Journal of Forest Products Business Research
Volume No. 5, Article No. 4

Networking, Innovation, and Performance in Norwegian Nature-Based Tourism

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ABSTRACT

Rural communities in Norway have been under great economic stress in recent years. There has been an increasing debate about how to utilize the large potential in a growing tourism industry to promote rural employment and income. This study is based on the institutional view of innovation with a focus on institutions that are important for stimulating innovations. The objectives are: 1) to determine if networking is positively related to innovativeness and if innovativeness is positively related to performance in the nature-based tourism industry in Norway and 2) to develop an in-depth understanding of how different actors trigger a member of the industry to change, create, or otherwise innovate. An email survey was conducted of companies across the country followed by a qualitative study in one Norwegian municipality. Results indicate that there is a positive connection between networking and innovativeness, and between innovativeness and performance. A qualitative case example illustrates the interaction among actors and the resulting impacts on the innovation process.

Keywords: innovativeness, innovation systems, interactive innovation model, networking, performance

Introduction

Rural communities in Norway have been under great economic stress in recent years. Even though growth patterns among rural communities have differed, all have been greatly affected by urban centralization, global markets, and economic decline in the agricultural sector. The multi-dimensional value of natural resources creates possibilities for local economic development, and landowners are a key factor in releasing this potential (Landbruksdepartementet 1999). Norway has a long tradition of maintaining rural populations and supporting the agricultural sector via government policy. Promoting alternative uses of forestlands has been an important topic in political debate.

The concept of innovation has historically been grounded in the idea of producing a physical product within the industrial sector. When Schumpeter (1934) introduced his definition of the term

"entrepreneur", it was linked to the production of "shipping goods" (Kilkenny 1999). Shipping goods, in this context, refers to products that are shipped out of a region to be sold in a market somewhere other than where they were produced. Conversely, shopping goods (Kilkenny 1999) are products that must be consumed where they were produced. Nature-based recreation services may be characterized as shopping goods. An experience of nature, or the landscape, can only be fully realized where the compelling element of nature is found. Consumers must travel to the place where they can have the experience. During the 1980s and 1990s, development of tourism increased rapidly in Norway. Of particular note is that Norway's relatively untouched nature attracted large groups of Europeans with increased purchasing power. In response, Norwegian tourist operators began developing new products and services to meet this growing demand. This was also the case within nature-based tourism. We argue that changes on the supply side can be described and analyzed using innovation theory.

Innovation in the Schumpeterian sense implies the introduction of something new that did not exist before. If there are only small changes or adoptions of an existing idea, this can be described as copying, imitating, or diffusion of a known technology. There are few examples of radical innovations in the nature-based recreation industry. Still, managers in the industry make numerous changes, which they themselves characterize as incremental innovations. In this article we have used the subjective view of innovation as defined by managers. The concept of innovation is then not a radical innovation in the Schumpeterian sense, but rather an incremental change.

Many studies have analyzed the effects institutions have on innovation (Lundvall 1992, Nelson 1993, Edquist 1997, Isaksen 1997). The main contribution to systems of innovation research applied to the forest sector comes from the European Forest Institute Project Centre INNOFORCE in Vienna (Weiss 2004; Rametsteiner et al. 2005; Weiss and Rametsteiner 2005; Kubeczko et al. 2006; Rametsteiner and Weiss 2006a, 2006b; Hansen et al. 2006; Weiss et al. 2007). This study is based on the institutional view of innovation with a focus on institutions that are important for stimulating innovations. *The overall objective of this study is to gain a better understanding of the impact networking has on innovativeness among nature-based tourism companies and to gain an enhanced understanding of the connection between innovativeness and economic performance.*

This article begins with a theoretical background where innovation/innovativeness, institutions, innovation systems, the effect of innovation on performance, and the interactive innovation model are described. Both qualitative and quantitative methods are used. The first phase of the study is quantitative, and the relationships among networks, innovations, and performance are empirically tested. The second phase is qualitative, and, in order to gain depth of understanding, field interviews were used to exemplify institutional systems applied to one nature-based recreation company and its surrounding actors and institutions. We consider this second phase to be an illustrative case example. Each phase is described separately in the Methods and the Results sections. Results from both phases are discussed and implications provided.

Theoretical Background and Hypotheses

Innovation and Innovativeness

Josef Schumpeter (1934) is largely regarded as the first important source of modern innovation theory. In his economic analyses, Schumpeter focused on the enterprise and the role of the

entrepreneur in the economic process. In general, innovation denotes the successful introduction of novelties and is often considered synonymously with technological innovation. Despite extensive study, there is no unified definition of the term innovation (Grønhaug and Kaufmann 1988). From Webster's Dictionary, one might distinguish between the act of innovation and a change effected by innovation. There is a general consensus that innovation represents something new (Grønhaug and Kaufmann 1988). It is normal to separate the act of innovation and the output of innovation. One also normally distinguishes between inventions and innovations. An invention is the first occurrence of an idea for a new product or process and innovation is the act of putting it into practice (Fagerberg et al. 2005). From an economic perspective, an invention must be advantageous, or at least thought to be advantageous, to be considered an innovation.

Hjalager (1994, 2002), studying the tourism industry, suggested that innovations take place in one or a combination of the following five categories: product innovation, process innovation, management innovation, logistics innovation, or institutional innovation. Schumpeter (1950) divided innovation into product, process, organizational, and market innovation. Product innovations are new, or better, material goods, as well as intangible services (Fagerberg et al. 2005). Process innovations are new ways of producing goods and services (Edquist 1997). Organizational innovation is defined as the creation or adoption of an idea or behavior new to the organization (Daft 1978, Damanpour 1996, Fagerberg et al. 2005). Market innovation is reaching new markets with the same or new products or services. Some researchers, who use an innovation systems approach, also include organizational innovation in process innovation (e.g., Edquist 2001, Rametsteiner et al. 2005, Kubeczko et al. 2006). According to Schumpeter, organizational innovation is not limited to new ways of organizing the process of production within a given firm (Fagerberg et al. 2005). Other researchers have separated these concepts (e.g., Daft 1978, Damanpour 1996, Fagerberg et al. 2005).

Innovation in the service sector has been a topic of growing interest among researchers and policy makers. There are several general contributions to the literature (e.g., Hjalager 2002, Walder et al. 2006); however, the diversity across service industries complicates generalization (Fagerberg et al. 2005). A large part of the service sector is, for example, technology intensive and the link to nature-based tourism and small and micro companies is not obvious (Hollenstein 2003). One component of the literature on innovation in the service sector focuses on tourism (e.g., Hallenga-Brink and Brezet 2003).

Studies in many countries clearly demonstrate that the tourism sector is dominated by micro and small-scale companies, and that most are owned and operated by a single person or family (Hjalager 2002). Companies offering nature-based services, or products, are mostly located in rural areas. When located in sparsely populated areas, the need to collaborate (e.g., networking, social capital) can be especially important (Vennesland 2004). Despite the potential advantage of collaboration, these firms often see each other as competitors rather than cooperators within a geographical area.

