Rapporter fra Høgskolen i Buskerud nr. 69

RAPPORT

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Business Success Factors in the Norwegian Geomatics Industry

Dennis B. Arnett
Kåre Sandvik

HØGSKOLEN i Buskerud

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Business Success Factors in the Norwegian Geomatics Industry

Sponsors

Rådet for Ringeriksregionen

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Forord

Dette er rapporten fra delprosjektet 1 ” Geografisk informasjon – gjennomføring av markedsanalyse” innenfor “Omstilling og partnerskap i Ringeriksregionen”, finansiert av Rådet for Ringeriksregionen. Målet har vært at dette prosjektet, så vel som de øvrige, skal lede til nye initiativ for å videreutvikle verdiskapingspotensialet i regionen.

Studien er basert på internasjonal forskning innen suksessfaktorer til innovasjon og lønnsomhet. Imidlertid har vi fått god hjelp og bistand fra ressurspersoner i geomatikkbransjen. Vi vil særlig nevne divisjonsdir. John Naustdal (Statens Kartverk), produktsjef Sven Arve Saga (Norsk Eiendomsinformasjon), daglig leder Karsten Lien (GeoForum) og daglig leder Jens Ingebrigtsen (Gemnor) for god hjelp til å forstå dynamikken i bransjen og til utvikling av intervjuskjemaet. I tillegg har GeoForum stilt sitt bedriftsmedlemsregister til rådighet for gjennomføring av studien. GeoForum har også gitt oss mulighet til å formidle hovedresultatene som som artikkel i medlemstidsskriftet ”Posisjon” og som plenumsforedrag på sin årskonferanse ”Geoforum 2009”. Dekan Hans Anton Stubberud ved Høgskolen i Buskerud har vært en positiv og verdifull sparringspartner for innholdet i studien og rapporten, samt har vært et viktig bindeledd mellom prosjektet og Regionrådet.

Rapporten og resultatene fra bransjestudien avslutter delprosjektet, men vi ser frem til et videre samarbeid med geomatikkbransjen og Ringeriksregionen i å bidra til videreutvikling verdiskapningspotensialet.

Hønefoss, 11. mai 2009

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Executive Summary

The project was designed to identify key drivers of organizational innovative practices of geomatics firms in the Hønefoss region. Specifically, the study examined factors that influenced important organizational outcomes, including financial performance, marketing effectiveness, marketing efficiency, and product advantage. The principle areas of investigation included tacit knowledge transfer, market offering flexibility, marketing process innovation, and environmental scanning. The key drivers examined included interfunctional connectedness, interfunctional communication quality, interfunctional conflict, the level of coworker trust, and socialization efforts. In addition, the project examined demographic characteristics of the firms.

Data were collected from 46 member firms of GeoForum. Four firms were eliminated from the sample because they were either much larger or much smaller than the typical member firm. The data were analyzed using descriptive statistics, correlation analyses, and backward stepwise linear multiple regressions. The results suggest that interfunctional connectedness, marketing domain width, domestic orientation, marketing process innovation, and market offering flexible are important factors that influence organizational success.

The results suggest 10 general recommendations:

- GeoForum should give members access to more relevant competence enhancing programs.
- GeoForum should facilitate member firms forming cooperative relationships with each other.
- Statens Kartverk should develop competences that are more relevant to geomatics firms.
- Statens Kartverk should acquire the ability to develop valued cooperative relationships with geomatics firms.
- GeoForum members should find ways to form cooperative relationships with each other.
- GeoForum members should focus on ways to increase the interfunctional connectedness in their firms.
- GeoForum members should focus on ways to increase the marketing domain width in their firms.
- GeoForum members should focus on decreasing their domestic orientations.
- GeoForum members should focus on increasing their market offering flexibility.
- GeoForum members should focus on increasing their marketing process innovations.

Sample Characteristics

The sample frame consists of all member firms of GeoForum. GeoForum supplied contact information for 64 members. Each firm was contacted and invited to participate in the study. Of these, forty-six (46) firms agreed to participate in the study, which represents a 72% response rate. The questionnaires were administered to key informants both online, through the use of a web-based questionnaire, and by telephone. The average size of the firms was 790 full-time employees (ranging from 1 to 20,000 full-time employees) (see Table I-10) and 132 part-time employees (ranging from 0 to 5,000 part-time employees) (see Table I-11). Forty (40) firms supplied a description of their businesses – 21 described themselves as delivering mapping services (field work), 5 described themselves as hardware suppliers, and 14 described themselves as software suppliers (see Table I-13).

An examination of the sample revealed that one of the firms in the sample was an "outlier" (i.e., it was much larger than the other firms and, therefore, it was not representative of the rest of the sample). In addition, three of the firms were deemed to be "too small" (< 10 full-time and part-time employees combined). Many of the questions dealt with subjects that required the existence of multiple functional areas within the firm. Employees of small firms are not usually broken into functional areas. Instead, employees often have multiple responsibilities that span functional areas. Therefore, the sample size for the correlation and regression analyses is 42 firms (66% of the total sampling frame). Although this sample is smaller, it is more representative of the GeoForum firms. As a result, the results will be more useful to GeoForum members.

The average size of the remaining firms was 323 full-time employees (ranging from 7 to 6,000 full-time employees) and 8 part-time employees (ranging from 0 to 100 part-time employees). Of these firms, thirty-six (36) firms supplied a description of their businesses – 18 described themselves as delivering mapping services (field work), 5 described themselves as hardware suppliers, and 13 described themselves as software suppliers.

Background

Keys for Innovation

Managing innovation in changing environments, such as the geomatics area, is a major challenge for most firms. Managing innovations requires not only being able to design good market offerings, it also requires the ability to redesign and adapt rapidly to changing marketing conditions. The business literature highlights many factors that are important to innovative firms. These factors can be divided into four main areas – tacit knowledge transfer, market offering flexibility, marketing process innovation, and environmental scanning.

Tacit knowledge transfer involves the dissemination of tacit knowledge (i.e., knowledge that cannot be easily codified) throughout the organization. Tacit knowledge is described as the "know-how" of the firm because it often constitutes the skills of its employees. Tacit knowledge cannot be disseminated through normal communication channels. For example, since it cannot be easily codified, it cannot be entered into databases or incorporated into reports. Experts suggest that tacit knowledge must be "learned by doing." Therefore, it can only be disseminated via training or gained through personal experience. The classic example is learning to ride a bicycle. One cannot learn to ride a bicycle by reading a book; it takes personal experimentation and practice to gain the necessary skills. Similarly, many business processes cannot be learned by reading manuals. Instead, employees must learn them through trial-and-error or through training programs.

Tacit knowledge has been found to be a crucial input to the innovation process. A firm's ability to innovate depends on its level of tacit knowledge. Specifically, business practices cannot be reduced facts. What is required, to be successful, is access to tacit knowledge that enables decision-makers to deal with new and yet unknown situations.

This study focuses on tacit marketing knowledge (i.e., knowledge of the market and the firm's marketing efforts). Tacit marketing knowledge can be an important source of sustainable competitive advantage. Competitors, because they do not come in direct contact with the processes and procedures of the firm, are not able to understand easily their tacit components. As a result, competitors are either not able to duplicate the procedures and processes or must take considerable time in doing so.

Research and business practice suggests that, to be successful over a long period of time, market offerings must adapt to changes in the marketplace. Most firms adapt to changing market conditions by making incremental changes to existing products (incremental product innovations) rather than by launching completely new products (radical product innovations). As a result, market offering flexibility (i.e., the ability to adapt quickly market offerings to contextual changes and opportunities at low costs) is important for long-term firm survival.

First, when it comes to market offerings, incremental innovations are less costly to develop than are radical innovations. Second, when it comes to market offerings, incremental innovations are less risky than are radical innovations. That is, customers are already familiar with the existing product and, therefore, incremental innovations do not represent new concepts to them. In contrast, radical product innovations often require customers to learn and adapt their perceptions and behaviors to the new product. Third, successful market offering adaptations help ensure continued market success.

Firms can innovate in a number of ways. For example, as just discussed, firm innovation can take the form of innovative marketing offerings. However, many of the innovations that occur in firms are in the form of new processes and procedures. The goal of which can be to understand new markets, reduce labor costs, improve production, reduce materials, reduce environmental damage, or reduce energy consumption. This study focuses on marketing process innovation, which is the degree to which a firm's marketing practices are unique. These processes include, but are not limited to, processes dealing with new product development, market research, production, and sales. Research suggests that process innovations have stronger links to sustainable competitive advantages than do product innovations. The reason is that product innovations are tangible (i.e., they can be touched, felt, measured…), while process innovations tend to have large tacit elements. As a result, process innovations are more difficult to copy or imitate.

Environmental scanning involves firms scanning the business environment to collect systematically information in order to lessen uncertainties regarding the marketplace, which, in turn, provides early warnings to managers of changing market conditions. Environment scanning can deal with a variety of factors, including microeconomic factors (e.g., competitor actions and customer behavior) and macroeconomic factors (e.g., inflation rates and unemployment figures). The study focuses on a specific characteristic of environmental scanning, *marketing domain width*. Marketing domain width is concerned with the degree to which firms concentrate on three aspects of environmental scanning: (1) emerging market segments, (2) new industry trends, and (3) innovations outside their core markets. Knowledge in these three areas enables firms to be more proactive in their marketing efforts rather than reactive. Specifically, firms that are able to see the formation of new market segments may be able to develop more quickly new market offerings that are adapted to the new segments. Similarly, firms that are able to see changes in industry trends, prior to their rivals, may be able to develop more successful strategies. In addition, knowledge of innovations in other industries may lead to new innovations in the firm's current industry.

