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The importance of the internet in international business-to-business markets

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Abstract

Purpose – The purpose of this paper is to provide empirical evidence on the actual use and market performance effects of information and communication technologies (ICT) with regard to international business-to-business marketing activities of small and medium-sized enterprises (SMEs).

Design/methodology/approach – The analysis is based on survey data from 635 Danish and Norwegian SMEs with international marketing activities. The two primary research questions regarding actual use and performance effects are addressed by descriptive statistics and structural equation modelling, respectively.

Findings – Findings suggest that, contrary to expectation, Norwegian and Danish international SMEs are not heavy users of ICT. Rather, ICT is predominantly used for market information search and to develop long-term customer relationships. In both those areas the use of ICT is positively associated with the firm's satisfaction with its development of new market knowledge. The use of ICT for sales purposes is limited and apparently negatively associated with the firm's satisfaction with its development of new market knowledge. There is no significant association between the use of ICT and the firm's satisfaction with its international performance.

Practical implications – This study contributes with new knowledge regarding the potential and limitations of the use of ICT in international business-to-business marketing. Heavy usage of ICT seems to be primarily directed towards information search and relationship development. The study also supports that ICT usage have positive impact on the accumulation of new market knowledge (and indirectly on international performance). Use of ICT for sales activities seems to be quite limited, and perhaps not even advisable. The reason for this may be that media richness associated with face-to-face interaction is beneficial for establishment of commitment and trust.

Originality/value – This paper makes an original contribution to the field of knowledge regarding the potential (and limitations) of ICT in international business-to-business marketing.

Keywords Communication technologies, Internet, Business-to-business marketing, Small to medium-sized enterprises, Norway, Denmark

Paper type Research paper

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Introduction

The development of information and communication technology (ICT) has been expected to generate international marketing opportunities for small and medium-sized enterprises (SMEs) (Hamill, 1997). In a general business perspective, Porter (2001, p. 71) argues that the internet "... by easing and speeding the exchange of real-time information, enables improvements throughout the entire value chain, across almost every company and industry". Overby and Min (2001, p. 392) state that information technology is "... transforming organisations and organisational processes and creating new opportunities and challenges for international marketers as many global markets are fast becoming borderless and integrated".

A number of studies suggest how ICT may be used in international marketing (Sultan and Rohm, 2004; Melewar and Smith, 2003). In a case study of computer software firms, Moen *et al.* (2004) concluded that inexpensive and highly standardised products were most suitable for internet-based sales efforts. Well-known examples like iTunes Store and Amazon.com further illustrate the possible influence of the internet on consumer product marketing, but most SMEs operate in a business-to-business market, often with non-standardised and complex products. Prasad *et al.* (2001) describe ICT as a tool for mass customisation, for automation of sales force tasks, for development of marketing decision support systems and for collaboration and communication with customers or partners. Evans and King (1999) discuss how the internet may improve access to competitive intelligence, customer service, just-in-time inventory planning, sales channel knowledge, support for channel partners, and improved cost effectiveness. The use of ICT should also influence export performance (Morgan-Thomas and Bridgewater, 2004). However, the manner in which individual firms use and benefit from ICT is expected to be influenced by factors within the firm and in its environment.

The motivation of the present research is to provide empirical knowledge about the actual use of ICT with regard to the international marketing activities of SMEs and its subsequent effect on performance. This type of research can bridge the gap between the hypotheses and reality with regard to the potential of ICT.

The paper presents empirical data on the use of ICT by small and medium-sized firms, mainly targeting B2B markets, for international marketing purposes. We examine the use of ICT for information search, sales activities, and relationship development. This part of the research is mainly descriptive, attempting to demonstrate the main areas of use of ICT. The association between the use of ICT and performance, i.e. the possible value of ICT, is also investigated. For this purpose, performance is divided into new market knowledge and performance in international markets. The association between the use of ICT and these two performance dimensions is investigated in order to shed light on how they may be influenced by the use of ICT.

Theoretical background

For many years the performance in international markets of firms has been a focus for researchers (from Tookey, 1964 to Lages *et al.*, 2005). This is not surprising, since the managements of international firms have to make decisions about future commitments based on the performance of their present activities. On the surface it is simple to judge whether or not an international venture is successful: it should meet or exceed the

targets set by management. Performance is, however, a complex concept that can be measured by multiple indicators (Madsen, 1998; Cavusgil and Zou, 1994). In a comprehensive review article Katsikeas *et al.* (2000) state that they found 42 different performance indicators out of which just over 50 per cent were economic whereas the remaining ones were objectives related to the firm's product, organization, or market. About half of all studies applied subjective measures. The present study applies subjective and relative measures of performance satisfaction. This is in accordance with Cavusgil and Zou (1994), who defined performance in international markets by a scale using the subjective perception of managers of the success of an export venture.