We follow Schumpeter (1950) and distinguish among product, process, market, and organizational innovations. In innovation studies, however, it has proven difficult to implement Schumpeter's distinction between 'first mover' innovation and other firms' adoption of the innovator's 'way of doing things' (Hauknes 1998). Especially in studies of service innovation, the concept of 'new to the firm' has been frequently used (Hauknes 1998) and we use this concept in this article. The definition of

innovation we use is wider than Schumpeter's innovation concept, but in line with what is commonly used in service innovation studies. We define innovation as the act of carrying out ideas, while innovativeness is a characteristic of a firm that carries out ideas.

Institutions and Innovation Systems

There are many definitions of an institution in the literature. Scott (1995, pg. 33) defined an institution as: " ... [institutions] consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers – cultures, structures, and routines – and operate at multiple levels of jurisdiction." According to North (1991), institutions are understood as a set of habits, routines, rules, laws, or regulations that regulate the relations and interactions among individuals, groups, and organizations. An institution connects to a practice, a relationship, or an organization that has been institutionalized inside a society or culture. Private property rights and forest owner organizations are examples of institutions. An institution can also be connected to a place or an object, such as forest owners in rural districts, a library, or a university in Norway.

The Systems of Innovation (SI) approach to study innovation was introduced by Freeman (1987) and followed by Lundvall (1992) and Nelson (1993). An institutional view of innovation is reflected in the literature on systems of innovation. The institutions shape, and are shaped by, the actions of organizations and relationships among them (Edquist 1997). The main components of a system of innovation are actors, institutions, and their interactions. Actors are considered to be organizations, which are seen as formal structures with an explicit purpose and are consciously created (Edquist and Johnson 1997). Interaction among actors and institutional settings is important for innovation activities. Companies do not normally innovate in isolation. Instead, innovations are seen as based on learning that is interactive among organizations in the SI approach (Edquist 1997, 2001).

The main contributors to SI research (Freeman 1987, Lundvall 1992, Nelson 1993) have focused on National Innovation Systems (NIS). Later innovation systems approaches have been further developed as Sectoral Innovation Systems (SIS) and Regional Innovation Systems (RIS). Sectoral Innovation Systems focus on various technology fields or product areas (e.g., Breschi and Malerba 1997, Carlsson 1995). In the debate concerning the nature of the innovation process at the local and regional level, the innovation model is called RIS. Most of the contributions on the nature of innovation in RIS refer to innovative dynamics based on technological change, organizational learning, path dependency, organizational selection, networks, institutions, and governance. These became distinct elements of the new theories (Carlsson and Jacobson 1997). It is explicitly recognized by scholars that learning and technological change are rooted in the structure of the economy; they are characterized by regional specificities and include strong elements of path dependency (Rametsteiner and Weiss 2005, Rametsteiner et al. 2005). Some of the main contributions to SI are summarized in **Table 1**.

Table 1. Main contributions to SI and SI applied to the forest sector.

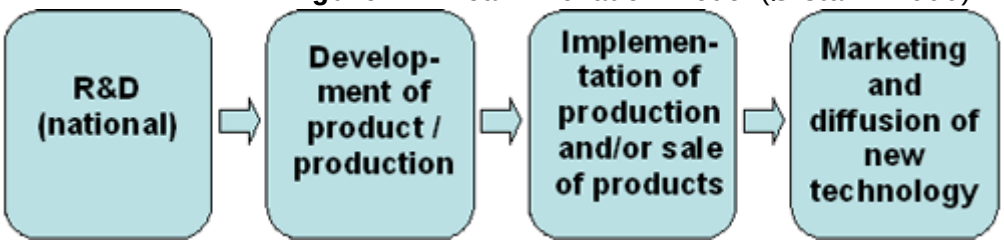
Author(s) and date	Main contributions
Freeman (1987)	Define NIS: The network of institutions in the public and private sectors whose activities and interactions initiate, import, and diffuse new technologies.

Lundvall (1992)	Theoretically oriented focus on SI, seeking to develop an alternative to neo-economic tradition by placing interactive learning, user-producer interaction, and innovation at the center of the analysis.
Nelson (1993)	Study of national R&D systems by calling attention to case studies.
Edquist (1997)	Define SI: All important economic, social, political, organizational, and other factors that influence development, diffusion, and use of innovation.
Isaksen (1997) and Asheim and Isaksen (1997)	Study of regional R&D systems by calling attention to case studies.
Rametsteiner et al. (2005)	Combine the National and Regional Innovation Systems and apply them to the forest sector.

Model of Innovation and Network Theory

The theoretical framework of this study is based on the concept that institutions mold the innovation system (IS). Two different innovation models have been developed, the linear and the interactive innovation models. The linear model (**Fig. 1**) was developed during World War II (Ørstavik 1996).

Figure 1. Linear innovation model (Ørstavik 1996).

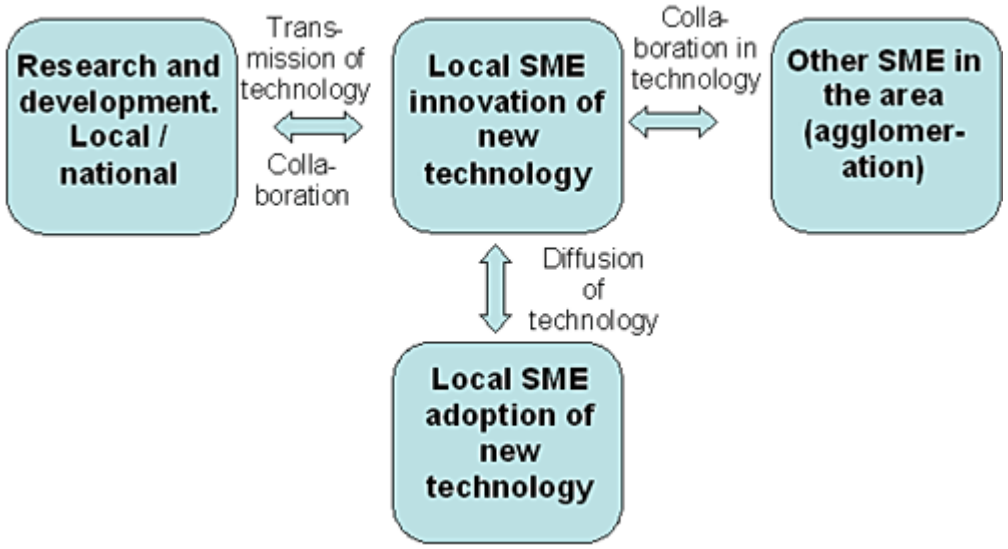


The linear model assumes that ideas and concepts leading to innovation come from R&D institutions and R&D divisions inside larger corporations, and that only new development in pure research will lead to innovation (Isaksen 1999). It focuses on technological innovations, new products, and new manufacturing equipment (Isaksen 1999). If national institutions make the basis for innovations, it is called a national innovation model. If there are regional institutions that make the basis for innovations, it is called a regional innovation model.