Key Drivers

Most firms are divided into a number of functional areas (e.g., production, marketing, and engineering). Research suggests that the characteristics of the interactions among the functional areas are important drivers of firm success. Specifically, they can influence strongly tacit knowledge transfer, market offering flexibility, marketing process innovation, and environmental scanning. The study examines a number of factors, including interfunctional connectedness, interfunctional communication quality, interfunctional conflict, the level of coworker trust, and socialization efforts.

Interfunctional connectedness is characterized by employees being motivated to communicate with people from different functional areas. High levels of interfunctional connectedness enhance information exchange. In addition, it enables firms to better implement marketing strategies. Research suggests that it is especially critical in turbulent markets.

For firms to be successful, employees must share information across functional areas. However, more importantly, they must share information that is timely, accurate, adequate, and complete. Therefore, interfunctional communication quality is important. Communication quality is the key success factor in working partnerships. Such communication increases trust and provides a mechanism by which misunderstandings and disputes can be rectified.

One factor that has been shown to be detrimental to firm success is interfunctional conflict. Interfunctional conflict refers to unhealthy behaviors across functional areas such as distortion and withholding of information to hurt other decision-makers, hostility and distrust during interactions, and the creation of obstacles to impede decision-making processes. As organizational structures become more complex, the chances for interfunctional conflict increase. In general, interfunctional conflict reduces interfunctional communication and fosters an atmosphere of mistrust, which results in less interfunctional cooperation.

The level of coworker trust (i.e., employees' confidence in each others reliability and integrity) can have a substantial affect on the work environment. Indeed, research suggests that coworker trust enhances organizational commitment, reduces aversions to change, increases sharing of knowledge, and encourages citizenship behaviors (e.g., voluntarily doing tasks outside one's job description). Coworker trust is especially important in work environments that rely on high levels of cooperation and teamwork. In general, coworker trust results in stable, committed employees, who feel they are supported by the organization.

To encourage a positive firm culture, many organizations engage in socialization efforts (i.e., organizational mechanisms that build interpersonal familiarity, personal affinity, and convergence in thinking among people from different functional areas). These efforts can take the form of employee training programs or informal meetings. They are designed to introduce employees to the firm's culture and help employees understand their roles in the organization. The study focuses on socialization efforts designed to encourage crossfunctional interactions.

A series of informal interviews with industry experts, prior to starting the project, suggested that one additional factor might provide some explanatory power, domestic orientation. Firms that are high in domestic orientation tend to focus on their domestic market rather than look for opportunities abroad. A domestic orientation could be an indication of a lack of relevant environmental scanning and, as a result, could be detrimental to firms.

Key Outcomes

To understand the importance of the various factors being examined, the study focuses on four key firm outcomes: (1) product advantage – the perception that a firm's market offerings have a strategic advantage over rival's market offerings, (2) marketing effectiveness – a firm's ability to produce market offerings that are perceived as being more valuable than those of rivals, (3) marketing efficiency – a firm's ability to produce market offerings at a lower cost than rivals, and (4) financial performance – the degree to which a firm outperforms its rivals (in sales and profits).

Results – Descriptive Statistics: Scales

The descriptive statistics for the individual questions and the average over all the items in each scale are presented in Appendix I (Tables I-1 through I13) and Appendix II (Tables II-1 through II-6). The statistics for the scales used in the correlation and regression analyses are replicated below.

Scale	# of items	n	Mean	Std Dev
Marketing Process Innovation	6	46	2.96	0.55
Marketing Efficiency	3	46	3.69	0.66
Marketing Effectiveness	3	46	4.00	0.64
Marketing Domain Width	4	46	3.38	0.68
Product Advantage	6	46	3.65	0.58
Market Offering Flexibility	4	46	3.44	0.78
Domestic Orientation	4	46	3.18	0.88
Financial Performance	2	46	3.45	0.95
Socialization Efforts	4	42	3.89	0.76
Interfunctional Connectedness	4	42	3.53	0.64
Interfunctional Communication Quality	4	42	3.51	0.46
Interfunctional Conflict	4	42	1.96	0.62
Coworker Trust	4	42	4.34	0.58
Tacit Marketing Knowledge Transfer	4	42	3.81	0.59

An examination of these statistics reveals that the firms all measured similarly on these scales (i.e., the standard deviations are all less than 1). The firms differed most widely on Market Financial Performance, Domestic Orientation, Offering Flexibility, and Socialization Efforts. In contrast, they differed least on Market Process Innovation and Interfunctional Communication Quality. The scale with the highest average was coworker trust and the scale with the lowest mean is Interfunctional Conflict.

Results – Descriptive Statistics: Other Questions

Firms with partners (Table I-12): 65% of the firms had at least one other firm that was considered their partner. The average number of partners for firms with partners was 4.36 (std. dev. = 3.15). The minimum number of partners was 1 and the maximum number of partners was 10.

Questions regarding Statens Kartverk (Table I-7):

> •*How important is the competencies of Statens Kartverk for your firm*
>
> The mean on this question was 2.98 (std. dev. = .46).

The firms in the study seemed to believe that the competencies of Statens Kartverk were only moderately important (i.e., the mean 2.98 is right on the mid-point of the scale). In addition, this opinion seems to be shared by all firms (i.e., the standard deviation is small).

> •*How important is the cooperation with geomatics firms in the geographical area (Hønefoss) around Statens Kartverk?*
>
> The mean on this question was 2.20 (std. dev. = 1.35).

The low mean on this question indicates that firms in the study did not think that cooperation among firms in the area was important. However, there is some disagreement as evidenced by the high standard deviation (i.e., > 1).

> •*How important is cooperation with other geomatics firms (other than Statens Kartverk) for your firm?*
>
> The mean on this question was 3.36 (std. dev. = 1.16).
>
> •*How important is cooperation with other firms to be able to provide competitive products (total solutions) in the market (e.g., combinations of hardware, software, services, etc.)?*
>
> The mean on this question was 3.54 (std. dev. = 1.31).

Answers to these two questions indicate that firms are cooperating with firms other than Statens Kartverk and local firms. However, the high standard deviations (>1) indicate that there is some disagreement here.

Industry support (Table I-8):

•*How satisfied are you with the offer of relevant meeting places for the industry?*

The mean on this question was 3.43 (std. dev. = .89).

•*How satisfied are you with the offer of relevant competence development for the industry?*

The mean on this question was 3.17 (std. dev. = .88).

The firms are satisfied with the meeting places (mean close to 4). However, they are not highly satisfied with the offerings for relevant competence development (mean close to the midpoint of the scale).

Results – Correlation Analyses (Table IV-1):

Correlation analysis examines the linear relationships between two variables. Correlation coefficients contain three important pieces of information. (1) If the correlation is significant, it indicates that there seems to be a relationship between the two variables. (2) The sign (+/-) indicates the direction of the relationship. (3) The absolute value of the correlation coefficient ($|r|$) indicates the strength of the association between the two variables. The closer the absolute value is to one, the stronger the association.

Note: Although all of the possible correlation coefficients among the variables are represented in Table IV-1, not all associations are logical. Therefore, when interpreting the coefficients one must be careful to use theory and logic. For example, though there is a significant positive correlation between Domestic Orientation and Interfunctional Conflict ($r = .26$), there is no reason to believe that there is a link between these two variables. Therefore, when interpreting these results, one should use caution.

Note: A significant correlation coefficient suggests that a relationship between two variables exists. However, it does not indicate necessarily that there is a cause-and-effect relationship.

Results – Stepwise Linear Multiple Regression:

Stepwise linear multiple regression involves choosing predictive variables by an automatic procedure that uses a series of F-tests. Specifically, the backward elimination method is used here. It involves starting with all candidate variables and testing them one by one for statistical significance ($p < .10$), deleting any that are not significant. The initial set of predictor variables for each analysis was chosen using business theory. Multiple regression analysis, unlike correlation analysis, allows the researcher to investigate multiple relationships simultaneously. For example, one can examine the influence of four variables on interest on Financial Performance. Multiple regression is seen as more realistic than correlation analysis because it is taking into account multiple factors simultaneously, which models the real world more accurately.

Standardized regression coefficients, like correlation coefficients, contain three important pieces of information. (1) If the regression coefficient is significant, it indicates that there seems to be a relationship between that variable and the dependent variable. (2) The sign (+/-) indicates the direction of the relationship. (3) The absolute value of the regression coefficient ($|\beta|$) indicates the strength of the association between the two variables. The closer the absolute value is to one, the stronger the association.

Note: The relationships uncovered, using multiple linear regressions, suggest that certain relationships exist. However, they do not indicate necessarily that the relationships are causal.

