

Research Article

The Effect of Information and Communication Technology on Export Performance of Iranian Firms

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Abstract: It seems necessary to employ new Information and Communication Technology (ICT) anywhere in order to increase accuracy and speed of preparation and distribution of information and quality of communications with final aim of organizational advancement and quality improvement in providing products and services according to customer requirements and even exceeding customer expectations. Thus, the purpose of this study is to investigate the effects of information and communication technology in three domains of information search, sales and service activities and communicational development on export performance of Iranian firms in two dimensions of performance in international markets and new market knowledge. Totally, 300 questionnaires were distributed to employees of export firms in Tehran city, that 267 questionnaires were used for the final analysis, which the results from analysis of them based on simple linear regression show that in export firms of Tehran city, ICT has a significant effect on export performance. But this effect varies depending on way of using ICT. Using ICT for searching information only influences dimension of performance in international markets but has no effects on new market knowledge dimension. Also using ICT for sales activities does not influence these two dimensions and finally there is a significant relationship between using ICT for communicational development and both dimensions of export performance i.e. performance in international markets and new market knowledge. Results of present research show that it is better to use ICT as a facilitator in first instance and after creation of face to face contacts, in next step it may be used as a means with high capability to support interactions between parties.

Keywords: Export performance, Information and Communication Technology (ICT), Iran

INTRODUCTION

With spread of ICT and its entering into work environment, the world is witness to close relationship between employment of ICT and performance improvement and also better and faster achievement to organizational goals. Today rarely an organization is found in which ICT is not on the discussion agenda and this issue is not a concern for managers. In present world, managers and practitioners without competency in and familiarity with ICT are in a disadvantage status compared to their counterparts with that competency and familiarity. They may obviously lose many opportunities or unconsciously make them available to their competitors. It seems necessary to employ new ICT anywhere in order to increase accuracy and speed of preparation and distribution of information and quality of communications with final aim of organizational advancement and quality improvement in providing products and services according to customer requirements and even exceeding customer expectations.

It is expected that with development of ICT, new opportunities are created for firms. For Porter (2001) internet improves the whole value chain process across

firms and industries by speeding and simplifying process of information exchange. Overby and Min (2001) state that information technology is transforming organizations and organizational processes and creating new opportunities and challenges for international marketers as world markets rapidly become integrated and without boundaries (Nijssen *et al.*, 1999).

Studies show that how ICT may be used in marketing (Sultan and Rohm, 2004). Prasad *et al.* (2001) describe ICT as a means for generally matching customer requirements, automation of sales department tasks, improvement of marketing decision support systems and cooperation and relationship with customers and peers. Evans and King (1999) explain that how internet may improve access to competitive awareness, serving customers, timely planning of warehouse inventory, identification of sales channel and reduction of costs. Using ICT should influence export performance (Morgan-Thomas and Bridgewater, 2004). It is expected that the way of using ICT by a firm is influenced by factors inside and outside of firm (Moen *et al.*, 2008). Thus present study aims to provide empirical knowledge on actual employment of ICT in relation to international marketing of firms and effect of it on export performance of export firms of Tehran city.

LITERATURE REVIEW

Information and Communication Technology (ICT): ICT is generated from integration of three domains of information, computer and communications. Computer part operates as the hardware and supplier of necessary equipment and tools. Information and data work as raw material within the network and telecommunications is responsible to establish the relationship between two above parts. Information Technology (IT) and Information and Communication Technology (ICT) are in a logical and close relationship; IT has a share in each three parts of ICT. Indeed though ICT has IT as a part, but no component of ICT can be found without any contribution of IT. Informational infrastructure is proposed as a foundation for ICT infrastructure which makes it possible to provide information services with favorable quality. On the same basis it can be said that ICT consists of three essential parts of information infrastructure, information technology and information applications.

Given the fact that the main purpose of present study is to show empirical evidence of actual use of ICT in real world, we address three dimensions of using ICT in present study:

- Using ICT for searching information in order to identify potential customers and business partners and for obtaining information on competitors.
- Using ICT for supporting sales and service activities.
- Using ICT for supporting development of long-term relationship with customers.