This linear innovation model was criticized because it does not allow analysis of the stepwise and practical way small- and medium-sized enterprises (SMEs) innovate (Isaksen 1999). This critique is even more applicable in nature-based recreation services companies in rural areas. Accordingly, the linear model is not suitable for the study of micro-scaled companies, the targets of this research.

The interactive innovation model (**Fig. 2**) gives a more diversified view of what generates innovation. In the interactive innovation model, companies are placed in the center surrounded by other actors or institutions that may influence their ability to innovate.

Figure 2. An example of an interactive innovation model (Landabaso 1995).



The main difference between the linear innovation model and the interactive model is that communication occurs in both directions rather then being unidirectional. An actor cannot be isolated and analyzed alone; rather, it must be assessed according to how it is functioning in relation to institutions within its network. It is important to adopt a 'bird's eye' view and look at the local innovation process using an abstract, holistic approach. Adopting such an approach allows the researcher to analyze the situation of single institutions, while constantly considering their contexts without losing the overall regional/local, value-added perspective. This can help to explain successes within single companies. The interactive innovation systems might be more complicated, and there may be more influential actors than appear in **Figure 2**.

The innovation system approach is based on the idea that actors do not innovate in isolation, but via continuous interactions with others. Other schools of thought acknowledge the importance of networking among heterogeneous groups. Social theory and network analysis also consider this phenomenon (Fagerberg et al. 2005). Granovetter (1973) and Burt (1992) emphasize that large and diverse social circles can facilitate innovation. Social networks can be looked at as a social structure with individuals or organizations that are tied by an interaction. These interactions must have some meaningful longevity to be considered part of a social network (Jensen 1999). An example of a social network for a nature-based company can be neighbors, local competitors, and friends and family who interact with the company. The social networks provide the entrepreneur with social capital (e.g., trust, information, ideas), which is a quality between people and increases the return based upon a person's intelligence, education, and work experience (Burt 1997). In other words, social networks have an important role in maintaining and/or enhancing the ability to be innovative.

Granovetter (1973) distinguishes between strong and weak ties. The strength of the network depends on factors such as trust, friendship, level of interaction, and the length of the relationship. A person has a strong tie to another he interacts with regularly (e.g., close friends, family, and other landowners) and is important for social support. It is important, especially for individual entrepreneurs with a micro organization or without an organization, to have the trust and support from an inner circle (strong ties). One drawback with strong ties with regard to innovation is that these tend to circulate old ideas. A person has a weak tie with someone he interacts with rarely (e.g., acquaintances). These types

of ties have the advantage of being more likely to introduce novel information. Network theory also distinguishes between direct and indirect ties (Burt 1992). Indirect ties can be an effective way for actors to partake of the benefits from a network without paying the costs of maintaining the network.

Nevertheless, the number of direct ties a company maintains, both strong and weak, is likely to affect its innovative output (Ahuja 2000). Both the innovation system and the social network literature suggest that the number of ties or interactions have an effect on innovation outputs, leading us to propose the following hypothesis:

Hypothesis 1: The greater the extent of social interactions, the greater the degree of innovativeness among nature-based tourism companies.

The Impact of Innovations on Performance

The link between innovation and performance has been a central issue in the literature. This can be traced back to Schumpeter (1934) who looked at economic development as a process of quantitative changes, driven by innovation (Fagerberg et al. 2005). Other literature has also emphasized the importance of innovation (Deshpande 1993). The diffusion literature has documented the importance of innovation in organizations (Rogers 2003). Grønhaug and Kaufmann (1988) linked innovativeness to organizational performance and argued that companies must be innovative to gain a competitive edge in order to survive and grow. Later literature has also shown a link between innovativeness and performance (Han et al. 1998).

Recent research applied to the forest products industry in the United States has shown a positive relationship between innovativeness and performance (Knowles et al. 2007, Crespell and Hansen 2008, Crespell 2007). The literature generally supports the idea that innovativeness positively impacts performance, suggesting the following hypothesis:

Hypothesis 2: The higher the degree of innovativeness, the greater the economic performance among nature-based tourism companies.

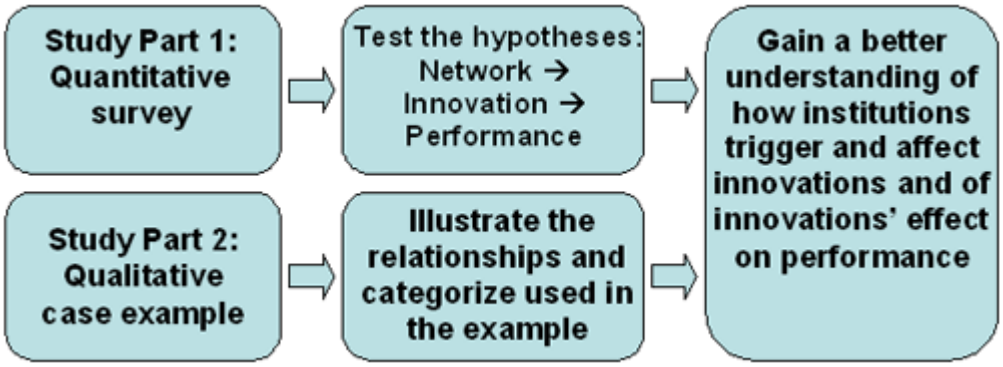
Micro-Companies in Nature-Based Tourism

Companies in the nature-based tourism sector in Norway are normally micro-scaled with less than five employees (Vennesland 2004, Lunnan et al. 2006). Small-scale family businesses often differ in the manner of profit maximization and do not necessarily behave according to the normal expectation of growth and profit maximization (Getz and Carlsen 2005, Carlsen et al. 2001). When the needs and preferences of the owning family are met, they often avoid rapid growth and strive for what can be called lifestyle goals (Vennesland 2005). Innovations in these companies are more likely to be the adoption of known products/services and processes, but as these would be new to the firm, they fall within our innovation concept.

Methods

A multi-method approach with both qualitative and quantitative methods was used in this study (**Fig. 3**). In the quantitative component, we tested if the network of a micro-firm affects innovation and if innovation affects performance. In the qualitative component, we illustrated the findings of the quantitative portion of the study and how a network of actors can trigger a micro-firm to change, create, or otherwise innovate using a case example.

Figure 3. Overview of study parts and objectives.



Part 1 – Quantitative Survey

For the purpose of generalization, we simplified the interaction model and looked at how networks affect innovation and if networks and innovation affect performance.

Measurement and Questionnaire Development

Little research has been done in the context of innovativeness and networking in nature-based companies. Most firm-level innovativeness research focuses on larger companies in well-known industrial sectors. There are major organizational differences between larger companies and those of interest in this study. All constructs in the main model were measured with multiple-item scales (Churchill 1979). Because of a lack of suitable pre-existing multiple-item constructs, this study created scales based on previous research.