Factors influencing Financial Performance (Table V-1):

The analysis investigated the relationship between 13 potential predictive variables (Coworker Trust, Domestic Orientation, Marketing Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Market Offering Flexibility, Marketing Domain Width, Effectiveness, Marketing Efficiency, Marketing Process Innovation, Product Advantage, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Financial Performance. Of these variables, two emerged as significant predictors – *Interfunctional Communication Quality* and *Marketing Domain Width*. They explain a significant portion of the variance in Financial Performance ($R^2 = .34$). Both Interfunctional Communication Quality ($\beta = .30$) and Marketing Domain Width ($\beta = .22$) are related positively to Financial Performance.

Factors influencing Marketing Effectiveness (Table V-2):

The analysis investigated the relationship between 11 potential predictive variables (Coworker Trust, Domestic Orientation, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Market Offering Flexibility, Marketing Domain Width, Marketing Process Innovation, Product Advantage, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Marketing Effectiveness. Of these variables, three emerged as significant predictors – *Interfunctional Conflict, Market Offering Flexibility,* and *Marketing Process Innovation*. They explain a significant portion of the variance in Marketing Effectiveness ($R^2 = .48$). Both Market Offering Flexibility ($\beta = .27$) and Marketing Process Innovation ($\beta = .24$) are related positively to Marketing Effectiveness. Interfunctional Conflict ($\beta = -.27$) is related negatively to Marketing Effectiveness.

Factors influencing Marketing Efficiency (Table V-3):

The analysis investigated the relationship between 10 potential predictive variables (Coworker Trust, Domestic Orientation, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Market Offering Flexibility, Marketing Domain Width, Marketing Process Innovation, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Marketing Efficiency. Of these variables, two emerged as significant predictors – *Market Offering Flexibility* and *Marketing Process Innovation*. They explain a significant portion of the variance in Marketing Efficiency (R^2 = .15). Both Market Offering Flexibility (β = .21) and Marketing Process Innovation (β = .18) are related positively to Marketing Efficiency.

Factors influencing Product Advantage (Table V-4):

The analysis investigated the relationship between 11 potential predictive variables (Coworker Trust, Domestic Orientation, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Market Offering Flexibility, Marketing Domain Width, Marketing Efficiency, Marketing Process Innovation, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Product Advantage. Of these variables, three emerged as significant predictors – *Market Offering Flexibility, Marketing Efficiency,* and *Tacit Marketing Knowledge Transfer*. They explain a significant portion of the variance in Product Advantage (R^2 = .52). All three variables, Market Offering Flexibility (β = .48), Marketing Efficiency (β = .24), and Tacit Marketing Knowledge Transfer (β = .20) are related positively to Product Advantage.

Factors influencing Market Offering Flexibility (Table V-5):

The analysis investigated the relationship between 8 potential predictive variables (Domestic Orientation, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Marketing Domain Width, Marketing Process Innovation, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Market Offering Flexibility. Of these variables, three emerged as significant predictors – *Domestic Orientation, Interfunctional Connectedness,* and *Marketing Domain Width*. They explain a significant portion of the variance in Market Offering Flexibility (R^2 = .52). Both Interfunctional Connectedness (β = .50) and Marketing Domain Width (β = .36) are related positively to Market Offering Flexibility. Domestic Orientation (β = -.34) is related negatively to Market Offering Flexibility.

Factors influencing Marketing Process Innovation (Table V-6):

The analysis investigated the relationship between 8 potential predictive variables (Coworker Trust, Domestic Orientation, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, Marketing Domain Width, Socialization Efforts, and Tacit Marketing Knowledge Transfer) and Marketing Process Innovation. Of these variables, two emerged as significant predictors – *Interfunctional Connectedness* and *Marketing Domain Width*. They explain a significant portion of the variance in Marketing Process Innovation (R^2 = .23). Both Interfunctional Connectedness (β = .36) and Marketing Domain Width (β = .47) are related positively to Marketing Process Innovation.

Factors influencing Tacit Marketing Knowledge Transfer (Table V-7):

The analysis investigated the relationship between 5 potential predictive variables (Coworker Trust, Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, and Socialization Efforts) and Tacit Marketing Knowledge Transfer. Of these variables, two emerged as significant predictors – *Coworker Trust* and *Interfunctional Communication Quality*. They explain a significant portion of the variance in Tacit Marketing Knowledge Transfer (R^2 = .16). Both Coworker Trust (β = .36) and Interfunctional Communication Quality (β = .29) are related positively to Tacit Marketing Knowledge Transfer.

Factors influencing Coworker Trust (Table V-8):

The analysis investigated the relationship between 4 potential predictive variables (Interfunctional Communication Quality, Interfunctional Conflict, Interfunctional Connectedness, and Socialization Efforts) and Coworker Trust. Of these variables, one emerged as significant predictor – *Interfunctional Connectedness*. It explains a significant portion of the variance in Coworker Trust (R^2 = .21). Interfunctional Connectedness (β = .51) is related positively to Coworker Trust.

Factors influencing Interfunctional Communication Quality (Table V-9):

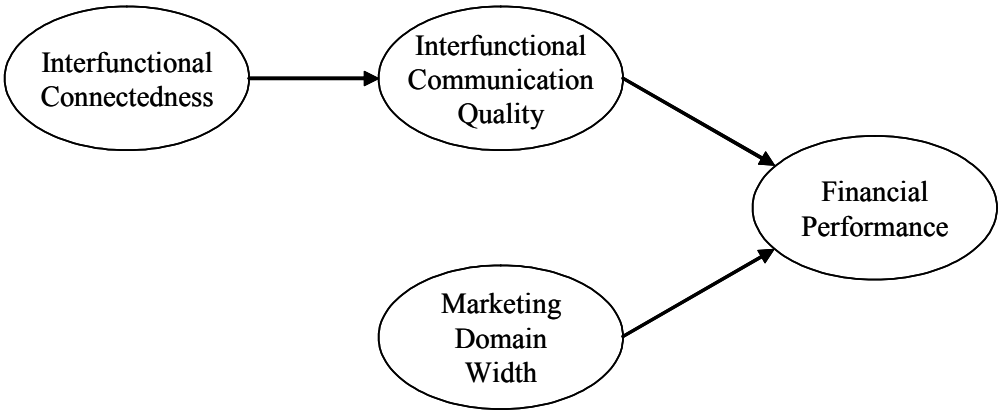
The analysis investigated the relationship between 4 potential predictive variables (Coworker Trust, Interfunctional Conflict, Interfunctional Connectedness, and Socialization Efforts) and Interfunctional Communication Quality. Of these variables, one emerged as significant predictor – *Interfunctional Connectedness*. It explains a small portion of the variance in Interfunctional Communication Quality (R^2 = .07). Interfunctional Connectedness (β = .23) is related positively to Interfunctional Communication Quality.

Factors influencing Interfunctional Conflict (Table V-10):

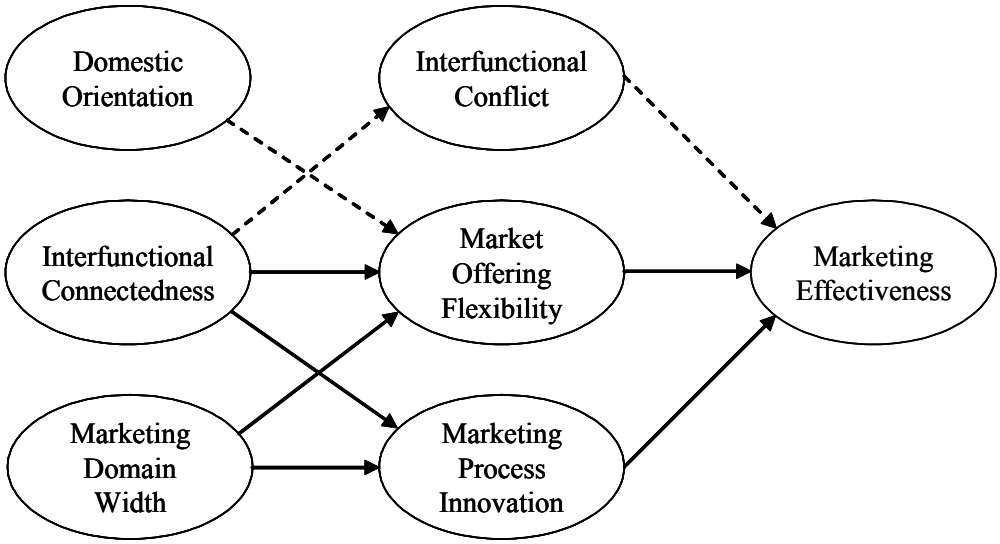
The analysis investigated the relationship between 4 potential predictive variables (Coworker Trust, Interfunctional Connectedness, Interfunctional Communication Quality, and Socialization Efforts) and Interfunctional Conflict. Of these variables, one emerged as a significant predictor – *Interfunctional Connectedness*. It explains a significant portion of the variance in Interfunctional Conflict (R^2 = .28). Interfunctional Connectedness (β = -.58) is related negatively to Interfunctional Conflict.

