An E-Commerce SWOT Analysis for Export of Agricultural Commodities in Iran

F. Hosseini¹, H. Sadighi¹, S. A. Mortazavi¹*, and H. Farhadian¹

ABSTRACT

Electronic commerce (E-commerce) is a contemporary concept with huge potential that is fundamentally changing how business is done. This paper describes robust E-commerce strategies for trading agricultural goods and services. The purpose of this study was to enhance the efficiency of E-commerce in the export of agricultural commodities. Since the SWOT method is a key tool used by businesses to formulate strategic plans, this study conducted a SWOT analysis of E-commerce to identify the strengths, weaknesses, opportunities, and threats faced by E-commerce in current scenarios. A random sampling method was used to select the statistical population, which was composed of 96 experts from the Ministry of Agriculture. Seventy-five questionnaires were distributed to the experts (N= 75) using Morgan and Krejci's table, of which 59 questionnaires were filled (n= 59). The questionnaire consisted of strengths, weaknesses, opportunities, and threats to E-commerce development and it was prepared using the Delphi technique. The important results of SWOT analysis constituted a framework to help planners and managers realize their goals and enhance the export of agricultural commodities. The resulting SWOT matrix analysis was located in the area of WO (conservative strategy). Accordingly, it is recommended that for proper exploitation of environmental opportunities, organizational weaknesses should be taken into account. Some important strategies suggested based on this study are enforcing laws and providing effective incentives to reduce production costs relative to global prices as well as creating innovation in the export process using E-commerce.

Keywords: Agricultural export, Delphi technique, Electronic commerce, Morgan and Krejci's table.

INTRODUCTION

Recent experiences in Iran point to instability in export earnings arising from a reliance on crude oil sales for economic income. Therefore, to reduce the dependence of Iran’s economy on crude oil exports and to shift towards a multi-product export economy, it is imperative to consider profitable export products such as agricultural commodities (Dhanashri Patil, 2014). For example, some profitable exporting products in Iran include saffron, pistachio, and apples (Amirteimoori and Chizari, 2008; Hosseini et al., 2003). Since E-commerce is one of the main channels for the export of agricultural products, it is therefore important to invest in it. In other words, E-commerce is a notable and promising example of Information and Communication Technology (ICT) that can contribute to economic growth and can radically transform how business is done (Jeethesh Dsouza and Joshi, 2014; Mohammadi et al., 2018). One of the most important instruments of each community for survival is competition. E-commerce has provided this opportunity since it has

¹ Department of Agricultural Extension and Education, Tarbiat Modares University, Tehran, Islamic Republic of Iran.
* Corresponding author; e-mail: sammortazavi@modares.ac.ir
provided a means of saving time and labor and facilitated the search for new products. Moreover, with the help of E-commerce, the required paperwork is vastly reduced since the safety of document archiving is ensured. Also, E-commerce is a solution for office automation because it reduces the use of space, manpower, and recording costs (Hetampur, 2011). Thus, it is increasingly important to understand and identify the strengths (the characteristics of a business or project that gives it an advantage over others), weaknesses (the characteristics of a business that places the business or project at a disadvantage relative to others), as well as the opportunities (the elements in the environment that a business or project could exploit to its advantage), and threats (the elements in the environment that could pose trouble for a business or project) of E-commerce (Kiran and Sharma, 2002). SWOT is a technical instrument that can be used to identify, understand, and evaluate the strengths, weaknesses, opportunities, and threats of E-commerce. The SWOT analysis of E-commerce can help business managers gain insight into current or potential problems (Nouri et al., 2008; Sabha, 2017; United States, 2008). Information that is derived from SWOT analysis consists of internal issues (strengths and weaknesses) and external issues (opportunities and threats). SWOT is a candidate model that identifies the availability of potential opportunities and threats as well as what a business can and cannot do (Sammut-Bonnici and Galea, 2015). In other words, SWOT analysis determines what can assist companies in accomplishing their objectives and what obstacles should be overcome or minimized to achieve their targets (Sabha, 2017). To illustrate this, the following sections discuss the strengths and opportunities (Section I) as well as weaknesses and threats (Section II) of E-commerce.