In this study, we looked at **Network** from a System of Innovation perspective. This was measured using a 7-item scale (**Table 2**). All items measured the level of interaction with institutions and actors, which are locally and nationally connected to innovations and changes in micro-companies. All items were developed specifically for this study, but all institutions and actors were identified based on previous literature (Isaksen 1997, 1999; Asheim et al 2003; Rametsteiner et al. 2005). All items were measured using a 6-point Likert scale, ranging from 1 (totally disagree) to 6 (totally agree).

Innovativeness was measured based on changes in the company during the previous three years. In this way, companies with more innovations were considered to be more innovative. We followed Schumpeter (1950) who divided innovation into product, process, organizational, and market innovation (**Table 2**). Product innovation was measured by the percent of sales related to products introduced during the last three years. Nature-based companies are small and we wanted to avoid question complexity. Therefore, the process, market, and organizational innovation items were

measured on a dichotomous scale, according to whether changes had been made in each area during the last three years.

Performance was considered to be financial performance and growth and it included three items. Calantone et al. (2002) measured firm performance in large companies by return on investment, return on assets, return on sales, and overall profitability. There has been no consensus regarding how to measure performance in small companies, and research has focused on variables that are easy to collect (Wiklund 1999). Micro-scaled, nature-based companies in Norway do not necessarily have a separate financial statement for their business and measurement scales designed for larger firms are not likely to be suitable. Nature-based tourism companies in Norway will often be a supporting activity to a farmer or a forest owner where the goal of the activity is to maintain the farm and forestland, rather than maximize earnings. Therefore, in this study we have used three items: 1) growth in sales, 2) growth in net income and 3) growth in person-years. Growth is the most important aspect of performance in small companies (Wiklund 1999). To make the questions as easy as possible to answer, respondents were asked if each item had: 1) increased, 2) stayed the same or 3) decreased (**Table 2**).

Table 2. Construct operationalization used in the study.

Construct	Dimension	Concept description	Scale anchors
Network	1. National public support institutions	High level of interaction with different institutions and actors, locally and nationally connected to innovations and changes in the micro-companies.	1: totally disagree 6: totally agree
	2. Local extension service		
	3. Local politician		
	4. Co-op/forest owner association		
	5. Other forest owners/neighbors		
	6. Customers		
	7. Suppliers		
Innovativeness	1. Product innovation	Percent of sales related to new products introduced during the last three years.	1: less than 10 percent 6: more than 50 percent
	2. Process innovation	Companies that have made changes in processes, marketing, or organizing during the last three years.	0: No changes in the last three years 1: Changes made in the last three years
	3. Market innovation		
	4. Organization innovation		
Performance	1. Growth in sales	Changes in sales, net income, and person-years during the last three years.	1: Reduced 2: Same 3: Increased
	2. Growth in net income		
	3. Growth in person-years		

The questionnaire consisted of three major sections: (1) Innovativeness, (2) Network, and (3) Performance. Additional information included the property size, number of person-years, activities offered, net income, turnover, and a set of questions used in a separate study. The questionnaire was pre-tested using five researchers and forest recreation micro-companies. Based on the pre-test, only small changes were made.

Sampling

Nature-based recreation services companies in Norway were surveyed. Seven forest owners' associations were contacted and asked to provide contact information for all relevant companies among their members. We received contact information from five of the associations. Additionally, all relevant companies from the organizations Norwegian Rural Tourism and Food from the Farm were selected. The sample frames provided a list of companies representing virtually all regions of the country. We could not find e-mail addresses for 26 of the companies in our contact list and, therefore, they were deleted. The questionnaire was e-mailed to 366 forest owners. Forty-two messages were undeliverable resulting in 324 delivered e-mails. Two reminders were sent at one and two weeks after the original message.

Data Screening and Non-Response Bias

Of the 324 questionnaires emailed, 178 responses (55%) were received. Item non-response resulted in an average of 4 percent missing observations with no one item having a large proportion of missing observations. Nonetheless, listwise deletion would have meant losing 24 percent of the cases, so the Expected Maximization Algorithm (EM) for multiple imputations in LISREL 8.80 was used to impute the data (Acock 2005). Four highly unbalanced cases were deleted, resulting in 174 valid responses. In terms of distribution, the variables distributed relatively normally. None of the single items were obviously non-normal, so non-normality was not considered a problem.

We tested for non-response bias using t-tests, where the first 30 respondents were compared to the last 30 respondents with respect to the number of person-years, property size, innovativeness, and performance (Armstrong and Overton 1977). The results showed no significant differences ($p < 0.05$) between early and late respondents, suggesting that non-response bias was not of concern.

Analysis

All basic statistical analyses were performed using SAS version 9.1. The hypotheses: (1) network is related to innovation, and (2) network and innovation combined are related to performance, were tested through Structural Equation Modeling using LISREL 8.80. The models analyzed were covariance structure models with multiple indicators for all latent constructs. Indicators for performance and innovation were categorical. Therefore, the Weighted Least Squares (WLS) method, the polychoric correlation matrix, and the estimated asymptotic covariance matrix of the polychoric correlations were used in the analysis (Jöreskog 1993).

There are several different possible coefficients for analyzing reliability in Structural Equation Modeling. Cronbach's alpha is the most widely known index of reliability, but the indicator is based on stringent conditions (Byrne 2006). In this study, we used categorical data and Cronbach's alpha was, therefore, not suitable. Instead, Composite Reliability (CR) was used to analyze construct validity, as was Average Variance Extracted (AVE) (Fornell and Larcker 1981, Netemeyer et al. 2003). The CR is analogous to coefficient alpha and reflects the internal consistency of the indicators measuring a given factor (Hatcher 1994). The AVE estimation assesses the amount of variance that is captured by an underlying factor in relation to the amount of variance due to measurement error (Hatcher 1994).

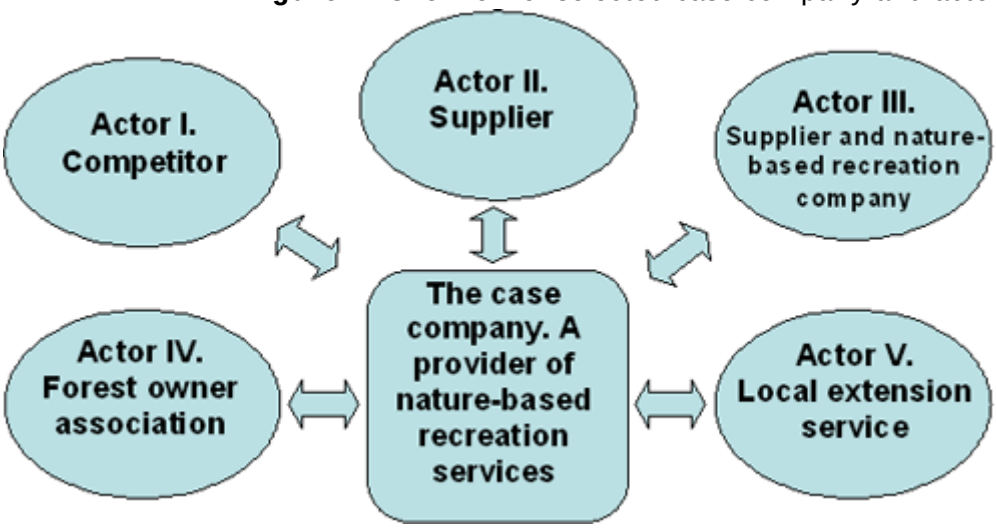
Part 2 – Qualitative Case Example

There are few research findings based on the Interactive Innovation Model and nature-based recreation micro-companies. Our intention with the qualitative approach was to: 1) illustrate the categories used in the study, and 2) to illustrate how a network of actors can trigger a company to change, create, or otherwise innovate using a case example. A qualitative approach is recommended when the main question under investigation is "how" (Yin 1994). The method is also recommended to illustrate categories in a quantitative study (Bryman 2004). Qualitative methods are suitable for gaining an overview of a topic or phenomenon and can be a supplement to a quantitative study (Ryen 2003). This overview gives a better understanding of social processes and context and can provide more insight than quantitative methods.