Models Suggested by Results

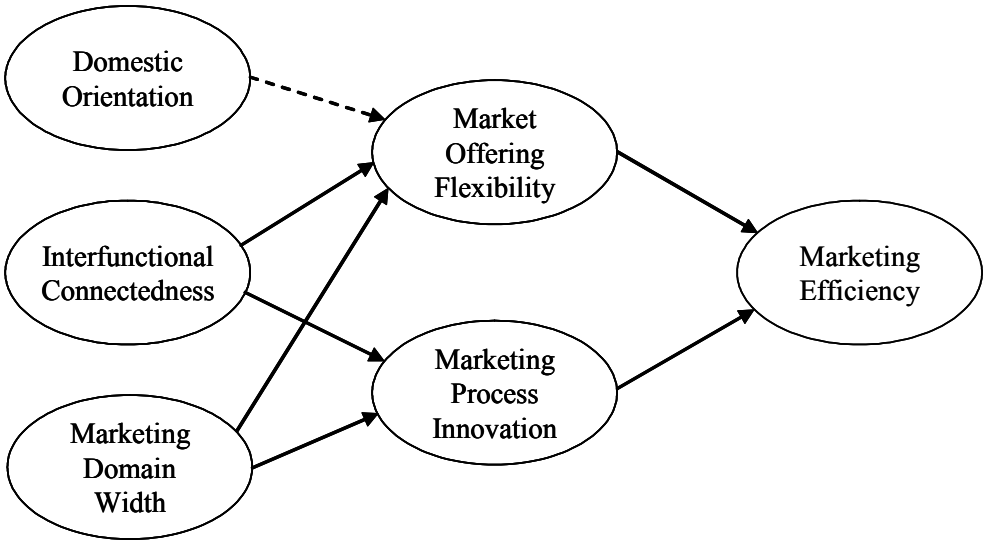
Model 1: Financial Performance



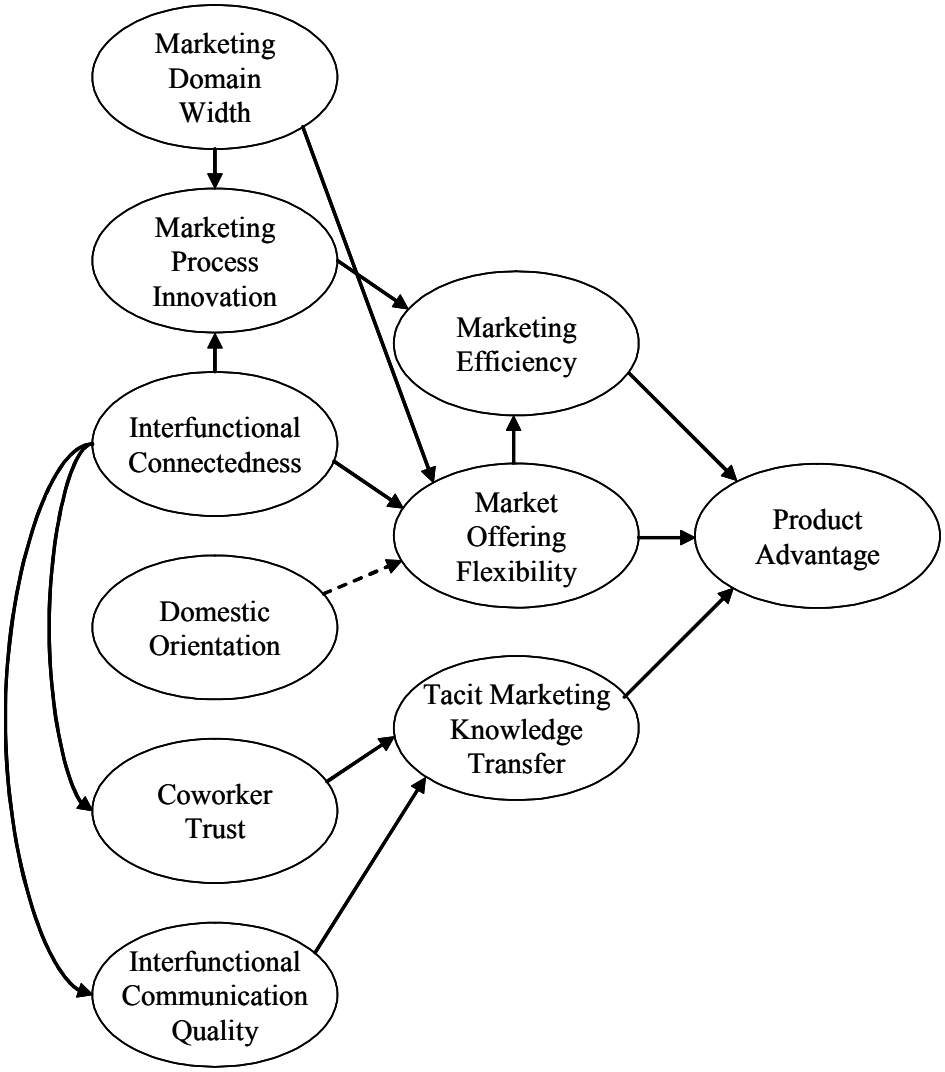
Model 2: Marketing Effectiveness



Model 3: Marketing Efficiency



Model 4: Product Advantage



Discussion of Models Suggested by Results

An examination of the four models suggests some of the important factors uncovered by the study.

Interfunctional Connectedness seems to be the most important factor. As can be seen, it is present in all four models. It affects *indirectly* all four outcomes – Financial Performance, Marketing Effectiveness, Marketing Efficiency, and Product Advantage.

In Model 1, it increases Interfunctional Communication Quality, which, in turn, increases Financial Performance.

In Model 2, it influences Marketing Effectiveness indirectly in three ways: (1) it decreases Interfunctional Conflict, which, in turn, increases Marketing Effectiveness; (2) it increases Market Offering Flexibility, which, in turn, increases Marketing Effectiveness; and (3) it increases Marketing Process Innovation, which, in turn, increases Marketing Effectiveness.

In Model 3, it influences Marketing Efficiency indirectly in two ways: (1) it increases Market Offering Flexibility, which, in turn, increases Marketing Efficiency and (2) it increases Marketing Process Innovation, which, in turn, increases Marketing Efficiency.

In Model 4, it influences Product Advantage indirectly in five ways: (1) it increases Marketing Process Innovation, which, in turn, increases Marketing Efficiency, which, in turn, increases Product Advantage; (2) it increases Market Offering Flexibility, which, in turn, increases Marketing Efficiency, which, in turn, increases Product Advantage; (3) it increases Market Offering Flexibility, which, in turn, increases Product Advantage; (4) it increases Coworker Trust, which, in turn, increases Tacit Marketing Knowledge Transfer, which, in turn, increases Product Advantage; and (5) it increases Interfunctional Communication Quality, which, in turn, increases Tacit Marketing Knowledge Transfer, which, in turn, increases Product Advantage.

Marketing Domain Width also seems to be an important factor. As can be seen, it is also present in all four models. It affects either *directly* or *indirectly* all four outcomes – Financial Performance, Marketing Effectiveness, Marketing Efficiency, and Product Advantage.

In Model 1, it increases Financial Performance.

In Model 2, it influences Marketing Effectiveness indirectly in two ways: (1) it increases Market Offering Flexibility, which, in turn, increases Marketing Effectiveness and (2) it increases Marketing Process Innovation, which, in turn, increases Marketing Effectiveness.

In Model 3, it influences Marketing Efficiency indirectly in two ways: (1) it increases Market Offering Flexibility, which, in turn, increases Marketing Efficiency and (2) it increases Marketing Process Innovation, which, in turn, increases Marketing Efficiency.

In Model 4, it increases Marketing Process Innovation, which, in turn, increases Marketing Efficiency, which, in turn, increases Product Advantage.

Domestic Orientation seems to be an important factor. As can be seen, it is present in three models. It affects *indirectly* three outcomes – Marketing Effectiveness, Marketing Efficiency, and Product Advantage.

In Model 2, it decreases Market Offering Flexibility, which, in turn, increases Marketing Effectiveness.

In Model 3, it decreases Market Offering Flexibility, which, in turn, increases Marketing Efficiency.

In Model 4, it decreases Market Offering Flexibility, which, in turn, increases Product Advantage.

Market Offering Flexibility seems to be an important factor. As can be seen, it is present in three models. It affects *directly* three outcomes –Marketing Effectiveness, Marketing Efficiency, and Product Advantage.

In Model 2, it increases Marketing Effectiveness.

In Model 3, it increases Marketing Efficiency.

In Model 4, it increases Product Advantage.

Marketing Process Innovation seems to be an important factor. As can be seen, it is present in three models. It affects either *directly* or *indirectly* all three outcomes – Marketing Effectiveness, Marketing Efficiency, and Product Advantage.

In Model 2, it increases Marketing Effectiveness.

In Model 3, it increases Marketing Efficiency.

In Model 4, it increases Marketing Efficiency, which, in turn, increases Product Advantage.

Interfunctional Communication Quality is a factor. As can be seen, it is present in two models. It affects either *directly* or *indirectly* all two outcomes – Financial Performance and Product Advantage.

In Model 1, it increases Financial Performance.

In Model 4, it increases Tacit Knowledge transfer, which, in turn, increases Product Advantage.

Coworker Trust is a factor in Model 4. It affects *indirectly* Product Advantage.

In Model 4, it increases Tacit Knowledge transfer, which, in turn, increases Product Advantage.

Interfunctional Conflict is a factor in Model 2. It affects *directly* Marketing Effectiveness.

In Model 2, it decreases Marketing Effectiveness.

Marketing Effectiveness is a factor in Model 4. It affects *directly* Product Advantage.

