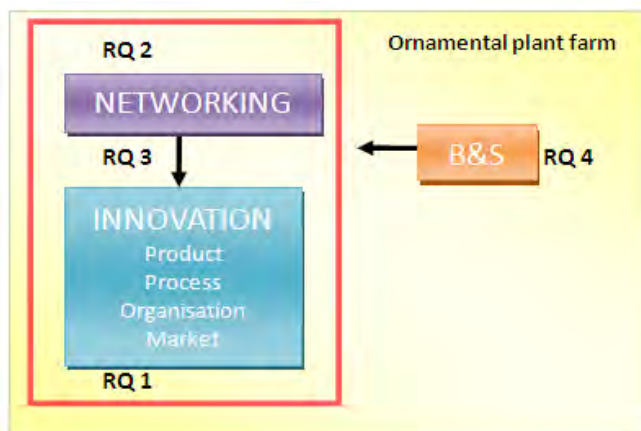


Figure 1. Conceptual framework for investigating bottlenecks and success factors (B&S) for networking as a tool for innovation (adapted from Gellynck X. et al, 2007), and research questions (RQ. 1-4)

al. 2005; Maravelakis et al. 2006; O'Regan et al. 2006). This paper focuses on the investigation of bottlenecks and success factors for networking in the ornamental plant production. The objective is to investigate the bottlenecks and success factors for networking. To reach this objective, first the following research questions are formulated: 1) What kind of innovations are applied?, (2) What kind of networks are used?, (3) What role does networking play in the contribution to the development and implementation of innovations? This leads to the final research question: (4) What are the main bottlenecks and success factors for networking as a tool for innovation?

3. Methodology

Between June 2011 and March 2013, 20 in-depth interviews and two focus group discussions with 9 growers were conducted, which are both qualitative research methods that assemble detailed attitudinal and experiential information from the respondents by using open-ended, exploratory questions in a semi-structured way (Powell and Single 1996; Malhotra 1999). Interview guides based on a comprehensive literature review were pilot-tested and adapted accordingly. Data were collected from growers and network coordinators active in the Flemish ornamental plant sector. In total, 14 ornamental plant growers were interviewed, from which 5 were also network coordinators. Furthermore, 6 interviews were conducted with exclusively network coordinators. For the focus groups, the subsector of azalea production was selected, because of its high importance in Flemish ornamental production. One group was characterized by a high network activity and another by a low network activity. All interviews and focus groups were audio-recorded and transcribed. The analysis of the data is based on the grounded theory-approach, which implies that information gathering and theoretical conceptualization of a given phenomenon evolve through a continuous interplay between analysis and data collection (Strauss and Corbin 1994). Rather than starting with a hypothesis, the first step is data collection. From the data, key points are marked with a series of codes. The responses were categorized in different analytical groups based on common similar words, concepts or themes. We ended with selective coding to refine the analytical categories. The data were sorted and coded using NVIVO.

4. Findings

4.1. What kind of innovations are applied in the ornamental plant sector?

The first question to the respondents was dealing with their perception of innovation, resulting in the reporting of mainly product and process innovations. Only some of them mentioned spontaneously market and organizational innovations as well. Afterwards, we formulated our definition of innovation: "Product, process, market and organizational innovations which are new to the farm or the sector, ranging from incremental to radical innovation", ensuring that everyone was speaking about the same. The innovations mentioned were those already implemented or likely to be implemented by the respondents. Table 1 gives an overview of the mentioned innovations by domain.

PRODUCT INNOVATION: As ornamental plant production is subject to trends, and consumers are keen on new products and product varieties, product innovation is necessary and hence an important type of innovation. However, a lot of growers are rather reluctant to introduce radical product innovation, because of the risk of investing in a product in which consumers might not be interested. Other introduced product innovations are driven by income related reasons, for example a change-over from indoor plants to outdoor plants to reduce energy costs.

Table 1. Innovation in ornamental plant production by domain

Product innovation	Process innovation	Market innovation	Organizational innovation
– New product-/ pot size – New product variety – New product – Selling flowering plants instead of the plants in bud – Switch to cultivation of less energy requiring plants	– Robotization – New cultivation method – Water recycling – Expansion – New technical solutions to improve quality – Installation of co-generation engine, solar panels – New fertilization techniques – Applying alternatives for pesticides	– Own label – New packaging – Establishment web shop – Self-service field with cut flowers – New product combinations packed together	– Move labour intensive tasks to low wage countries – Hire East-European labour forces – Establishment of close collaboration with colleagues to assure sales – Elimination of links in the chain – Establishment of close collaboration with chain partners to fulfil market needs – Joint product development activities – Formation of a joint research network – New establishment – Introduction of a new software system

PROCESS INNOVATION: In general, process innovations are driven by high labour and energy costs, environmental regulations and the need to improve the quality of their products. Labour costs are decreased, for example by introducing robots to plant or sow products, while installing a cogeneration engine or solar panels helps to minimize energy costs. In order to meet the increasing environmental requirements, investments in environmental friendly techniques such as water and waste recycling are necessary. To improve plant quality, innovations in the production process, such as new fertilization methods and alternatives for pesticides are important.