Sample

Following the approach recommended by Patton (1990), an intensity sampling approach was used to select one information-rich, nature-based recreation company that manifested the phenomenon of interest. Information about the company was collected through newspaper articles, website homepages, and financial statements for the last three years. The company chosen for the case study was a high performance and an above average innovative company. For years, the company had been assessed as being a frontier business in the region. Furthermore, the company in question had received awards for service and publicity from national magazines, been used to promote Norway abroad, and had good financial results over many years. A snowball sampling method (Patton 1990) was used to collect five more examples, which all represented institutions or actors with which the case company interacted. A group of experts, and the company itself, were asked which information-rich institutions and actors were relevant to the innovations in the case company. The five actors selected were: two suppliers, a local extension service, a forest owner association, and one other local, nature-based company. The case company and all actors chosen were from one municipality in rural Norway. An overview of the actors is presented in **Figure 4**.

Figure 4. Overview of selected case company and actors.



Data Collection

Several types of data were collected. Primary data consisted of transcripts from in-person and telephone interviews as well as email communications. Secondary data consisted of documents, newspaper articles, website homepages of the case company and actors, financial statements, and presentations given by the case company and actors.

In the first round of interviews, the company manager was interviewed. To secure reliability, an interview guide was created in advance and used throughout the interviews. The interview guide included the interactive innovation model (**Fig. 2**) and the main questions were:

- Describe innovation in your company.
- Who are the most important actors that have influenced your ability to create something new?

Descriptive information about the company was collected, including the year established, the nature of the company, number of person-years, turnover, and amount. On-site observations were also made. The actors were further asked about whom they interacted and co-operated with during innovation processes.

Each interviewee was introduced to the interactive innovation model (**Fig. 2**). Interviewees were free to discuss whatever actors or institutions that came to mind. In fact, three of the respondents 'grabbed' the paper notes to map the different actors that had influenced their creative behavior. The interviewer wrote field notes and observations throughout the interviews. Pictures were also taken. Interviews ranged from 90 to 120 minutes. An extended transcript of the field notes was created, resulting in a total of 40 pages of notes for the four interviews. Interviews with the forest owner association and the local extension service were limited to informal conversations in the first round.

The second round of interviews was more structured than the first and based on findings from the first round and the secondary data. The forest owner association and the local extension service were interviewed on-site. The remaining four interviews were conducted by telephone. The case company was asked about actors influencing the ability to create something new, what role these actors had in the innovation process, and why they were important. The actors were also asked about their contributions and innovations in the local community, why their contribution was important, and how they had been involved in the innovation process in the case company. Interviews in this second round ranged from approximately 45 to 90 minutes. Only the most relevant and structured parts of the interviews were recorded and later transcribed. The length of recordings ranged from 10 to 15 minutes per interview. Twenty-two single-spaced pages were transcribed covering all of the the second-round interviews. All follow-up communication with the managers was done via email. A summary of the interview composition and descriptive information based on secondary data can be found in **Table 3**.

Table 3. Secondary information about the case companies.

	Amount of data collected[a]	Main role in the innovative model

The case company and the innovator	– 1 personal and 1 phone interview with manager and on-site observations. – 4.5 pages field notes – 3.5 pages transcribed interview – 31 pages secondary data	Nature-based recreation company. Offers outdoor adventure activities, accommodations, and catering with complementary team building.
Actor I: Competitor	– 1 personal and 1 phone interview with manager and on-site observations. – 2.5 pages field notes – 3.5 pages transcribed interview – 18 pages secondary data	Offers outdoor adventure activities. Located in the same municipality. Is a competitor and collaborator of the case company.
Actor II: Supplier and nature-based recreation company	– 1 personal and 1 phone interview with manager and on-site observations. – 3 pages field notes – 3.5 pages transcribed interview – 14 pages secondary data	Production of traditional local food. Offers nature-based activities. Delivers traditional Norwegian food to the case company.
Actor III: Supplier	– 1 personal and 1 phone interview with manager and on-site observations. – 2.5 pages field notes – 4.5 pages transcribed interview – 42 pages secondary data	Cultivation of fish in local water near the case company. Improves the fish quality and accordingly the fishing experience.
Actor IV: Forest owner association	– Informal conversation and 1 interview with section manager and on-site observations. – 3 pages transcribed interview – 38 pages secondary data	Promotes non-wood forest products and services for members, e.g., through courses. Co-operates with the case company.
Actor V: Local extension service	– Informal conversation and 1 interview with section manager and on-site observations. – 2 pages transcribed interview – 2 pages secondary data	Supports local companies that come with new ideas for different commercial activities. Helps companies acquire national funding for projects.
[a] Secondary data include archival documents, newspaper articles, website homepages of case companies, financial statements, and presentations given by case institutions and actors.		

Analysis

In this study, we used a similar approach to that described in the literature (Yin 1994, Miles and Huberman 1994, Rubin and Rubin 1995). Data collection and analysis were partially concurrent as we carefully considered new information from each additional interview. All of the data from the first round of interviews were analyzed before the second round of interviews. Early analyses helped the researchers to cycle back and forth between careful consideration of the existing data and the generation of strategies for collecting new and better data.

The transcripts from each interview were carefully read and coded. Upon completion of this coding process, a summary of all coded text was created, according to the theme. The summaries were read again carefully with a goal of identifying sub-themes. The last step in the analysis was a complete recoding of each interview transcript using each of the newly identified sub-themes. This was done to ensure complete coverage of the transcripts via an additional consideration of the entire text. The transcripts were sent to each of the respondents for comments. Three of the respondents provided additional information regarding the text.

Validity and Reliability

Different precautions were taken to improve construct validity, external validity, and reliability in the qualitative study. Validity was improved by collecting data from different sources, constructing a chain of evidence, and obtaining feedback from managers regarding findings. Techniques and methodologies were also well documented. External validity (generalizability) was supported by the fact that findings were consistent with earlier literature, theory, and findings from the email survey. Data were also collected in two rounds, assuring consistency over a time period. Reliability was maintained by using a carefully constructed case study protocol and established qualitative methods.