In Model 4, it increases Product Advantage.

Socialization Efforts was not linked to any of the factors examined in the study. This does not mean that socialization efforts are not important for firm success. The results suggest that they do not influence directly the factors investigated in this study.

Recommendations

GeoForum

Recommendation 1:

GeoForum should give members access to more relevant competence enhancing programs. For example, given the findings of this study, it could develop seminars to aid firms in: developing cooperative relationships, improving interfunctional connectedness, increasing marketing domain width, increasing market offering flexibility, reducing domestic orientation, and enhancing marketing program innovation.

Recommendation 2:

GeoForum should facilitate member firms forming cooperative relationships with each other. For example, it could (1) develop a database of member firms' competencies and contact information, which could be used by member firms to find potential partners, (2) develop seminars to aid firms in developing cooperative relationships, and (3) sponsor conferences designed to promote cooperative relationships among member firms.

Statens Kartverk

Recommendation 3:

Statens Kartverk should develop competences that are more relevant to geomatics firms. It should survey geomatics firms to find out what additional services would be of value.

Recommendation 4:

Statens Kartverk should acquire the ability to develop valued cooperative relationships with geomatics firms. It should examine its relationships with geomatics firms in an effort to forge closer relationships.

Geomatics firms

Recommendation 5:

GeoForum members should find ways to form cooperative relationships with each other. The results of the study show that the size of most firms was relatively small. Yet, the member firm business types (hardware suppliers, software suppliers, and mapping services) suggest the possibility of interfirm synergies. Cooperative relationships could be formed using a variety of means, ranging from short-term project-based alliances to formal mergers.

Recommendation 6:

GeoForum members should focus on ways to increase the interfunctional connectedness in their firms. That is, they need to find ways to develop cultures, where people from different functional areas work together. One option would be to share best practices with other member firms through conferences sponsored by GeoForum.

Recommendation 7:

GeoForum members should focus on ways to increase the marketing domain width in their firms. That is, they need to increase their focus on understanding emerging segments, industry trends, and innovations in markets other than their own. One option would be to share best practices with other member firms through conferences sponsored by GeoForum.

Recommendation 8:

GeoForum members should focus on decreasing their domestic orientations. That is, they need to increase their efforts to enter foreign markets. One option would be to share best practices with other member firms through conferences sponsored by GeoForum.

Recommendation 9:

GeoForum members should focus on increasing their market offering flexibility. That is, they need to improve their abilities to rapidly and efficiently adapt their existing products to changing market conditions. One option would be to share best practices with other member firms through conferences sponsored by GeoForum.

Recommendation 10:

GeoForum members should focus on increasing their marketing process innovations. That is, they need to increase the uniqueness of their marketing programs. One option would be to share best practices with other member firms through conferences sponsored by GeoForum.

APPENDICES

Appendix I: Descriptive Statistics
(All Firms) (n = 46)

The following questions were analyzed for all sized firms. Certain questions are omitted from this analysis because they assume that the firm is large enough to have a variety of separate functional areas. Small firms (i.e., those with less than a total of 10 full-time and part-time employees) are assumed to be too small to organize themselves into to separate functional areas that would be meaningful for the concepts investigated in many of the questions (e.g., cross-function conflict) included in the questionnaire.

Table I-1

Marketing process innovation (5-point semantic differential scale):

Compared to our competitors, our marketing programs are:

A5.1 *exciting/dull*
N = 46, mean = 2.74, standard deviation = 1.00, min value = 1, max value = 5

A6.1 *conventional/unconventional*[*]
N = 46, mean = 2.72, standard deviation = .91, min value = 1, max value = 5

A7.1 *original/commonplace*
N = 46, mean = 2.93, standard deviation = .93, min value = 1, max value = 5

A8.1 *trendsetting/warmed over*
N = 46, mean = 3.13, standard deviation = .93, min value = 1, max value = 5

A9.1 *average/revolutionary*[*]
N = 46, mean = 3.22, standard deviation = 1.05, min value = 1, max value = 5

A10.1 *an industry model/nothing special*
N = 46, mean = 3.00, standard deviation = .79, min value = 1, max value = 5

[*] Indicates reversed scored item.

Average over all 6 items: mean = 2.96, standard deviation = .55

Table I-2

Marketing Efficiency (5-point Likert scale):

Our firm, compared to our competitors:

A11.1 makes better use of resources
N = 46, mean = 3.72, standard deviation = .78, min value = 3, max value = 5

A11.2 is more efficient
N = 46, mean = 3.74, standard deviation = .74, min value = 2, max value = 5

A11.3 gets more output with less input
N = 46, mean = 3.61, standard deviation = .74, min value = 2, max value = 5

Average over all 3 items: mean = 3.69, standard deviation = .66

Table I-3

Marketing Effectiveness (5-point Likert scale):

Our firm, compared to our competitors:

A12.1 create more customer value
N = 46, mean 4.02, standard deviation = .75, min value = 2, max value = 5

A12.2 better understand customer needs
N = 46, mean = 4.11, standard deviation = .74, min value = 2, min value = 5

A12.3 better tailors products/services to customer needs
N = 46, mean = 3.87, standard deviation = .81, min value = 2, max value = 5

Average over all 3 items: mean = 4.00, standard deviation = .64

Table I-4

Marketing domain width (5-point Likert scale):

A13.1 *We collect a great deal of information about customer groups that are not currently being served by us.*
N = 46, mean = 2.72, standard deviation = 1.15, min value = 1, max value = 5

A13.2 *Compared to our competitors, we have more knowledge about new trends in the geomatic industry.*
N = 46, mean = 3.26, standard deviation = 1.02, min value = 1, max value = 5

A13.3 *We are more concerned with discovering new customer segments than are our main competitors.*
N = 46, mean = 4.11, standard deviation = .77, min value = 2, max value = 5

A13.4 *We are more concerned with understanding what firms in other markets do than our competitors.*
N = 46, mean = 3.43, standard deviation = .96, min value = 1, max value = 5

Average over all 4 items: mean = 3.38, standard deviation = .68

Table I-5

Product Advantage (5-point Likert scale):

A14.1 The customers perceive the firm's product to contain many unique attributes and characteristics for the customer that are not available from competitive products.
N = 44, mean = 3.45, standard deviation = .85, min value = 1, max value = 5

A14.2 The firm offers a product which represents good value for money for the customer.
N = 44, mean = 4.05, standard deviation = .81, min value = 2, max value = 5

A14.3 The firm's product offering is superior to competing products in terms of meeting customer needs.
N = 44, mean = 3.77, standard deviation = .86, min value = 1, max value = 5

A14.4 In terms of how the customers measure quality, the firm delivers excellent product quality relative to competitors' products.
N = 44, mean = 3.50, standard deviation = .85, min value = 1, max value = 5

A14.5 The firm's product benefits are easily perceived as being useful by the customer.
N = 44, mean = 3.84, standard deviation = .86, min value = 1, max value = 5

A14.6 The benefits of the firm's product offering are very visible and obvious to the customer.
N = 44, mean = 3.30, standard deviation = .95, value = 1, max value = 5

Average over all 6 items: mean = 3.65, standard deviation = .58

Table I-6

Market Offering Flexibility (5-point Likert scale):

A14.7 *Compared to our competitors, we have been more frequent to perform adaptations and development of our products and services in the last year.*
N = 44, mean = 3.36, standard deviation = 1.24, min value = 1, max value = 5

A14.8 *Compared to our competitors, we have introduced more new products and services that are new to the geomatic industry.*
N = 44, mean = 3.20, standard deviation = 1.05, min value = 1, max value = 5

A14.9 *Compared to our competitors, we have been more consistent through the different product and service adaptations and developments.*
N = 44, mean = 3.66, standard deviation = .71, min value = 2, max value = 5

A14.10 *Compared to our competitors, we are **rapid** to change and develop our products and services, when other firms do something new in the market.*
N = 44, mean = 3.55, standard deviation = .87, min value = 2, max value = 5

Average over all 4 items: mean = 3.44, standard deviation = .78

Table I-6

Domestic Orientation (5-point Likert scale):

A15.1 *We rarely look for opportunities to sell our products/services outside of Norway.*
N = 41, mean = 3.39, standard deviation = 1.55, min value = 1, max value = 5

A15.2 *We are actively seeking new markets outside of Norway.* *
N = 41, mean = 3, standard deviation = 1.65, min value = 1, max value = 5

A15.3 *Doing business outside of Norway is not part of our business plan.*
N = 41, mean = 3.24, standard deviation = 1.65, min value = 1, max value = 5

A15.4 *We would jump at the chance to do business outside of Norway.* *
N = 42, mean = 2.90, standard deviation = 1.57, min value = 1, max value = 5

* Indicates reversed scored item.