Searching information may be noticed in market evaluation, access to information on competitors and searching for potential partners and customers. Firm is expected to use internet in a direct way in order to access relative information and create more efficient interactions with information gatherers. When firm identify a sales opportunity, this is promisingly followed by primary contact which could be result in sales and service activities. Larson (1992) focused on this process which had been initiated by one of his studied firms with the aim of providing economical advantage to both parties (Knight and Cavusgil, 2004). Kanter and Corn (1994) argue that success in this initial phase is dependent on the balance between organizational structures and personal relationships. As considered by Deresky (2000), sales and service activities consists of negotiations and contractual agreements but as explained by Ring and van de Ven (1994), there are important elements of informal sense making, personal interactions and non-spoken psychological contracts among involved people. ICT may play the role of support device for sales and service activities. It is important to many firms that primary sales results in long-term relationships with customer or business partner and create an opportunity for more sales. Successful relationship depends upon a

number of factors e.g., participation in meeting expectations (Hitt *et al.*, 2000) and degree of trust and commitment (Anderson and Narus, 1990). Overby and Min (2001) describe the importance of affiliation between firms and their customers in using ICT. The latter is especially may be appropriate for small and medium entities (SMEs) operating in international markets, because their limited resources often prevent their physical presence in foreign markets (Overby and Min, 2001).

Export performance: Performance in international markets has been focused by scholars since a long time ago (Lages *et al.*, 2005). It is not surprising that international firm management should make decision on future commitments based on performance of present activities. Apparently it is simple to judge about success of an international transaction; goals set by management may be met or exceeded. Success is a complex concept can be assessed by multiple measures (Moen *et al.*, 2008). In present study we focus on two dimensions of performance: performance in international markets and new market knowledge. The former relates to satisfaction of management with economical results and the latter relates to knowledge obtained from international activities which represents the market and the competency goals. Scale for performance in international markets is derived from Cavusgil and Zou (1994), (seven point scale which measure satisfaction in relation to initial expectations related to market share, sales growth, pre-tax earnings, sales growth compared to main competitors and an overall evaluation of satisfaction). New market knowledge scale consists of simple questions and measures satisfaction based on access to new markets and customers and also satisfaction with new knowledge on competitors and distribution channel (Knight and Cavusgil, 2004). Relationship between using ICT and these two dimensions of performance is studied in order to show that how they are influenced by ICT and their mutual correlation is analyzed.

RESEARCH HYPOTHESIS

After study of papers and investigations on the topic of present research and a review of their results, the following hypotheses were developed which address the effect of ICT on information search, sales activities and communicational development on performance in international markets and new market knowledge.

- H1:** The using information and communication technology for information search has a positive influence on performance in international markets.
- H2:** The using information and communication technology for information search has a positive influence on new market knowledge.

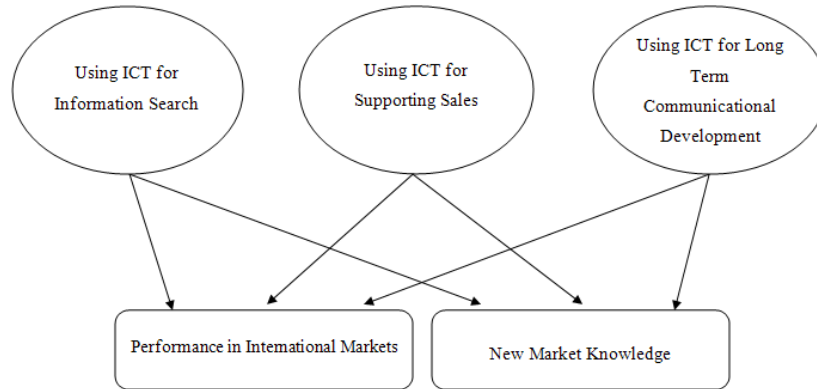


Fig. 1: The conceptual model for research

Table 1: Results of original regression analysis table

Hypothesis	Independent variable	Dependent variable	Unstandardized coefficients		Standardized coefficients		
			B	S.E.	β	t	Sig.
1	Using ICT for Information Search	Performance in International Markets	0.194	0.211		0.919	0.360
2	Using ICT for Information Search	New Market Knowledge	1.014	0.085	0.723	11.975	0.000
			0.188	0.130		1.449	0.150
3	Using ICT for Supporting Sales	Performance in International Markets	3.369	0.145		23.233	0.000
			0.025	0.058	0.038	0.439	0.662
4	Using ICT for Supporting Sales	New Market Knowledge	2.919	0.209		13.972	0.000
			0.076	0.058	0.115	1.322	0.188
5	Using ICT for Long Term Communicational Development	Performance in International Markets	2.139	0.207		10.325	0.000
			0.431	0.052	0.583	8.217	0.000
6	Using ICT for Long Term Communicational Development	New Market Knowledge	2.034	0.286		7.102	0.000
			0.493	0.073	0.510	6.778	0.000