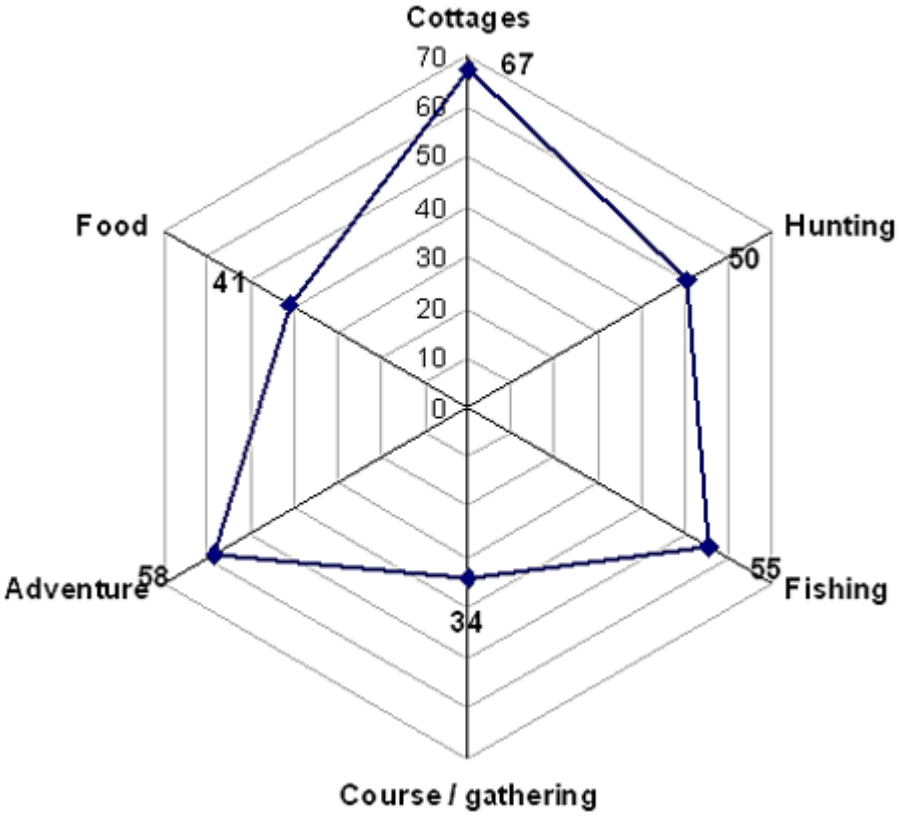
Results

Part 1 – Quantitative Survey Results

Descriptive Information

Fifty-two percent of the respondents were farmers and/or forest owners and 94 percent were landowners. Twenty-three percent had a property size less than 50 hectares and 27 percent had a property size larger than 1,000 hectares. The most common activities are shown in **Figure 5**. Some respondents also emphasized other activities related to food, arranging seminars/gatherings, preparation and sale of cottage properties, and farm tourism. According to the definition used in this study, 95 percent of the companies were micro-scaled and 5 percent were small-scaled.

Figure 5. Main products offered by respondent companies (in percent).



On average, respondents networked mostly with co-operatives/forest owner associations, customers and their neighbors, and other local firms related to the innovation process (**Table 4**). They had the least contact with local politicians.

Table 4. Degree of networking among companies and actors (n = 174).

	Mean[a]	Standard deviation
Co-operatives/forest owner associations	3.63	1.71
Customers	3.42	1.37
Other forest owners/neighbors	2.95	1.64
Local extension services	2.47	1.43
National public support institutions	2.34	1.63
Suppliers	2.29	1.54
Local politicians	1.85	1.13
[a] Mean on a scale from 1 (= low degree of co-operation) to 6 (= high degree of co-operation).		

Model Refinement

The Measurement Model

The measurement model consisted of three constructs: Network, Innovativeness, and Performance. Each of the constructs was measured by three to seven manifest indicators (**Table 2**). Two of the indicators for Network, "Other forest owners/neighbors" and "Customer", had low t-values for the loading coefficients and high error variances. Therefore, they were deleted from the measurement model. The revised measurement model, with the loading coefficients and error variances for all manifest indicators, is presented in **Table 5**. The t-values for the factor loadings varied from 8.7 to 19.8 ($p < 0.01$), which supports the convergent validity of the indicators (Anderson and Gerbing 1988).

Table 5. Parameter estimates for measurement relationships in the revised measurement model (two network indicators deleted).

Construct	Indicator	Std. loading	t-value	r^2
Network	National public support institution	0.79	16.42	0.62
	Local extension service	0.86	19.79	0.74
	Local politician	0.78	15.85	0.61
	Co-op/forest owner association	0.51	8.71	0.26
	Supplier	0.52	9.71	0.27
Innovativeness	Product innovation	0.54	8.65	0.29
	Process innovation	0.99	13.83	0.98
	Market innovation	0.73	10.21	0.53
	Organization innovation	0.68	8.86	0.46
Performance	Growth in sales	0.92	14.76	0.85
	Growth in net income	0.94	13.91	0.88
	Growth in person-years	0.66	9.74	0.44

Intercorrelations (polychoric) for the study's 12 manifest items are presented in **Table 6**.

Table 6. Polychoric correlation coefficients for the manifest items in (n = 174).

	N2	N3	N4	N5	I2	I3	I4	P2	P3
N1 – National public support institutions	0.60	0.28	0.39	0.28					
N2 – Local extension service	1	0.47	0.41	0.17					
N3 – Local politician		1	0.20	0.36					
N4 – Co-op/forest owner association			1	0.06					
N5 – Supplier				1					
I1 – Product innovation					0.43	0.09	0.14		
I2 – Process innovation					1	0.47	0.47		
I3 – Market innovation						1	0.39		
I4 – Organization innovation							1		
P1 – Growth in sales								0.17	0.66
P2 – Growth in net income								1	0.10
P3 – Growth in person-years									1

As previously stated, reliability was analyzed using the Composite Reliability (CR) method and construct validity was analyzed with the Average Variance Extracted (AVE) method. The CR and AVE estimates are presented in **Table 7**. The CR values were all above 0.8 and, therefore, demonstrated acceptable levels of reliability. AVE estimate values were also high. The value for Network was just under the 0.5 cut-off point; however, the AVE test is quite conservative and the AVE estimate will often be below 0.50, even if reliabilities are acceptable (Hatcher 1994). Overall CR and AVE values indicated acceptable levels of reliability and construct validity.

Table 7. Descriptive and polychoric correlation matrix for the constructs (n = 174).

	CR	AVE	Correlation	
			Network	Innovativeness
Network	0.83	0.43		
Innovativeness	0.83	0.51	0.50	
Performance	0.88	0.72	0.23	0.46
CR = composite reliability; AVE = average variance extracted.				