Average over all 4 items: mean = 3.18, standard deviation = .88

Table I-7

Other questions regarding Statens Kartverk and the geomatics industry (5-point Likert scale)

How important is:

A16.1 ...the competencies of Statens Kartverk for your firm?
N = 42, mean = 2.98, standard deviation = 1.46, min value = 1, max value = 5

A16.2 ...cooperation with geomatic firms in the geographical area (Hønefoss) around Statens Kartverk?
N = 42, mean = 2.2, standard deviation = 1.35, min value = 1, max value = 5

A16.3 ...cooperation with other geomatic firms (other than Statens Kartverk) for your firm?
N = 42, mean = 3.36, standard deviation = 1.16, min value = 1, max value = 5

A16.4 ...cooperation with other firms to be able to provide competitive products (total solutions) in the market (e.g., combinations of hardware, software, services, etc.)?
N = 41, mean = 3.54, standard deviation = 1.31, min value = 1, max value = 5

Table I-8

Industry support (5-point Likert scale):

How satisfied are you with:

A17.1 ... the offer of relevant meeting places for the industry?
N = 42, mean = 3.43, standard deviation = .89, min value = 1, max value = 5

A17.2 ... the offer of relevant competence development for the industry
N = 42, mean = 3.17, standard deviation = .88, min value = 1, max value = 5

Table I-9

Financial Performance (5-point Likert scale):

A20 What is your profitability, compared to your most important competitors (poorer, slightly poorer, approximately the same, slightly greater, or greater)?
N = 41, mean = 3.49, standard deviation = 1.03, min value = 1, max value = 5

A21 How do your sales compare to your most important competitors (lower, slightly lower, equal, slightly greater, or greater)?
N = 41, mean = 3.44, standard deviation = 1.05, min value = 1, max value = 5

Average over both items: mean = 3.45, standard deviation = .95

Table I-10

Firm Size (open-ended)

A22.1 How many full-time employees does your firm have?
N = 40, mean = 790.78, standard deviation = 3,263.12, min value = 1, max value = 20,000

A22P1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	5.00	2	5.00
2	1	2.50	3	7.50
7	1	2.50	4	10.00
8	1	2.50	5	12.50
9	2	5.00	7	17.50
10	2	5.00	9	22.50
11	1	2.50	10	25.00
14	2	5.00	12	30.00
16	1	2.50	13	32.50
18	1	2.50	14	35.00
19	1	2.50	15	37.50
20	2	5.00	17	42.50
21	1	2.50	18	45.00
23	1	2.50	19	47.50
30	1	2.50	20	50.00
32	1	2.50	21	52.50
35	1	2.50	22	55.00
38	1	2.50	23	57.50
42	1	2.50	24	60.00
45	1	2.50	25	62.50
50	2	5.00	27	67.50
66	1	2.50	28	70.00
95	1	2.50	29	72.50
100	1	2.50	30	75.00
110	1	2.50	31	77.50
120	1	2.50	32	80.00
155	1	2.50	33	82.50
550	1	2.50	34	85.00
700	1	2.50	35	87.50
980	1	2.50	36	90.00
1000	1	2.50	37	92.50
1200	1	2.50	38	95.00
6000	1	2.50	39	97.50
20000	1	2.50	40	100.00

Table I-11

A22.2 How many part-time employees does your firm have?
N = 40, mean 132.43, standard deviation = 789.57, min value = 0, max value = 5,000

A22P2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	12	30.00	12	30.00
1	10	25.00	22	55.00
2	4	10.00	26	65.00
3	3	7.50	29	72.50
5	2	5.00	31	77.50
10	2	5.00	33	82.50
20	3	7.50	36	90.00
30	1	2.50	37	92.50
50	1	2.50	38	95.00
100	1	2.50	39	97.50
5000	1	2.50	40	100.00

Table I-12

Number of partners

A23 Do you work with any other firms that you consider to be your partner?

A23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	26	65.00	26	65.00
No	14	35.00	40	100.00

A24.1 If so, how many?
N = 26, mean = 4.36, standard deviation = 3.15, min = 1, max = 10

A24P1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	7.69	2	7.69
2	7	26.92	9	34.62
3	7	26.92	16	61.54
4	2	7.69	18	69.23
5	2	7.69	20	76.92
8	1	3.85	21	80.77
10	5	19.23	26	100.00

Table I-13

Business type

A.25 Which product area best describe your business – (1) mapping services (field work), (2) hardware supplier, or (3) software supplier (incl. web solutions and services)?
N = 40

A25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	21	52.50	21	52.50
2	5	12.50	26	65.00
3	14	35.00	40	100.00

Appendix II: Descriptive Statistics
(Firms with at total of at least 10 full-time and part-tome employees)(n = 42)

Table II-1

Socialization efforts (5-point Likert Scale):

A1.1 *Our development programs often include people from multiple functional areas.*
N = 33, mean = 3.70, standard deviation = 1.16, min value = 1, max value = 5

A1.2 *Members of one functional area are easily accessible to members of other functional areas.*
N = 33, mean = 3.85, standard deviation = 1.03, min value = 2, max value = 5

A1.3 *We are given ample opportunities to get to know people from other functional areas.*
N = 33, mean = 4.27, standard deviation = .94, min value = 2, max value = 5

A1.4 *People from different functional areas are always available for each other.*
N = 33, mean = 3.73, standard deviation = 1.15, min value = 1, max value = 5

Average over all 4 items: mean = 3.89, standard deviation = .76

Table II-2

Interfunctional connectedness (5-point Likert scale)

A1.5 *Members of one functional area feel comfortable interacting with members of other functional areas.*
N = 33, mean = 3.79, standard deviation = .89, min value = 2, max value = 5

A1.6 *People from different functional areas speak "different languages," which makes it difficult to communicate.*[*]
N = 33, mean = 2.91, standard deviation = 1.18, min value = 1, max value = 5

A1.7 *Functional areas volunteer information that they believe will affect other functional areas.*
N = 33, mean = 3.52, standard deviation = .87, min value = 2, max value = 5

A1.8 *Members of one functional area will often contact members of other functional areas.*
N = 33, mean = 3.73, standard deviation = 1.01, min value = 1, max value = 5

[*] Indicates reversed scored item.

Average over all 4 items: mean = 3.53, standard deviation = .64

Table II-3

Interfunctional communication quality (5-point Likert scale):

A1.9 *Communication that I have with other functional areas is timely.*
N = 33, mean = 3.09, standard deviation = .95, min value = 1, max value = 5

A1.10 *Communication that I have with other functional areas is accurate.*
N = 33, mean = 3.48, standard deviation = .83, min value = 1, max value = 5

A1.11 *Communication that I have with other functional areas is adequate.*
N = 33, mean = 4.09, standard deviation = .72, min value = 2, max value = 5

A1.12 *Communication that I have with other functional areas is complete.*
N = 33, mean = 3.36, standard deviation = .74, min value = 2, max value = 5

Average over all 4 items: mean = 3.51, standard deviation = .46

Table II-4

Interfunctional Conflict (5-point Likert scale):

A2.1 *Tensions frequently run high when members from different functional areas work together.*
N = 33, mean = 2.30, standard deviation = 1.13, min value = 1, max value = 5

A2.2 *People from different functional areas dislike having to work together.*
N = 33, mean = 1.45, standard deviation = .56, min value = 1, max value = 3

A2.3 *There is often tension over the specific terms of the working relationships among functional areas.*
N = 33, mean = 2.00, standard deviation = 1.06, min value = 1, max value = 4

A2.4 *The objectives of various functional areas are often incompatible with each other.*
N = 33, mean = 2.09, standard deviation = .84, min value = 1, max value = 4

Average over all 4 items: mean = 1.96, standard deviation = .62

Table II-5

Coworker trust (5-point Likert scale):

In our firm, employees:

A3.1 *...are honest.*
N = 33, mean = 4.42, standard deviation = .61, min value = 3, max value = 5

A3.2 *... can be counted on to do what is right.*
N = 33, mean = 4.24, standard deviation = .79, min value = 2, max value = 5

A3.3 *... have high integrity.*
N = 33, mean = 4.24, standard deviation = .79, min value = 2, max value = 5

A3.4 *... are trustworthy.*
N = 33, mean = 4.48, standard deviation = .57, min value = 3, mx value = 5

Average over all 4 items: mean = 4.34, standard deviation = .58

Table II-6

Tacit marketing knowledge transfer (5-point Likert scale):

A4.1 *Employees teach each other the knowledge that they have learned about the market.*
N = 33, mean = 3.97, standard deviation = .81, min value = 2, max value = 5

A4.2 *Employees are willing to pass on the knowledge they have learned about the market.*
N = 33, mean = 3.97, standard deviation = .98, min value = 1, max value = 5

A4.3 *There is a good deal of organizational conversation that keeps alive lessons learned about the market.*
N = 33, mean = 3.79, standard deviation = .82, min value = 1, max value = 5

A4.4 *We share lessons learned from unsuccessful organizational marketing endeavors.*
N = 33, mean = 3.52, standard deviation = .94, min value = 1, max value = 5

Average over all 4 items: mean = 3.81, standard deviation = .59

Appendix III: Definitions

Coworker Trust – when coworkers have confidence in each others reliability and integrity.

Domestic Orientation – the degree to which a firm concentrates on its domestic market.

Financial Performance – the degree to which a firm outperforms its rivals (in sales and profits).

Interfunctional Communication Quality– The extent to which communication across organizational functions is perceived to be timely, accurate, adequate, and complete.

Interfunctional Conflict – refers to unhealthy behaviors across functional areas such as distortion and withholding of information to hurt other decision-makers, hostility and distrust during interactions, and creating obstacles to impede decision-making processes.

Interfunctional Connectedness – is characterized by the motivation to communicate with people from different functional areas.

Marketing Domain Width – the degree to which a firm engages in market research to understand emerging market segments, new industry trends, and innovations outside its core market.