Inspired by Cavusgil and Zou (1994), Madsen (1998), Evans and King (1999) and Knight and Cavusgil (2004), we have focused on two performance constructs, "new market knowledge" and "performance in international markets". The latter relates to managers' satisfaction with economic results and the former taps into their satisfaction with the knowledge resulting from their international activities, representing market and capabilities-oriented goals. The "performance in international markets" scale is a replication of the Knight and Cavusgil (2004) study (seven point scale measuring satisfaction relative to prior expectations with regard to market share, sales growth, and pre-tax profitability, combined with sales growth compared with main competitor(s) and an overall assessment of satisfaction). The "new market knowledge" scale frames the questions in a similar manner and taps into satisfaction with access to new markets and lead customers as well as satisfaction with new knowledge about competitors and distribution channels.

We examine whether the use of ICT is associated with these two constructs, and we also analyse the intercorrelation between them. In addition to these analyses we also examine different aspects of the use of ICT. Even though many authors argue for the potential of ICT use and the opportunities it should create for small and medium-sized firms, it is striking how limited the knowledge of the actual use of ICT in the international marketing environment is. As expressed by Eid (2005, p. 267): "few studies can provide strong theoretical or statistical support, often because of their exploratory nature, dealing more with the potential than the reality of Internet use in practice".

So, a key issue of this paper is to present empirical evidence of the actual ICT use. Overby and Min (2001) suggested a model that distinguishes between four different areas of use: information, interaction, transaction and integration. We have taken their model as our point of departure, which is also largely in accordance with the process perspectives on business relationship development presented by Ford (1980), Wilson (1995), Kanter and Corn (1994) and Batonda and Perry (2003). Focusing on more short-term and sales-oriented activities, we have chosen to treat transaction and interaction as one dimension. The integrative dimension is treated as being more long-term and oriented towards building relationships with foreign partners. We have thus examined three main areas of ICT use:

(1) information search to identify possible customers and partners and to obtain information about competitors;

(2) using ICT to support sales and service activities (interaction and transaction); and

(3) using ICT to support the development of long-term customer relationships.

Information search may be aimed at evaluating markets; accessing information about competitors and searching for partners and customers. Through the internet, a firm should be expected to access relevant information directly and develop a more efficient interaction with information providers.

When the firm has identified a sales opportunity, this will hopefully be followed by initial contact leading to sales and service activities. Larson (1992) focused on this process as a trial period, initiated by one of the firms in their search for mutual economic advantage. Kanter and Corn (1994) argued that success in this phase depends on the balance between institutional structures and personal relations. As noted by Deresky (2000), sales and service activities include an exchange of task-related information, persuasion, concessions, and agreement. The formal process includes bargaining and contractual agreements, but, as described by Ring and van de Ven (1994), there will also be important elements of informal sense making, personal interactions and a development of non-spoken psychological contracts between the people involved. ICT may play a role as a supporting tool for sales and service activities.

It is important for many firms that initial sales develop into a long-term relationship with a customer or partner, creating opportunities for further sales. A successful relationship will depend on a number of factors, such as contributing to the achievement of expectations (Hitt *et al.*, 2000) and the degree of commitment and trust (Mohr and Spekman, 1994; Anderson and Narus, 1990). Overby and Min (2001), as well as Simchi-Levi *et al.* (2000), describe the importance of integrating firms with their customers using ICT. This may be especially true for SMEs operating in international markets since their limited resources often prevent them from being physically present in their export markets.

For each of the three areas (information search, sales and service activities, relationship building) we will examine the extent of use of ICT. We will also examine whether high levels of use in one area is associated with high levels of use in the other areas. Finally, we will test a set of hypotheses about the association between ICT use and performance. These hypotheses will be developed in the next section.