The Structural Model

The model showed acceptable fit (X^2 = 131.5, df 52 =, p = 0.00, CFI = 0.93, IFI = 0.93, NNFI = 0.91, PNFI = 0.70, X^2/df = 2.53, SRMR = 0.15, RMSEA = 0.09 [0.07, 0.11]). Power for the model was 0.72, which is lower than the recommended value of 0.8. The hypotheses: (1) the degree of networking affects innovativeness, and (2) innovativeness affects performance, were tested by examining the estimated structural path coefficients (Anderson and Gerbing 1988). The first hypothesis (the degree of

networking affects innovativeness) was supported ($p < 0.01$) (**Fig. 6**). But, no significant direct effect between network and performance was found. The indirect effect of networking on performance via innovativeness was 0.23 (0.46 × 0.50). Seven percent of the variation in innovativeness was explained by the degree of networking. The second hypothesis (innovativeness affects performance) was supported as well ($p < 0.01$). Seventeen percent of the variation in performance was explained by innovativeness and networking.

Figure 6. The structural model shows how network affects innovativeness, which in turn affects performance (Above arrow: regression coefficient, ** = $p < 0.01$ and t-value in parentheses).

Part 2 – Qualitative Case Example Results

The manager of the case company founded the company and owns it together with his wife. They offer a wide range of adventure sports, as well as accommodation. For business groups, the company offers superb conference facilities including a conference room, accommodation, and catering with complementary team building and motivational training programs. In 1994, the manager was the only employee in the company, but by 2004, 13 person-years had accumulated.

Connection between Networking and Innovation

Companies do not normally innovate in isolation, but in collaboration and interdependence with other actors (Fagerberg et al. 2005). Interactions among actors are mostly based on the idea of collaboration. During the interviews, the importance of collaboration was emphasized by the actors in different ways. Despite the fact that the "other" actors interviewed in this study were all related to the main case, we did not limit our focus to the direct lines between the "others" and the main case. In this way, we attempted to illustrate how information for new ideas very often comes from sources outside the closest network of an entrepreneur (Burt 1992, 1997).

Several of the interviewees emphasized the importance of collaboration among actors without a direct connection to the case company. Whether an interaction takes place between the case company and other actors in a direct line was not seen as particularly important. Instead, tan understanding of their own role in the interactive innovation system by all of the actors was important and this was stated throughout the interviews.

Collaboration with Other Firms

Asheim et al. (2003) found that small companies often collaborated with other local small companies. Collaboration in different activities, such as accommodation, was found to exist between the case company and Actor I, the competitor. They both sent customers to each other when needed, e.g., when there were no vacant beds at one place, they would recommend the other. By co-operating,

they could use the expertise of the other to develop new and more customized services to expand the portfolio of services. Customers could then more easily select activities from different companies according to their preferences.

The manager of the case company obtained many of his inspirations and ideas to develop new products and markets from a European network. He travels extensively, especially within Europe, and has a large international network. Through the sharing of experience and ideas, this network has been important to the implementation of new services and processes. The case company also cooperates with local companies. The most important areas of cooperation were tourist accommodation, adventures, and cultural activities.

The manager of the case company also emphasized the importance of having a good relationship with a private company that produces electricity. This company controls the flow of water via a large dam across the river. With this dam, they help the case company obtain the right water level in the river for each activity. It took a lot of time for the case company to make this cooperation work, but it has been important and has resulted in process innovation and improved services. By controlling the water flow, the company can now promise the perfect water level for a specific activity at a precise time.

Collaboration with Local, Regional, and National Extension Services

Isaksen (1997, 1999) and Ashim et al. (2003) found that national and regional public support institutions had a role in supporting innovation projects. The local extension services are employed by the municipality to help forest owners improve their business activities. Historically, they have had a role in supporting farmers as they develop agricultural production (Almås 1995). Parallel to the increased focus on nature-based tourism, however, local extension services have played an important role as farmers have seen new opportunities in these businesses.

The company has organized its activities in two different municipalities. While working with one of the municipalities was difficult, the other municipality was helpful, recognized the value of economic activities, and provided support when necessary. One of the suppliers also stressed the importance of the local extension service:

> *"To have the local extension service available is of the greatest importance in getting inputs on how to run the business." – Actor III, supplier*

> *"When people come to us, we try to help and further develop their ideas." – Actor V, local extension service*

The local extension service has a long history in Norway (Vennesland 2005). Local extension service employees were highly trusted among forest owners and landowners. They were viewed as possessing great expertise on how to utilize natural resources, both within traditional agricultural as well as within the nature-based tourism industry. When Actor III, supplier relates the importance of inputs from the local extension service to run the business, this is very much linked to the fact that the local extension service is trusted. Because landowners trust the local extension service and the extension service works proactively to further develop ideas of entrepreneurs, the result has been a trigger for innovation.

One of the suppliers also called attention to the importance of a national/regional public support institution. They had received financial support and consultancy services from the institution to turn their ideas into a running business.

> *"We got a lot of financial support from the national/regional public support institution. [...] The regional office has been very important because of their commitment. [...] they call us, give us advice and so on." – Actor III, supplier*

Collaboration with Forest Owner Associations

Most of the active forest owners in Norway have been organized in the Forest Owner Association (FOA). The association was founded on the idea of increasing market power for many small landowners and the organization has been based on trust (Norges Skogeierforbund 1988). The case company saw the FOA as a resource, with expertise in nature-based tourism. Other actors in the company's innovation system also emphasized the role of the FOA.

> *"Our main product is expertise to support nature-based rural economic development. We want to contribute to business development through our courses and seminars. I believe our initiatives to stimulate interactions among actors have contributed to innovations." – Actor IV, Forest Owner Association*

The FOA has built up competence on how to trigger/stimulate innovation among its members as well as other actors (non-landowners) regarding economic development in Norway. At the same time as the FOA was acting as the "voice" of all its members, it was acting as one institution in rural economic development efforts. One initiative taken by the FOA to stimulate innovation was organizing conferences. In addition to developing innovation process skills for entrepreneurs, the FOA was aware of the positive effect of simply creating interactions among actors in order to shape new networks.

> *"I have attended one conference organized by the Forest Owner Association, which I appreciated a lot." [...] "I expect that we will meet with each other very soon and discuss future ideas." –Actor I, competitor*

> *"Support from the Forest Owner Association is important" [...] "It is of the greatest importance to have their inputs." – Actor III, supplier*

One important issue was that these conferences were initiated by a private organization, such as the FOA, which is trusted by landowners. This situation makes it easier for the entrepreneurs to be "open-minded" and thereby more open to catalyzing innovations. The FOA also emphasized that they looked at the case company as a resource regarding innovativeness in the local community.

Interactions among actors go in many directions and have been important for the development of new ideas. When ideas circulated among actors within the interactive innovation system, they were formed in a way that made them more suitable for the market. This depends on a high degree of trust among the actors involved in the process.

Collaboration with Suppliers

Suppliers' inputs to innovative processes have been widely studied (e.g., Isaksen 1997). In this study, we found that the case company had reorganized its business by outsourcing food to another local company (Actor II). The company that delivers the food specializes in traditional, local food and is an important part of the case company's final product. The case company also co-operates with suppliers of equipment for their activities. This co-operation has been important for many of the new activities and ideas. This was also found among some of the other actors interviewed.