Marketing Effectiveness – producing market offerings that are perceived as being more valuable than rivals' marketing offerings.

Marketing Efficiency – producing market offerings at lower cost than rivals.

Market Offering Flexibility – the ability to adapt quickly market offerings to contextual changes and opportunities at low costs.

Marketing Process Innovation – The degree to which marketing practices are unique or deviate substantially from industry practice.

Product Advantage – the degree to which a firm's market offerings are perceived to have a strategic advantage over rival's market offerings.

Socialization Efforts – refers to those organizational mechanisms that build interpersonal familiarity, personal affinity, and convergence in thinking among people from different functional areas.

Tacit Marketing Knowledge Transfer –The expectation that lessons learned regarding marketing processes will be shared throughout the firm through knowledge sharing.

Appendix IV: Correlation Analyses

Table IV-1: Correlation Analyses*

	Socialization Efforts	Interfunctional Connectedness	Interfunctional Communication Quality	Interfunctional Conflict	Coworker Trust	Tacit Knowledge Transfer	Market Offering Flexibility	Domestic Orientation	Marketing Domain Width	Marketing Process Innovation	Product Advantage	Marketing Efficiency	Marketing Effectiveness	Financial Performance
Socialization Efforts	1.00													
Interfunctional Connectedness	.49	1.00												
Interfunctional Communication Quality	Not Significant	.31	1.00											
Interfunctional Conflict	-.33	-.53	-.27	1.00										
Coworker Trust	Not Significant	.44	Not Significant	-.37	1.00									
Tacit Knowledge Transfer	.34	.48	.43	-.33	.39	1.00								
Market Offering Flexibility	.22	.54	Not Significant	-.23	.41	.27	1.00							
Domestic Orientation	Not Significant	Not Significant	Not Significant	.26	.38	-.25	-.56	1.00						
Marketing Domain Width	Not Significant	.27	Not Significant	-.23	.25	.28	.65	-.33	1.00					
Marketing Process Innovation	.38	.29	Not Significant	Not Significant	Not Significant	.21	.34	Not Significant	.51	1.00				
Product Advantage	Not Significant	.47	Not Significant	Not Significant	.31	.39	.77	-.44	.50	.37	1.00			
Marketing Efficiency	Not Significant	Not Significant	.34	Not Significant	.22	Not Significant	.37	.22	.31	.30	.37	1.00		
Marketing Effectiveness	.21	.49	Not Significant	-.27	.44	.27	.57	.30	.43	.55	.47	.33	1.00	
Financial Performance	.26	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	.37	Not Significant	.47	.35	.23	.21	Not Significant	1.00

*All correlation coefficients are significant at the $p < .10$ level, unless otherwise indicated (n = 42).

Appendix V: Step-Wise Linear Multiple Regression Analyses

Table V-1. Results Step-Wise Regression Analysis – **Financial Performance**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Financial Performance	0.34	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Communication Quality	0.30	0.07
Marketing Domain Width	0.22	0.01
Independent Variables not Retained		
Coworker Trust		
Domestic Orientation		
Interfunctional Conflict		
Interfunctional Connectedness		
Marketing Effectiveness		
Marketing Efficiency		
Marketing Process Innovation		
Product Advantage		
Market Offering Flexibility		
Socialization Efforts		
Tacit Marketing Knowledge Transfer		

Table V-2. Results Step-Wise Regression – **Marketing Effectiveness**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Marketing Effectiveness	0.48	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Conflict	-0.27	0.01
Market Offering Flexibility	0.27	0.01
Marketing Process Innovation	0.24	0.01
Independent Variables not Retained		
Coworker Trust		
Domestic Orientation		
Interfunctional Communication Quality		
Interfunctional Connectedness		
Marketing Domain Width		
Product Advantage		
Socialization Efforts		
Tacit Marketing Knowledge Transfer		

Table V-3. Results Step-Wise Regression – **Marketing Efficiency**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Marketing Efficiency	0.15	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Market Offering Flexibility	0.21	0.06
Marketing Process Innovation	0.18	0.07
Independent Variables not Retained		
Coworker Trust		
Domestic Orientation		
Interfunctional Communication Quality		
Interfunctional Conflict		
Interfunctional Connectedness		
Marketing Domain Width		
Socialization Efforts		
Tacit Marketing Knowledge Transfer		

Table V-4. Results Step-Wise Regression – **Product Advantage**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Product Advantage	0.52	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Marketing Efficiency	0.24	0.04
Market Offering Flexibility	0.48	0.01
Tacit Marketing Knowledge Transfer	0.20	0.10
Independent Variables not Retained		
Coworker Trust		
Domestic Orientation		
Interfunctional Communication Quality		
Interfunctional Conflict		
Interfunctional Connectedness		
Marketing Domain Width		
Marketing Process Innovation		
Socialization Efforts		

Table V-5. Results Step-Wise Regression – **Market Offering Flexibility**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Market Offering Flexibility	0.54	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Domestic Orientation	-0.34	0.01
Interfunctional Connectedness	0.50	0.01
Marketing Domain Width	0.36	0.02
Independent Variables not Retained		
Interfunctional Communication Quality		
Interfunctional Conflict		
Marketing Process Innovation		
Socialization Efforts		
Tacit Marketing Knowledge Transfer		

Table V-6. Results Step-Wise Regression – **Marketing Process Innovation**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Marketing Process Innovation	0.23	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Connectedness	0.36	0.07
Marketing Domain Width	0.47	0.01
Independent Variables not Retained		
Coworker Trust		
Domestic Orientation		
Interfunctional Communication Quality		
Interfunctional Conflict		
Socialization Efforts		
Tacit Marketing Knowledge Transfer		

Table V-7. Results Step-Wise Regression – **Tacit Marketing Knowledge Transfer**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Tacit Marketing Knowledge Transfer	0.16	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Coworker Trust	0.36	0.01
Interfunctional Communication Quality	0.29	0.04
Independent Variables not Retained		
Interfunctional Conflict		
Interfunctional Connectedness		
Socialization Efforts		

Table V-8. Results Step-Wise Regression – **Coworker Trust**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Coworker Trust	0.21	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Connectedness	0.51	0.01
Independent Variables not Retained		
Interfunctional Communication Quality		
Interfunctional Conflict		
Socialization Efforts		

Table V-9. Results Step-Wise Regression – **Interfunctional Communication Quality**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Interfunctional Communication Quality	0.07	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Connectedness	0.23	0.05
Independent Variables not Retained		
Coworker Trust		
Interfunctional Conflict		
Socialization Efforts		

Table V-10. Results Step-Wise Regression – **Interfunctional Conflict**

Results Step-Wise Regression	n = 42	
Dependent Variable		
	R^2	
Interfunctional Conflict	0.28	
Independent Variables Retained		
	Std. Coeff.	***p*-value**
Interfunctional Connectedness	-0.58	0.01
Independent Variables not Retained		
Coworker Trust		
Interfunctional Communication Quality		
Socialization Efforts		

Appendix VI: Questionnaire (Norwegian)

Project	0000
Schema ID	

1 BEDRIFTER KAN BESKRIVES PÅ ULIK MÅTE. TA STILLING TIL HVA DU MENER ER MEST KARAKTERISTISK FOR DIN BEDRIFT. DIN FØRSTE INNSKYTELSE ER SANNSYNLIGVIS DEN MEST RIKTIG.

Beskrivelse av bedriften

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad	
Våre utviklingsprogrammer omfatter ofte personer fra flere fagområder i bedriften. Når vi avholder møter, inkluderer disse ofte personer fra flere fagområder	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
Personer fra ett fagområde/avdeling er lett tilgjengelig for personer fra andre fagområder i bedriften.	☐	☐	☐	☐	☐	
Vi har mange muligheter for å bli kjent med personer fra andre fagområder i bedriften.	☐	☐	☐	☐	☐	
Personer fra ulike fagområder er hele tiden tilgjengelig for hverandre.	☐	☐	☐	☐	☐	
Ansatte innen et fagområde føler seg bekvem med hvilken som helst ansatt innen andre funksjonsområder.	☐	☐	☐	☐	☐	
Personer fra ulike fagområder snakker ¨ulike språk¨ som gjør kommunikasjon vanskelig.	☐	☐	☐	☐	☐	
Personer fra de ulike fagområdene i bedriften viderebringer selv informasjon de tror kan ha betydning for andre funksjonsområder.	☐	☐	☐	☐	☐	
Ansatte innen et fagområde vil ofte kontakte ansatte medlemmer ved andre fagområder.	☐	☐	☐	☐	☐	
Min kommunikasjon med andre fagområder/avdelinger er stort sett alltid ¨just-in-time.¨	☐	☐	☐	☐	☐	
Min kommunikasjon med andre fagområder/avdelinger er stort sett alltid nøyaktig (dvs. at misforståelser ikke dukker opp i etterkant).	☐	☐	☐	☐	☐	
Min kommunikasjon med andre fagområder/avdelinger er stort sett alltid nyttig for bedriften.	☐	☐	☐	☐	☐	
Min kommunikasjon med andre fagområder/avdelinger er stort sett alltid fullstendig.	☐	☐	☐	☐	☐	

2 **Beskrivelse av bedriften**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad	
Spenningene blir ofte høye når deltakere fra ulike fagområder/avdelinger arbeider sammen.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
Ansatte fra ulike fagområder/avdelinger misliker å måtte jobbe sammen.	☐	☐	☐	☐	☐	
Spillereglene for hvordan de ulike fagområdene skal samarbeide skaper ofte spenning i bedriften	☐	☐	☐	☐	☐	
Målene for de ulike fagområdene/avdelingene er ofte uforenlige med hverandre.	☐	☐	☐	☐	☐	

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3 **Sammenlignet med andre bedrifter, er de ansatte i vår bedrift:**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
... ærlige	☐	☐	☐	☐	☐
... forventet å gjøre de riktige tingene	☐	☐	☐	☐	☐
... antatt å ha høy integritet	☐	☐	☐	☐	☐
... pålitelige	☐	☐	☐	☐	☐

4 **Bedriftens markedsrelasjoner.**

TA STILLING TIL HVORDAN BEDRIFTENS FORHOLD TIL MARKEDET ER.