Hypothesis development

It is possible to argue for a positive association between performance and the use of ICT for information search, but it may also be argued that no such association should be expected. As discussed by Nijssen *et al.* (1999), a high-quality information search process will improve the quality of decisions made and hence improve performance in international markets. Moreover, information searches are a means of acquiring information and may contribute to new market knowledge. High performance in international markets should also motivate the firm to carry out further information search. On the other hand, as information search through the internet rely on secondary sources of information of varying quality, an export firm risks exposing itself to much unimportant, confusing, or unreliable information. One may question whether this contributes to new market knowledge or has a positive impact on sales or performance in general. However, as we believe that there are stronger arguments for the case that more information should lead to better decisions and improved performance, we hypothesise that:

H1a. Using ICT for information search is positively associated with new market knowledge.

H1b. Using ICT for information search is positively associated with performance in international markets.

Using ICT to support sales and service activities may contribute to the development of knowledge and thus to a more efficient use of the firm's resources and higher sales levels. On the other hand, in this setting, ICT will essentially be a supportive tool comparable to a fax, letters, etc. while the most important elements may be the personal factors (face-to-face meetings, telephone contact, negotiation processes), rather than the ICT-driven parts of the process. However, if used properly, ICT may, as a supplement to face-to-face meetings and negotiations, efficiently reduce costs and increase opportunities for sales to distant customers. So, even though counter-arguments are present, we hypothesise that:

H2a. Using ICT to support sale and service activities is positively associated with new market knowledge.

H2b. Using ICT to support sale and service activities is positively associated with performance in international markets.

Two arguments may be presented as to why the use of ICT to develop relationships may have a positive association/correlation with new market knowledge and performance in international markets. First, the case studies presented by Moen *et al.* (2003, 2004) describe how firms use ICT for support activities. As Sethuraman *et al.* (1988) pointed out, it is important to provide partner/customer support (training programmes, ongoing technical support and assistance with problem solving), and ICT may be actively used for this purpose. Second, if a firm succeeds in using ICT both for support activities and for effective communication, this should be expected to have a positive impact on the development of knowledge, as well as on the trust and commitment between the firms and individuals involved. This, *ceteris paribus,* should result in higher sales. A different point of view would be, as described by Mohr and Spekman (1994), a situation where the quality of the communication process (e.g. accuracy and adequacy of information) is regarded as important for the development, maintenance, and success of relations. Within this perspective, face-to-face communication would be important for relationship development. In total, ICT is expected to provide a potential for more communication; stimulating relationship development and having a positive effect on knowledge and performance in international markets:

H3a. Using ICT for customer interaction and long-term development of relationships is positively associated with new market knowledge.

H3b. Using ICT for customer interaction and long-term development of relationships is positively associated with performance in international markets.

Figure 1 shows the hypotheses. The three independent variables are expected to be associated with the two performance dimensions. One would also expect that the three dimensions of ICT use are interrelated, as a high score on one dimension would imply a

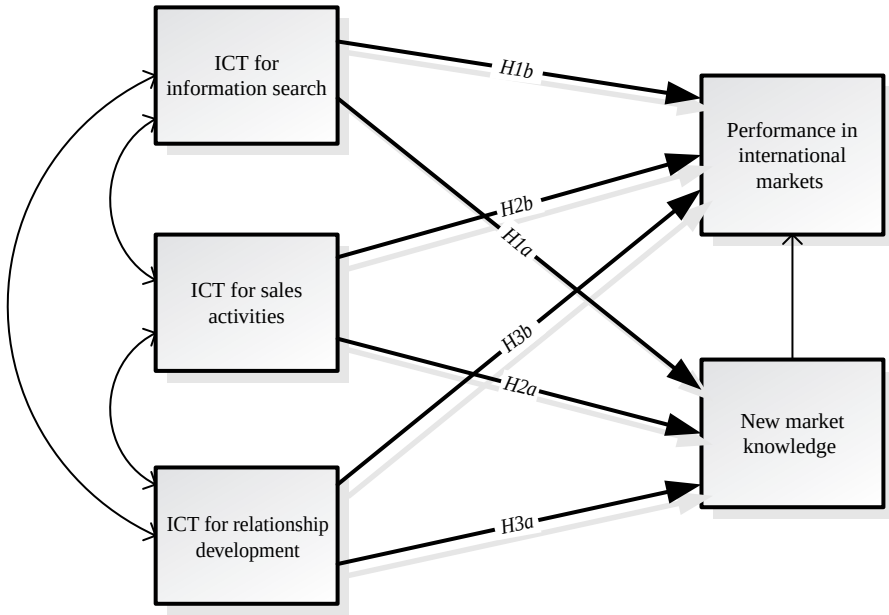

Figure 1.
Conceptual model

high score on the others as well. New market knowledge is expected to contribute positively to improved performance in international markets.