> *"When our customers ask for a new product, then we have to deliver. This is how it works [...] This is stimulating and we have to be innovative to be able to produce and deliver what has been asked for." – Actor II, supplier*

Interaction such as that described above between a firm and its supplier facilitates creativity among the involved actors. The interaction between Actor II, supplier and the case company clearly triggered innovation for the supplier.

It was important for the case company to be as flexible as possible regarding the utilization of equipment. It was also important to be in contact with more than one supplier.

> *"Special equipment has made us very flexible in the way we offer some of our products [...] We have many suppliers that deliver equipment. However, even though I am the one in charge when it comes to what kind of equipment I choose/buy, it is important to have different options." – The case company*

Competition increases creativity among suppliers. In addition, the buying company will be triggered to innovate by comparing the different options offered by suppliers. This shows that there was collaboration between the actors when developing new products/services for the market. Through the collaboration with the suppliers, the case company obtained new ideas to develop and improve existing activities. Again, the interaction among actors goes in several directions.

Collaboration with Neighbors

Cooperation with neighbors and other local landowners has been a precondition for success. The local community showed considerable skepticism toward the case company in the beginning, but today it supports the company and all of its activities. The case company adds value back to the community by creating new jobs and by renting apartments and cabins from neighbors. The company is placed in a sparsely populated rural area. This implies in this case that the neighbors are also landowners.

> *"The neighbors have been very positive and allowed me to expand my business. The opposite would have made my business impossible [...] What makes my spot special is very much linked to our relationship with the neighbors." – The case company*

Nature-based tourism in Norway is embedded in the private ownership structure. Whether the entrepreneur was a landowner was an important, but not essential, question. What was important was

that anyone who wants to run a nature-based business concept needed land – and a large part of Norway is owned by small landowners (120,000 landowners). Normally, the landowner wants to be in charge of their own land. This means that if you want to build a business that needs land, you must interact with landowners. The relationship between an entrepreneur and the landowner can be positive or negative. This was an issue for the case company when the owner stated that: "the opposite would have made my business impossible." He even claimed that the relationship with landowners shaped the way the business was run. This is important in understanding how a relationship between an entrepreneur and landowners can form/trigger creativity/innovation. The case company has invested in relationships with landowners. For example, it rented a site for mountain climbing from a neighboring landowner, even though by law (Everyman's Right of Access in Outfields and Wilderness) they had the right to climb there for free. The reason for doing this was that the case company wanted a good relationship with the landowner. Because of this the landowner helped them build a parking lot.

Collaboration with Customers

Customers are seen as an important resource in triggering innovation processes (Isaksen 1997) in firms acting in the nature-based tourism industry (Hjalager 1997). The case company also emphasized the role of customers.

> *"We do get inputs from our customers. We have a lot of customers coming back to us who have given valuable inputs. In fact, there are too many to mention right now." – The case company*

The quality of the "product" in nature-based tourism was mostly measured as an "experience" by the customer. This experience was special and unique to each customer. But, the producer needs feedback from the customer to be able to develop the "product" further. At the same time, a customer might come up with an idea for a new product/service. If a company does not develop strong interactions with its own customers, it is difficult to identify the areas in which to improve the business.

Internal Factors Affecting the Innovation Process

Despite the importance of the external network and interaction among actors in the innovation system, the manager in the case company emphasized internal factors as the most important influence on innovativeness. Personal capacity, commitment, an innovative attitude, and experience in management were identified as the most important factors. The manager also emphasized the importance of all of the ideas obtained from seasonal workers that often have experience from other nature-based recreational companies. But, this was not a focus of the quantitative model (**Fig. 6**).

Discussion and Implications

Connection between Networking and Innovativeness

The hypothetical model showed an acceptable fit and was supported by the survey data. Networking was positively related to innovativeness ($\beta = 0.46$, $p < 0.01$) in Norwegian nature-based recreational companies. These findings are consistent with earlier literature (Isaksen 1997, Vennesland 2005). Companies do not innovate alone, but in cooperation with other organizations (Fagerberg et al. 2005), such as suppliers, customers, neighbors, local landowners, national public support institutions,

local extension services, and local politicians. Only 7 percent of innovativeness was explained by our networking construct. The intention of this study was to consider several factors affecting innovativeness. Many important factors could have been included, such as innovative working climate within the organizations and in the local community.

The results from the case example illustrate how institutions trigger a member of the industry to change, create, or otherwise innovate. Besides the actors, the customers, neighbors, and other local and international firms had an influence on the innovation process. The case company obtained its inspiration to create something new from many different actors, but none were indispensable. The overall impression from the case example was that interaction with external actors has a limited effect on innovation and creation in the company.

The manager for the company emphasized internal factors as the most important with respect to creativity and innovation. This was also supported by the quantitative study, where the network was found to have a small but significant effect on innovation. One reason for this can be the small size of the companies in the industry.

The literature shows that external relations are important for the innovation process (Asheim et al. 2003). Various types of actors are also involved in the innovation process and they interact in innovation systems (Lundvall 1992, Edquist 1997). Customers, suppliers, competitors, and R&D organizations are examples of some important actors. Small companies face innovation barriers, have a low capacity and tendency for networking, and are not interested in or able to carry the overhead cost related to, for example, conducting research projects (Asheim et al. 2003). This was also consistent with the findings in this study where local politicians, extension services, and national public support institutions had a limited influence on the innovation process. The findings also indicated that the respondent companies networked more with neighbors, other small companies, and customers, which were equal in size and nature.

Nevertheless, the relationship between networking and innovations was significant and this was also consistent with the results from the qualitative study. A summary of the external relationships in the innovation process is given in **Table 8**.

Table 8. Summary of results from the qualitative and quantitative studies – patterns of external relationships in the innovation process in nature-based companies in Norway.

External relationships to:	Importance for nature-based companies in Norway
Customers	This was emphasized as one of the most important types of interaction, both in the survey and the case example.
Competitors – other local nature-based companies	Emphasized as one of the influencing actors in the case example.
Suppliers	Of low importance generally in both the survey and the case example.
Neighbors, the local community in general	This was headlined as one of the most important types of interaction in the survey. This was also important in the case example: new innovations, new activities, and growth would have been difficult without support from and interaction with this group.
Regional special interest organizations	The survey indicated that the Forest Owner Association was of most importance among the actors. It was also emphasized as important in the case example.

Regional public support institutions	Of some importance for some actors but in general of low importance in both the survey and the case example. Helps companies acquire support from regional and national institutions.
National public support institutions	Of low importance in the survey, but of some importance for some actors in the case example. Financing of innovation projects in companies comes from national funds, delivered by national project organizations.

The interviews showed how the interactive innovation model could work in real life. They illustrated the interdependence among actors involved in the model. It is important, however, to recognize that the interactions do not take place solely between the main company and others. There were interactions found between actors in most directions. This illustrates the interdependence among actors involved in the system.

Connection between Networking and Performance

No significant direct effect between network and performance was found. The network literature argues that there is an advantage in having broad and dive