MARKET INNOVATION: To assure and increase their sales, growers have to introduce market innovations. Examples in this domain are the development of a label or new packages. Other identified market innovations are preparing new product combinations packed together, the set-up of a self-service field with cut flowers or the establishment of a web shop.

ORGANIZATIONAL INNOVATION: This kind of innovation can be very diverse with various underlying drivers. High labour costs are an important driver for moving production branches to low wage countries or hiring East-European seasonal labour forces invoking the need for accommodation and adapted human resource management. Collaborative initiatives are set up between growers to distinguish themselves in the market, and between growers and research institutes, to develop market oriented product varieties. Furthermore, changes of relationships within the chain are observed. Several intermediary links are eliminated, which brings the grower closer to the end-consumer. In this way, the added value of the sold product can be shared among less links, and the grower is better aware of the market needs because of his closer contact with the end-consumer. Also close collaboration with the chain partners is another observed possibility to be better aware of the market needs. Other examples of organizational innovations are the introduction of a new software system and the building of a totally new establishment.

Although innovations in all domains are applied by ornamental plant growers, most of the interviewees do not acknowledge the necessity of innovating in other domains than process innovations.

4.2. What kind of networks are used in ornamental plant production?

Table 2 gives an overview of the networks used, divided in three major categories: horizontal and vertical networks as well as collaboration with third parties (based on Gellynck and Kühhe, 2008).

HORIZONTAL NETWORKS (peers): A large variety of formal collaboration possibilities with peers is identified, including organisation of transport, marketing or buying of products, developing new products, ... More informal networks are : the exchange of information with colleagues from inside as well as outside the sector, following on the activities organized by sector associations or network activities for entrepreneurs in general, contact with colleagues at fairs, conversations related to the companies' activities with family, friends and personnel.

VERTICAL NETWORKS (chain): We observed that collaboration of growers is often better with suppliers than with customers, due to the stronger bargaining power of the latter. Via suppliers, growers are informed about the novelties on the market and the possibilities for their farm. Collaboration with customers to obtain access to market needs seems to be difficult. Nevertheless, in some of the cases, examples of close collaboration are identified. Furthermore, collaboration with wholesalers is difficult since many growers do have the perception that they want to exploit them.

THIRD PARTIES: These are persons or entities which are other than peers or the chain. Noteworthy is Sietinet, which is a network established and coordinated by a research institute (ILVO) with the aim to improve the translation and transfer of research results to the sector via individual

Table 2. Networking and collaboration for innovation in ornamental plant production by type of network

Type of network	Type of partners
Horizontal (peers)	Colleagues ornamental plant growers Network established by advisor Sector association/ producer association Professional network of entrepreneurs/ business club Cooperative auction Fairs Personnel Family Friends Colleagues outside of the sector
Vertical (chain)	Suppliers of materials, infrastructure Wholesalers/traders Customers End-consumers
Third parties	Research institutions Governmental institutions Educational establishments Consultancy agencies Innovation Support Centre Financial provider Think-tank 'Ornamental Plant Strategy 2020' (growers, chain partners, producer association, government, research institutes)

advice and the organisation of workshops and courses. The coordinating research institute collaborates with eight other Flemish research institutions to support innovation in the sector. Only the members of the network can make use of the offered services. Moreover, this network brings multiple growers together, which offers numerous opportunities for horizontal networking. In addition, the role of consultancy agencies is significant. Furthermore, collaboration takes place with governmental institutions, the Innovation Support Centre, and educational establishments. Besides, financial providers are also important third parties, facilitating innovation. Also the Think-tank 'Ornamental Plant Strategy 2020', which has the mission to formulate strategies and actions for the future. It is established by the Flemish government, including a number of progressive growers, an export company, an advisor, practice-based and fundamental researchers and a representative of a producer organization.

4.3. What role does networking play in the contribution to the development and implementation of innovations?

Respondents were asked how important they perceive networks in the contribution to the development and implementation of innovations. They reported that the outcomes of network participation were generally advantageous to learn something, to reduce the distance between the sector and policymakers, to prevent them from insulation, to know the right people/place when information is needed and to obtain information from outside the sector. Further advantages mentioned were the possibility to exchange knowledge with colleagues and the higher awareness of things that happen and new trends. Overall, networking is perceived as an important strategic tool to come to innovation in the sector.