Methodology

In this study, data were collected from surveys among managers of small and medium-sized export firms in Norway and Denmark. According to the World Economic Forum (2006), these nations are among the most advanced in terms of ICT use. As SMEs often have limited resources, ICT may be a potential resource for these firms in their efforts to penetrate international markets. The 635 returned questionnaires are used in most of the analyses.

In Norway, questionnaires were in 2005 sent to senior managers in small and medium-sized (less than 250 employees) export firms classified as manufacturing firms. Company classifications and address lists were obtained from the Kompass Norway database. A total of 2,415 firms received a questionnaire, and 308 responded usefully. The empirical study in Denmark was carried out in 2004-2005, the population being Danish manufacturing firms, obtained from CD-Direct, published by Købmandstandens Oplysnings-Bureau, which lists all private Danish businesses. The 2,527 firms selected were contacted by telephone and a total of 327 firms returned a usable questionnaire. Table I summarizes basic information about the firms in the sample.

As Table I shows, the Danish firms are larger than Norwegian representatives in terms of both annual sales and the number of employees. Furthermore, the Danish firms were established slightly earlier than the Norwegian firms. These differences are, as may be expected, due to differences in data collection, as the selection in Denmark was restricted to firms with more than ten employees. The Danish firms have a higher

	Norway ($n = 308$)	Denmark ($n = 327$)
Annual turnover (€1,000)		
Mean (€)	8,104,000	11,213,000
Median (€)	3,513,000	5,249,000
Number of employees		
Mean	47.6	63.2
Median	22.0	44.3
Year of establishment		
Mean	1,969	1,961
Median	1,980	1,976
First year of export		
Mean	1,981	1,979
Median	1,987	1,986
Export share		
Mean (per cent)	44.8	48.3
Median (per cent)	41.7	47.0

Table I.
Information on the firms

export share, while the first exporting year is 1981 in Norway and 1979 in Denmark. Regarding business and market profiles, 58.8 per cent of the firms operated with direct sales to business customers and fewer than 2 per cent sold their products directly in consumer markets. The remaining 39.2 per cent used intermediaries as partners, agents, or distributors, mainly targeting industrial customers.

In the ensuing, the two samples have been combined into the same analyses. We carried out all the analyses separately for the two samples, but no significant differences were identified. For that reason we found it acceptable to combine them in order to obtain analyses that were statistically stronger.

ICT use was measured by questions covering information searches, sales support, service activities, and development of relationships. The scale used is a Likert type, ranging from 1 to 7 (a high number indicates agreement with a statement). Factor analyses were performed to test the ICT constructs. Factors were extracted by principal component analysis using varimax (Kaiser normalisation) as the rotating method. The rotation converged in four iterations. Based upon this analysis, three factors were identified. The first is termed "ICT for information searches" and includes searches for intermediaries, searches for information about competitors and searches for information about new market opportunities (Cronbach's $\alpha = 0.678$). The second factor, termed "ICT for sales activities" (Cronbach's $\alpha = 0.684$) consists of three items: ICT-based international sales, using ICT as a tool for service activities and using ICT to identify new customers in more distant countries. This factor is interpreted as focusing the degree of ICT use to directly obtain and support existing sales. The third factor includes ICT use directed at developing customer relationships, as a tool for developing joint projects with customers, and as a way of communicating with customers. This factor is termed "ICT for relationship development" and Cronbach's $\alpha = 0.794$. Table IV provides more detailed information about the factor constructs including CFA loadings.

As mentioned earlier, performance was split into two dimensions. Performance in international markets was measured by five items: total satisfaction with the export activity, satisfaction with market share, sales growth, sales growth compared to

competitors, and satisfaction with profitability (Cronbach's $\alpha = 0.91$). The second performance dimension focused on new market knowledge and comprised satisfaction with knowledge obtained through interaction with lead customers, with knowledge about competitors and new forms of distribution, and with access to new markets. Cronbach's α for this factor was 0.71.

Data analysis

The analyses are presented in two parts. The first presents the actual use of ICT and the second examines the association between the use of ICT, new market knowledge, and export sales success using structural equations modelling.

The actual use of ICT

The first part of the analysis gives an impression of how firms use ICT in their international activities based on the items included. Table II shows mean scores with standard deviations. The table also includes a column showing the percentage of firms reporting 6 and 7 on the scale; high percentages thus indicate agreement with the issue in focus.