H3: The using information and communication technology for supporting sales and service activities has a positive influence on performance in international markets.

H4: The using information and communication technology for supporting sales and service activities has a positive influence on new market knowledge.

H5: The using information and communication technology for long term communicational development and interaction has a positive influence on performance in international markets.

H6: The using information and communication technology for long term communicational development and interaction has a positive influence on new market knowledge.

Therefore, based on the hypothesis, Fig. 1 is a conceptual model to this study.

METHODOLOGY

Data collection and analysis:

Questionnaire design and procedure: In order to collect data for analysis of hypotheses and test of model

a closed questionnaire consisting of 29 questions with Likert seven-point scale was used in which 10 questions were on demographic variables and 19 ones for assessment of research specific variables; In order to measure research specific questions, foreign standard scales were used and in this respect standard questions were translated and then studied by consulting with some academic experts and five managers and corporate marketing professionals and were adjusted with respect to Iranian contexts. Also confidence coefficient based on Cronbach α was 92.4 for questions on ICT and 94.7 for ones on export questions and this shows very favorable reliability of questionnaire.

Statistical population and research sample: In present research, data were collected in August 2012, from 267 export firms of Tehran city operating in exporting non-oil products and in agriculture and foods, textiles, handy crafts, industry and mining and service sectors. Because of great geographical spread of firms and time limitation, sampling was conducted based on simple random method and initially 300 questionnaires were distributed to employees of these firms in posts of general management, export management and business and sales management. Among all distributed questions, 267 ones were returned and used for testing research hypotheses.

Data analysis: In order to test 6 research hypotheses, regarding to significance values and t-value in original regression analysis table (Table 1), it is judged that if sig. value is less than research error coefficient value, i.e., 0.05 and also t-value is more than 1.96 or less than -1.96, then the related hypothesis will be supported with a CI confidence intervals of 95%.

RESULTS AND DISSCUSSION

Hypothesis testing:

Hypothesis 1: Findings of original regression analysis table (t-value = 11.975; sig = 0.000) in relation to hypothesis 1 show that using ICT for information search influences positively on performance in international markets; Thus hypothesis 1 is supported.

Hypothesis 2: Findings of original regression analysis table (t-value = 1.449; sig = 0.150) in relation to hypothesis 2 show that using ICT for information search does not positively influence on new market knowledge; Thus hypothesis 2 is rejected.

Hypothesis 3: Findings of original regression analysis table (t-value = 0.439; sig = 0.662) in relation to hypothesis 3 show that using ICT for supporting sales does not positively influence on performance in international markets; Thus hypothesis 3 is rejected.

Hypothesis 4: Findings of original regression analysis table (t-value = 1.322; sig = 0.188) in relation to hypothesis 4 show that using ICT for supporting sales does not positively influence on new market knowledge; Thus hypothesis 4 is rejected.

Hypothesis 5: Findings of original regression analysis table (t-value = 8.217; sig = 0.000) in relation to hypothesis 5 show that using ICT for long term communicational development influences positively on performance in international markets; Thus hypothesis 5 is supported.

Hypothesis 6: Findings of original regression analysis table (t-value = 6.778; sig = 0.000) in relation to hypothesis 6 show that using ICT for long term communicational development influences positively on new market knowledge; Thus hypothesis 6 is supported.