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
Ansatte utveksler erfaringsbasert kunnskap om markedet seg i mellom.	☐	☐	☐	☐	☐
Ansatte er villige til å dele sin erfaringsbaserte kunnskap om markedet med andre.	☐	☐	☐	☐	☐
Det er mange samtaler i bedriften som holder liv i tidligere tilegnet kunnskap om markedet.	☐	☐	☐	☐	☐
Vi deler erfaringer hentet fra mislykkede markedstiltak.	☐	☐	☐	☐	☐

5 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== Spennende	<=		=>	==> Kjedelige
	1	2	3	4	5
spennende eller kjedelige?	☐	☐	☐	☐	☐

6 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== Tradisjonelle	<=		=>	==> Utradisjonelle
	1	2	3	4	5
Tradisjonelle eller utradisjonelle?	☐	☐	☐	☐	☐

7 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== Originale	<=		=>	==> Alminnelige
	1	2	3	4	5
Originale eller alminnelige?	☐	☐	☐	☐	☐

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8 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== Trend-setten-de	<=		=>	==> Velk-jente
	1	2	3	4	5
Trendsettende eller velkjente?	☐	☐	☐	☐	☐

9 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== Gjen-nom-snittlige	<=		=>	==> Revo-lusjonerend
	1	2	3	4	5
Gjennomsnittlige eller revolusjonerende?	☐	☐	☐	☐	☐

10 **Sammenlignet med våre konkurrenter er våre markedsføringsaktiviteter:**

	<== En fore-gangsmod-ell for bran-sjen	<=		=>	==> ingent-ing spe-sielt?
	1	2	3	4	5
En foregangsmodell for bransjen eller ingenting spesielt?	☐	☐	☐	☐	☐

11 **Vår bedrift, sammenlignet med våre konkurrenter:**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
utnytter ressursene bedre	☐	☐	☐	☐	☐
er mer effektiv	☐	☐	☐	☐	☐
får mer effekt med mindre ressursbruk	☐	☐	☐	☐	☐

12 **Vår bedrift, sammenlignet med konkurrentene:**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
tilpasser produkter og tjenester bedre til kundens behov	☐	☐	☐	☐	☐
gir kunden bedre verdiskapning	☐	☐	☐	☐	☐
har bedre forståelse for kundens behov	☐	☐	☐	☐	☐

13 **Vår bedrift, sammenlignet med konkurrentene:**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
Vi samler inn mye informasjon om kundegrupper som vi i dag ikke betjener.	☐	☐	☐	☐	☐
I forhold til våre konkurrenter har vi mye mer kunnskap om nye trender innen geomatikk.	☐	☐	☐	☐	☐
Vi konsentrerer største oppmerksomhet mot kunder og kundegrupper vi allerede har.	☐	☐	☐	☐	☐
Sammenlignet med våre viktigste konkurrenter er vi mer opptatt av å oppdage nye kundegrupper.	☐	☐	☐	☐	☐

14 **Vår bedrift, sammenlignet med konkurrentene:**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
Kundene oppfatter vårt tilbud til å omfatte mange fordeler som ikke er tilgjengelig hos konkurrentene.	☐	☐	☐	☐	☐
Vi tilbyr helhetlige produkter som gir god verdi for den prisen kunden betaler.	☐	☐	☐	☐	☐
Med utgangpunkt i kundenes oppfatning av kvalitet vil vi påstå at vår helhetlige produkttilbud er bedre enn gjennomsnittet i bransjen.	☐	☐	☐	☐	☐
Våre tilbud kan beskrives til å ha et bedre pris/kvalitetsinnhold for kundene enn hva som er tilfelle hos konkurrentene.	☐	☐	☐	☐	☐
De sterke sidene ved våre tilbud opptattes som nyttige og viktige ovenfor kunden.	☐	☐	☐	☐	☐
Fordelen ved våre tilbud er lett å få øye på for kundene.	☐	☐	☐	☐	☐
Sammenlignet med våre konkurrenter har vi gjort mange endringer og utvikling av vårt produkt- og tjenestetilbud det siste året	☐	☐	☐	☐	☐
Sammenlignet med våre konkurrenter har vi introdusert flere nye produkter og tjenester som er nye i geomatikkbransjen	☐	☐	☐	☐	☐
Sammenlignet med våre konkurrenter har de aller fleste av endringene og produktutviklingstiltakene vi har gjort holdt et jevnt og forventet kvalitetsnivå	☐	☐	☐	☐	☐
Sammenlignet med våre konkurrenter har vi vært hurtige til å reagere med endringer og utvikling av vårt produkt- og tjenestetilbud når andre bedrifter har gjort noe nytt i markedet	☐	☐	☐	☐	☐

15 **Orientering mot hjemmemarked**

	1 Svært liten grad	2	3 Verken/ eller	4	5 I svært stor grad
	1	2	3	4	5
Vi ser sjelden etter muligheter for å selge våre varer/tjenester utenfor Norge.	☐	☐	☐	☐	☐
Vi søker aktivt nye markeder utenfor Norge.	☐	☐	☐	☐	☐
Å gjøre forretninger med kunder utenfor Norge er ikke en del av vår strategi.	☐	☐	☐	☐	☐
Vi vil gripe enhver sjanse til gjøre forretninger utenfor Norge.	☐	☐	☐	☐	☐

16 **Hvor viktig er ....?**

	1 Svært lite viktig	2	3 Verken/ eller	4	5 Svært viktig
fagkompetansen til Statens Kartverk for din bedrift?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
samarbeid med geomatikkbedrifter i nærområdet (Hønefoss) rundt Statens Kartverk for din bedrift?	☐	☐	☐	☐	☐
samarbeid med andre geomatikkbedrifter (utenom Statens Kartverk) for din bedrift?	☐	☐	☐	☐	☐
samarbeid med andre bedrifter for din bedrift for å kunne tilby konkurransedyktige totalløsninger i markedet (for eksempel kombinasjoner av utstyr, software, tjenester, etc.)	☐	☐	☐	☐	☐

17 **Hvor fornøyd er du med....?**

	1 Svært lite fornøyd	2	3 Verken/ eller	4	5 Svært fornøyd
tilbudet av relevante møteplasser for bransjen?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
tilbudet av relevant kompetanseutvikling for bransjen?	☐	☐	☐	☐	☐

18 **Evt. kommentarer til hvor fornøyd du er med TILBUDET AV RELEVANTE MØTEPLASSER FOR BRANSJEN**

Other, note _____

For MI Pro ☐

19 **Evt. kommentarer til hvor fornøyd du er med TILBUDET AV RELEVANT KOMPETANSEUTVIKLING FOR BRANSJEN**

Other, note _____

For MI Pro ☐

20 **Sammenlignet med deres viktigste konkurrenter, har dere svakere lønnsomhet, noe svakere lønnsomhet, omtrent lik lønnsomhet, noe bedre lønnsomhet eller bedre lønnsomhet?**

Svakere lønnsomhet ☐ 1
Noe svakere lønnsomhet ☐ 2
Omtrent lik lønnsomhet ☐ 3
Noe bedre lønnsomhet ☐ 4
Bedre lønnsomhet ☐ 5

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21 **Sammenlignet med deres viktigste konkurrenter, har dere svakere salgsvekst, noe svakere salgsvekst, omtrent lik salgsvekst, noe bedre salgsvekst eller bedre salgsvekst?**

Svakere salgsvekst ☐1
Noe svakere salgsvekst ☐2
Omtrent lik salgsvekst ☐3
Noe bedre salgsvekst ☐4
Bedre salgsvekst ☐5

22 AVSLUTNING. VI HAR AVSLUTNINGSVIS FIRE SPØRSMÅL OM DIN BEDRIFT

Størrelse

Hvor mange heltidsansatte har din bedrift? ____

Hvor mange deltidsansatte har din bedrift? ____

23 ANTALL SAMARBEIDSPARTNERE.

Samarbeider du med noen annen bedrift som du betrakter som partner?

Ja ☐1
Nei **(⇒ 25)** ☐2

24 **Hvor mange bedrifter gjelder det?**

Antall bedrifter ____

25 **Hvilket produktområde beskriver best virksomheten til bedriften din?**

Kartleggingstjenester ☐1
Utstyrsleverandør ☐2
Programvareleverandør (inkl. webløsninger og tjenester) ☐3

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