The two most important elements of ICT use for the firms included are to seek information about competitors and to communicate with customers. About 47 per cent of the firms very actively use the internet for these purposes. Both the average scores and their distributions suggest that these elements are far more important than all the other elements. Furthermore, four specific items are regarded as highly important by between 15.7 and 24.9 per cent of the firms. These are using the internet as a tool for developing relationships, seeking customers, reaching more distant customers, and cooperating on development projects. Two items had low-mean scores with fewer than 10 per cent of the firms regarding them as highly important. These are; using the internet to seek intermediaries (agents, partners) and using ICT to support service activities.

The three factor constructs have different average scores as indicated in Table III: relationship focus has an average score of 3.88 and a standard deviation of 1.71; information focus has an average of 3.85 and a standard deviation of 1.35; and sales focus has an average of 2.38 and a standard deviation of 1.32.

ICT is mainly used to seek information (most frequently about competitors and new markets) and to develop relationships (most frequently communicating with customers

	Mean score total ($n = 615$)	SD	High-score percentages ($n = 615$)
Seeking information about competitors	5.03	1.65	47.2
Communicating with customers	4.75	2.09	47.5
ICT to develop relationships	3.80	1.97	24.9
Seeking information about new markets	3.91	1.77	21.5
ICT used to reach new, distant customers	3.08	1.95	15.7
ICT used in development projects with customers	3.12	2.05	17.6
ICT used to search for intermediaries	2.62	1.71	7.8
Offering customer service based on ICT	2.17	1.72	7.6
ICT for sales purposes	1.92	1.42	3.9

Table II.
Actual use of ICT

and maintaining existing relationships), with a lower score on sales efforts. When the underlying distribution of scores is examined, the information search factor shows a normal distribution centred on the average score (also expressed by the low-standard deviation). The relationship development factor has a more even distribution, including low, medium and high scores, thus leading to a higher standard deviation. The sales factor is dominated by scores below 2.0 (about 50 per cent of the firms); only around 30 per cent of the firms have scores between 2 and 3.5.

The overall level of ICT use was checked for variations due to the size of the firms or their involvement in export, but no significant correlations were identified. Thus, firms with a higher involvement in export, long-term customer relationships, etc. were not more active users of ICT than other firms. The only significant difference was found in regards to the age of the firm, where younger firms (established after 1986) use ICT more actively than older firms.

In conclusion, the firms investigated can be classified as moderate, but not heavy users of ICT in their efforts to penetrate international markets seeking information and building relationships. They are, however, only very light users of ICT to support sales and service activities.

The association between use of ICT and performance

AMOS 6 was used to model the structural equations. It should be noted that Table IV presents confirmatory factor analysis (CFA) loadings for the scale items. All items are statistically significant and substantively large, as described in the appendix. Cronbach α values vary between 0.68 and 0.91. Nunnaly (1978) suggests that α should equal or exceed 0.70. Two of the observed scores are just below this level, but assessed as satisfactory. As described by Jarvis *et al.* (2003) most marketing studies specify a reflective measurement model. Owing both to the direction of causality from construct to measure and the attempt to develop constructs which does not alter meaning if one indicator is dropped a reflective model design is used.

The overall fit of the model was evaluated using χ^2, Bentler's comparative fit index (CFI) and root mean square error of approximation (RMSEA) values. A discussion of these indices may be found in Bentler (1990) or McDonald and Marsh (1990). Model fit is defined as satisfactory if CFI is equal to or exceeds 0.90 and RMSEA is equal to or below 0.08. Byrne (1998) summarizes the acceptable level of RMSEA based on existing literature, suggesting that values of RMSEA less than 0.05 indicate good fit, values ranging from 0.005 to 0.08 as reasonable fit, values between 0.08 and 0.10 as mediocre and values greater than 0.10 as poor fit. A non-significant χ^2 score would be preferable, but it should be noted that sample sizes may influence the χ^2 results. Figure 2 shows the results obtained when testing the basic model. Only significant paths are included.