An observation is that the networks used partly differ dependent on the type of innovation. For product innovations, growers work frequently together with a research institute for the development of a new product, and appeal to networks with customers to gather market information. To obtain ideas for product innovation, they mainly are drawn back on colleagues and suppliers. For market innovations, some recent collaboration initiatives are set up to market products together with colleagues. With regard to organizational innovations, it is observed that networking with people from outside the sector is very important to obtain ideas. Also the Innovation Support Centre is mentioned as an important network for developing and implementing organizational innovations.

4.4. What are the main bottlenecks and success factors for networking as a tool for innovation?

BOTTLENECKS: Based on the interviews, internal as well as external bottlenecks for networking can be distinguished. A lack of human resources is an important internal bottleneck, including problems in terms of managerial competencies and the absence of a strategic vision. Also a lack of financial resources in terms of time and money are an internal bottleneck, which are often linked to the size and structure of the company. External bottlenecks relating to horizontal networks involve a strong competition between the network partners, leading to individualism and distrust, fear of losing own identity and difficulty to find connections with others. Ornamental plant growers are individualists; the smaller the market, the more competition and distrust. With respect to vertical networks within the chain problems arise when chain members do not consider each other as potential partners for collaboration, due to conflicts of interest and disbelief that collaboration efforts would deliver greater benefits for all chain members. Also the strategic vision

towards innovation often differs between the members of the chain. An important bottleneck for networking with third parties such as research institutions, governmental institutions, etc. is that the threshold is often too high. Nevertheless, recent initiatives of collaboration between growers and research institutes, such as Sietinet, have proven to be successful. Another bottleneck is the low perceived added value of organised network activities. Respondents mentioned that the same topic is often covered by different organizers. Moreover, as growers' problems and hence the required information and knowledge is very company specific, they spend a lot of time listening to less relevant information. Furthermore, growers state that they are often not aware of organized activities.

SUCCESS FACTORS: Critical success factors for networking in general are lowering the threshold between the network members and enhancing trust and transparency. Trust, or the lack of trust, were much-discussed issues for horizontal and vertical networks. With respect to networking with third parties, recently initiatives are launched by research institutes to decrease the threshold with the growers, which is mentioned as a significant improvement by the sector. For example, in Sietinet, trust is enhanced via a contract, guaranteeing that research results remain confidential and property of the company who asked the question.

5. Conclusions

The answers on the first research question of this paper '*What kind of innovations are applied?*' reveal that ornamental growers have many possibilities in the domain of product, process, market and organizational innovation, which are often underutilized. In general, innovations in the ornamental plant sector are driven by high energy and labour costs, environmental regulations, product quality improvement and difficulties to market products.

The second research question is: *What kind of networks are used?* The findings indicate that a high diversity in network types is used, which can be categorized as horizontal and vertical networks and collaboration with third parties. Research question three investigates *The role of networking in the contribution to the development and implementation of innovations?* Among the respondents, networks are perceived as very important in the contribution to innovations, similarly to the finding of Omta (2004) and Pittaway et al. (2004). The fourth research question, which can only be answered on the basis of the previous findings focuses on the *Investigation of the main bottlenecks and success factors for networking as a tool for innovation*. Internal bottlenecks are the lack of human and financial resources, which are often linked to the size and structure of the company. In general, the internal bottlenecks observed are in line with previous studies in agribusiness in general (Avermaete et al. 2003; Scozzi et al. 2005; O'Regan et al. 2006; Kühne 2011) and more specifically in ornamental plant production (Taragola and Van Lierde 2010; Van Lierde et al. 2011). External bottlenecks relating to horizontal networks involve strong competition between the network partners, leading to individualism and distrust. Also previous research in the ornamental plant sector confirms this lack of trust among the growers, which can be related to the individual commercialization structure with a small number of producers per product (Taragola et al. 2002; Taragola 2003; Van Lierde et al. 2007; Van Lierde et al. 2007). External bottlenecks relating to the vertical network are induced by conflicts of interest and disbelief that collaboration efforts could deliver greater benefits for all chain members. This is also a finding of Kühne (2011), which was also confirmed by Van Lierde et al. (2011) in their research in the ornamental plant sector. With regard to networks with third parties, important bottlenecks are the high threshold between the growers and research and governmental institutes, etc. and a low perceived added

value of organized network activities. However, recently some initiatives to lower this threshold are launched. The growers prefer to invest in company aligned information instead of in general information provided by governmental research institutes. Furthermore, the growers state that they are often not aware of organized activities. Critical success factors for networking in general are lowering the threshold between the network members and enhancing trust and transparency.

Hence, growers should take advantage of the underutilized innovation possibilities through enhanced networking. This would increase the farmers' insights into changing markets and consumer needs and the necessary and relevant partners and information as trigger for innovation.

This study delivers valuable insights and implications for growers as well as network coordinators. As also found in the literature on networking of small and medium sized enterprises (e.g. Birley 1985), an important recommendation is that growers as well as network coordinators should apply strategies to connect with each other in the most effective and efficient way.

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