Discussion: Study of research findings with respect to test of hypotheses suggests that in firms of Tehran city, ICT influences export performance; but this influence is different depending upon way of ICT use. Using ICT for information search has no effects on dimension of performance in international market; findings of present study are consistent with Nijssen *et al.* (1999) which state that high quality information search improves quality of decision making and so improves performance in international market. But using ICT for information search has no effects on new market knowledge; findings from present research are

consistent with those of Moen *et al.* (2008) which argue that high performance in international markets encourages firm to search information and on the other hand when firms search information in internet and rely on second-hand resources and ever changing high quality information, take risks and expose themselves to unimportant, confusing and/or untrustworthy information and this prevent acquiring new knowledge.

Using ICT for sales activities does not influence two studied dimensions of export performance. Results from present research are consistent with those of Moen *et al.* (2008) which state that many times, negative results for the relationship between using ICT for sales activities and export performance may be due to limitations of ICT in trust building, personal participation and interpersonal commitment between individuals in various organizations. Also results from present research are consistent with those of Moen *et al.* (2004) which argue that using ICT for sales activities is suitable when standard products with limited importance are offered to customers because negotiation on features, personalization, price, service requirements etc. are often too complex to resolve through internet. In addition findings of present research are similar to those of Ganesan *et al.* (2005), Gordon and McCann (2005), Porter (1998) and Sternberg (1999) which believe in transfer of informal information through face-to-face communications.

Findings of present research are consistent with those of Moen *et al.* (2008) which argue that though ICT is essentially a supportive device, but the most important elements are personal components (face to face contacts, telephone contacts, negotiation processes). But if correct communications are employed, ICT can be used as a complement for appointments and face to face negotiations to reduce costs efficiently and offer opportunities for selling to remote customers.

Finally using ICT for communicational development influences both dimensions of export performance i.e., performance in international markets and new market knowledge. Findings of present research are consistent with those of Moen *et al.* (2003, 2004) which show how firms use ICT for supporting their activities; Moreover findings of present research are consistent with those of Moen *et al.* (2008) which believe that ICT provide a potential for more communications, simulation of relationship development and a positive effect on knowledge and performance in international markets; also they argue that using ICT in long-term interactions between purchasing organizations and seller ones, increase knowledge level of sellers.

Results of present study are also consistent with those of Sethuraman *et al.* (1988) who argue that supporting customers and business partners is of importance and ICT can actively be used for this purpose and if firm is successful in using ICT for

support and communication activities, it should be expected that it has a positive effect on knowledge development and also on trust and commitment between firms and involved individuals.

CONCLUSION

Purpose of present study was to address the relationship of ICT in three dimensions of information search, sales and service activities and communicational development with export performance of Iranian firms in two dimensions of performance in international performance and new market knowledge in export firms of Tehran city and in these respect six hypotheses were developed and tested.

Findings of present research show that in export firms of Tehran city ICT influences export performance but this effect is different based on way of using ICT. Using ICT for information search, influences dimension of performance in international markets but using ICT for information search does not influence dimension of new market knowledge. Using ICT for sales activities does not influence on two studied dimensions of export performance i.e., of performance in international markets and new market knowledge. Finally, using ICT for communicational development has a significant effect on both dimensions of export performance i.e. performance in international markets and new market knowledge. Overall, results from present study suggest that ICT is better to use as a facilitator in first instance and is used as a complement for face to face contacts as a high capable means for supporting interactions between parties.

Research limitations: One of the major limitations of present study is geographical range of it because only export firms of Tehran city were considered in present research. Another limitation was that only certain aspects of ICT were studied; for example payment, transportation and contract formation were not studied.

Future research directions: Given the results from present study, researchers may address to such topic as the following in order to expand our insight about ICT and export performance:

- Study of strategies for optimal use of ICT in export firms.
- Clarification of legal grounds for establishment of ICT in organizations.
- Study of difficulties in using ICT in export firms.

Managerial recommendations: Based on research results, following recommendations and strategies are provided for using ICT in export firms:

It is recommended that training courses on exports, e-commerce, etc. are hold by related governmental and

non-governmental organizations e.g., chamber of commerce, Iranian Export Development Organization and ministry of ICT in order to make private sector familiar with new commerce principles.

It is recommended to sell standardized products rather than too customized ones through ICT (Internet) because negotiation on features, customization, price and service requirements of non-standard products are often too complex to be performed through ICT.

Finally it is recommended that in early phases of communication, personal contacts and face to face meeting are used for achieving agreement on process features and customization of products according to customer requirements.

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