In this model, $\chi^2 = 345.20$, df $= 112$, $p < 0.001$, CFI $= 0.928$, NFI $= 0.921$, and RMSEA $= 0.057$. These statistics indicate that the model is a reasonable

	Mean score	SD	Skewness	Kurtosis
Information focus ($n = 615$)	3.85	1.33	− 0.040	− 0.419
Sales focus ($n = 613$)	2.38	1.32	1.246	1.461
Relationship focus ($n = 612$)	3.88	1.71	− 0.015	− 0.984

Table III.
Mean score and distribution for the three factor constructs

	CFA loadings
ICT for information search (α = 0.68)	
ICT used to search for intermediaries (i1)	0.55
ICT used to search for competitor information (i2)	0.62
ICT used to search for new market opportunities (i3)	0.80
ICT for sales activities (α = 0.68)	
ICT used to gain access to more distant customers (s1)	0.59
ICT used for sales activities (s2)	0.57
ICT used as a tool for service activities (s3)	0.72
ICT for relationship development (α = 0.79)	
ICT used to develop customer relations (r1)	0.84
ICT used to communicate with customers (r2)	0.69
ICT used in development projects with customers (r3)	0.74
New market knowledge (α = 0.71)	0.57
Knowledge of distribution channels	
Knowledge of competitor strategies	0.58
Competence development through cooperation	0.68
Ability to operate in new markets	0.73
Performance in international markets (α = 0.91)	
Market share	0.87
Sales growth	0.89
Sales growth vs competitors	0.83
Profitability	0.66
Overall performance assessment	0.87

Table IV.
Final scale items, CFA loadings and Cronbach's α coefficients

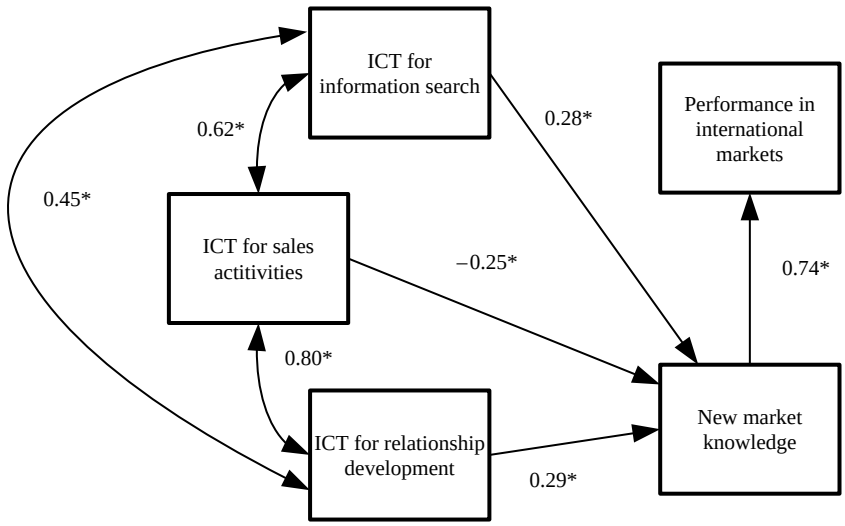

Figure 2.
SEM-results

representation of the data. None of the ICT factors were significantly related to performance in international markets, whereas ICT used both for information searches and relationship development had a significant and positive impact on new market knowledge. Somewhat surprisingly, the use of ICT in international sales activities was

negatively related to new market knowledge. This result suggest that heavy users of ICT in sales activities seem to be less satisfied with the new knowledge they get about markets (distribution channels, competitors, lead customers, etc.). The result may indicate that ICT is not a good medium for providing such knowledge because it is more directed towards information search or efficient information exchange in connection with specific transactions. Also, ICT used in sales activities may cause reduced personal in-depth contact with the market and customers, which negatively affects access to new market knowledge as will be described in the next sections.

Model stability across subsamples (sales, export share, year of establishment, and first year of export) was examined by subdividing the data set. The results showed stability with regards to actual export sales and export share. Regarding the year of establishment, the model gives a far better representation of the data set for the most recently established firms than for the other firms, with a CFI score for firms established after 1986 of 0.982. It also appears that firms that started exporting more recently have a slightly better model fit than other firms. The interaction between ICT use, new market knowledge, and performance in international markets is more systematically and strongly observed for firms established in the past two decades. Furthermore, it should be noted that firms established after 1986 also had a significantly higher average level of ICT use than older firms. More specifically, mean scores (pre/post-1986) are 3.74/4.04 ($p < 01$) for information search and 2.31/2.52 ($p < 0.10$) for sales activities. Firms established before 1986 had an average ICT use for developing relationships of 3.76 compared to 4.09 for those established more recently ($p < 0.05$).

Conclusions and discussion

Numerous claims about how the use of the internet should change the nature of international marketing have been presented in the literature. Table V summarises the empirical results of realities reported by more than 600 firms from Norway and Denmark.

Table V shows that the use of ICT differs with regard to its purpose, but in general we do not see heavy usage of ICT. The data furthermore reveal that there is no direct significant association between use of ICT and performance in international markets. However, even though the direct effect of ICT use on international performance was non-significant, it should be noted that indirect effects do exist through the relation with new market knowledge. These results suggest differences between the myths and realities related to the use of ICT in international marketing. We will discuss this below while answering the key questions that motivated our research.

	New market knowledge	Performance in international markets
ICT for information search	*H1a.* Supported	*H1b.* Rejected
ICT for sales activities	*H2a.* Rejected, significant negative association	*H2b.* Rejected
ICT for relationship development	*H3a.* Supported	*H3b.* Rejected

Table V.
Summary of the results

Use of ICT

It should be noted that the variation across firms is large with regard to actual use of ICT, with the highest level of variation in the area of developing relationships. The third area of use, sales process support, is far less heterogeneous, indeed, few firms use ICT much for this purpose. This may be due to the importance of developing personal relationships and trust through face-to-face contact in the negotiation and sales stages. It should be noted that most of the firms operate in B2B markets, and that 62.9 per cent stated that their customers regard the decision to buy as an important one (score 5 or above on a seven-point scale). About 57.0 per cent stated that the decision to buy had long-term consequences for their customers. In international markets especially, personal contact may be important in the initial selling phases in order to establish the foundation for mutual trust and a future business relationship. When this phase ends, the development of long-term interaction seems to be facilitated by the use of ICT; once the foundations have been established, other means of communication become relevant. It is a possibility that written communication via the internet may even facilitate communication across cultures because it is much more explicit and permits clarification of possible misunderstandings in the perception of constructs and situations.

Ganesan *et al.* (2005) state that researchers focusing on industrial clusters often argue that informal information sharing is important, with face-to-face communication and the development of strong relational ties as key factors (Gordon and McCann, 2005; Porter, 1998a, b; Sternberg, 1999). In many situations, negative results may arise from the limitations of using ICT in developing of trust, personal involvement, and commitment between individuals in different business organisations (buyers and sellers). Not surprisingly, the case studies presented by Moen *et al.* (2004) suggest that using ICT for sales purposes is most suitable when standardised products of limited importance for the customers are being offered. Negotiations about specifications, customisation, prices, service conditions, etc. are often too complex to be settled via ICT. The fact that most of the firms in the sample offer non-standardised, relatively complex products creates a need for face-to-face contact at the negotiation and sales stages.

Consequences of use of ICT

With regard to the association between the use of ICT and performance, our analyses reveal that the use of ICT is not significantly associated with performance in international markets. In other words, managers do not perceive any direct effects. Many factors have an impact on performance, and since ICT is not widely used for sales purposes, it is not surprising that the data do not show any association. The SEM analysis suggests indirect effects in the sense that new market knowledge is a mediating factor in a manager's perception of hierarchies of effects.

With regard to new market knowledge, two of the hypotheses (ICT used to seek information and develop relationships) were, as expected, supported. This implies that access to information, even though its relevance and quality may vary, does in fact contribute to new market knowledge within the firm. There is also a significant positive path between ICT used for developing relationships and new market knowledge. ICT used in long-term interaction between a selling and a buying organisation seems to increase the seller's level of knowledge.

The average score for ICT used for sales activities was low, and was negatively associated with new market knowledge. First, this indicates that personal contact between the selling and buying organisation is important at the sales and negotiation stages while ICT has only limited importance. If a firm does use ICT actively in this phase, it may increase the distance between the firm and its customers and inhibit the development of knowledge and trust. This seems to have a negative effect on new market knowledge, and hence also on performance It should be noted that Ganesan *et al.* (2005) classify knowledge as having content (process/product) and form (non-codified/tacit knowledge). The negative effect of the use of ICT in sales activities may be interpreted as an effect of limitations in the transfer of non-codified/tacit knowledge. The results indicate complex effects of the use of ICT, which may stimulate and improve new market knowledge, but it may also, if used for the wrong purposes, have a negative effect.

How important is ICT for international marketing?

This paper initially made references to statements of how the internet may change the international operations of firms and redefine international marketing. When we examined the actual use of ICT, we saw that many firms do not use it very actively in their international operations. Since both Norway and Denmark are high-level users of ICT (World Economic Forum, 2006) and have limited domestic markets, it would be surprising if the use of ICT for international marketing purposes is more widespread or important in other nations. Even though we found variations in the use of ICT among the SMEs in this study, we must conclude that a large proportion of firms make only limited use of ICT in their international operations.

The fact that some firms build their activities on the internet, often offering a standardised consumer product, is well documented. Other specific types of firms, such as computer software providers (Moen *et al.*, 2004), are characterised by their intense use of ICT in international marketing, but for the exports sector in general, the results of this large-scale empirical study can be summed up as follows:

- The use of ICT seems to reduce entry barriers for SMEs through access to information and the development of knowledge.
- The use of ICT is also indicated to reduce the barriers to international marketing through a cost-efficient ability to maintain and further develop long-term customer relationships.
- The use of ICT has no direct effect on perceived performance in international markets; on the contrary, such use of ICT for sales activities may be a barrier to the development of knowledge about foreign markets.
- SMEs are not heavy users of ICT, which is used mainly as a tool; ICT seems to neither redefine international marketing nor radically change the business operations of SMEs.
- The use of ICT is more widespread and important in newly established firms than in older firms. There may be two reasons for this. First, the need for information and cost reduction may be more important for newly founded firms than for older firms with more international marketing experience and established customer relations. Second, the barrier for implementing ICT in their business concepts and activities may be lower for newly established firms than

for older firms with more traditional patterns of operation. Consequently, the use of ICT may reduce entry barriers and will probably gradually increase in importance as more and more new firms become involved in international markets.

Implications for researchers and managers

As we have seen, Norwegian and Danish SMEs do not use ICT in their international marketing efforts to the extent predicted by previous authors. The findings indicate some interesting challenges for both researchers and managers.

From a management perspective, it seems wise to rely primarily on personal contact during the most resource demanding and uncertain phases when sales activities involve negotiations, attempts to reach sales agreements, and the development of trust at both the individual and organisational levels. The firms' own behaviour shows that managers are well aware of this, as the SMEs are only very light users of ICT for sales support. From a managerial perspective, ICT may be an efficient tool to reduce entry costs (primarily through information searches) and may lower operational barriers to activities in international markets (primarily through relationship development), but this tool does not seem to be useful in the costly and risk-related phases of early-stage customer interaction and actual sales. The use of ICT may be a major challenge for managers in older export firms where many routines may have to be altered to increase the use of ICT in the maintenance of existing customer relationships.

From a research point of view, the results of this study point to the need for further investigation of the relationship between ICT use, new market knowledge, performance, and the development of individual as well as organisational trust and commitment. Clearly, the initial search phases do not require much personal contact with potential customers. For example, the firms are heavy users of ICT in their search for information about competitors. As mentioned above, sales and service activities involve the exchange of task-related information, negotiations, informal sense making, and agreements/contracts between the two parties. Personal contact allowing for an exchange of formal as well as tacit knowledge may be necessary to agree on product and process specifications and to tailor products to customer needs. This may explain why firms are more reluctant to use ICT in these phases of market penetration. Once the initial relationship with a foreign customer has been established, ICT seems to be a productive means of communication for further exchanges, and it is then less necessary to meet in person.

These are only hypotheses, however, and this is clearly an area where more research is needed. A better understanding of the obstacles impeding the use of ICT is important, since it may provide a means to changing the situation. It is also important to better understand why the use of ICT in other stages is positively associated with performance. The basic characteristics of the product are probably important. For example, a highly standardised product is probably a more appropriate object for sale via the internet than a highly customised product. Such studies are clearly relevant. Studies of actual ICT use in other countries are also called for to increase our knowledge.

The present study has some limitations readers should be aware of. First, only certain aspects of the use of ICT have been examined; payment, shipping, and contracting, for example, are not included. Secondly, only two Nordic countries have

been included; many e-markets are established in other parts of the world (e.g. the USA, Europe, Asia), and the inclusion of such firms and geographical areas have not yet been done. Thirdly, the operationalisations of the use of ICT as well as performance imply the usual methodological challenges of reliability and validity. However, the study has provided new knowledge about the actual use as well as analysis of the value of using ICT in international marketing. As we have seen, however, it has also raised new questions that researchers and managers will need to clarify in order to improve the positive impact of ICT use on the performance of exporting firms.

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