Section I: Strengths/Opportunities

The basic idea of E-commerce is that innovation resources improve certain aspects of productivity that affect firms in terms of internationalization, profitability, and growth. It is estimated that E-commerce activities will be a key indicator of agricultural development in the next decade (Liu et al., 2013; Uzoka et al., 2007). This will open new markets and create opportunities to increase production (Alarcón and Sánchez, 2016; Kiang and Chi, 2001; Totonchi and Kakamanshadi, 2011). For developing countries, E-commerce represents a compelling strategy and is a promising opportunity for economic development (Albastroiu, 2007; Rillo and Dela Cruz, 2016). Developing countries need to create and exploit new economic opportunities. E-commerce practices are adopted mainly to achieve the following objectives: promotion of economic growth, social development, enhancement of business efficiency and productivity, and a decreased cost of doing business (Albastroiu, 2007). In recent years, E-commerce of agricultural commodities has developed rapidly. In this way, many classic cases and business models including tootoo industrial commune model, original life model and Suichang model have emerged to develop the process of E-commerce of agricultural commodities (Hu and Mu, 2017). It has been pointed out that the research of agricultural commodities E-commerce has mainly focused on the basic research (Wen, 2007), development strategy, operation mode and comparison of agricultural commodities, agricultural products supply chain and agricultural commodities logistics. Moreover, Helander (2000) reported that inductive E-commerce of agricultural commodity transaction costs, such as, distribution costs and transaction costs of contracting agricultural E-commerce applications, can not only change the sales pattern and adjust the market structure of agricultural commodities
Table 1. A summary of strengths and opportunities of trading agricultural commodities.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreasing cost of doing business and sales pattern</td>
<td>Opening new markets</td>
</tr>
<tr>
<td>Enhancing business efficiency and productivity</td>
<td>Creating opportunities to increase production</td>
</tr>
<tr>
<td>Adjusting the market structure of agricultural commodities</td>
<td>Promoting economic growth</td>
</tr>
<tr>
<td>Improving the competitive advantage of agricultural products</td>
<td>Social development</td>
</tr>
<tr>
<td>Reducing external and internal communication expenses</td>
<td>Providing a large array of products</td>
</tr>
<tr>
<td>Cost reduction and increased flexibility in working practices</td>
<td>Providing a large array of services</td>
</tr>
<tr>
<td>Removal of boundaries (Global locations)</td>
<td>Making transactions convenient for consumers</td>
</tr>
<tr>
<td>Time-saving</td>
<td>Helping consumers save time</td>
</tr>
<tr>
<td>Cost-effectiveness</td>
<td>Reducing information asymmetry between parties</td>
</tr>
<tr>
<td>Direct communication with consumers</td>
<td>Opportunities of new technologies</td>
</tr>
<tr>
<td>Improved customer interaction</td>
<td>High (round the clock) availability</td>
</tr>
<tr>
<td>Lower transaction costs</td>
<td>Cutting down on local competition</td>
</tr>
<tr>
<td>Faster purchase procedures</td>
<td></td>
</tr>
</tbody>
</table>
mistrust in the safety of conducting business over the Internet (Velmurugan, 2009). The main reason for companies to avoid online marketing is uncertainty as the Internet is a new transaction channel (Kiang and Chi, 2001; Overby and Jap, 2009). According to a survey by Information Systems Audit and Control Association (ISACA), security, risk management, and trust are key problems in the E-commerce world that directly or indirectly have significant effects on trust (Canavari et al., 2010; Lee et al., 2018). Therefore, trust management systems can help reduce risk (e.g., ID theft) and make it easier for users and agents to interact with one another in a low-risk environment. Because of the unique characteristics of virtual shopping environments (i.e., inability to directly see and touch a product and an absence of face-to-face interactions), consumers face uncertainty and heightened risk in their online buying decisions. In some papers (Bhattacherjee, 2002; Mazhar et al., 2012; Patton and Jøsang, 2015), it was explained that the uncertainties inherent in the current E-commerce environment give rise to a lack of trust and reliability in E-commerce partnerships, thereby reducing confidence and creating barriers to trade. For instance, in Latin America, a low rate of credit card usage can be attributed to a “lack of trust” in the credit card system rather than “lack of access” to the system (Wandoko et al., 2017). As a result, trust is one of the most effective tools for reducing uncertainty and risk (Frederiksen, 2014; Vos et al., 2014). Since 1995, the development of IT has fostered an excellent environment for the expansion of technology in Iran, creating a dramatic increase in IT adoption. For instance, Iran has been heavily investing in the development of Internet and electronic banking (E-banking) among governmental institutions and the private sector when compared to other Middle Eastern countries (Kamalabadi et al., 2008; Salehi and Alipour, 2010; Sarlak et al., 2009). Some researchers have examined the influence of E-banking on the adoption of E-commerce. Some aspects of the Internet banking that influence the adoption of E-commerce include time-saving (DeYoung et al., 2007), the reduction of cost and overhead expenses, particularly those pertaining to the maintenance of physical branches, marketing and work (Chang, 2002), the enhancement of mass customization, marketing and communication activities, and the maintenance and attraction of consumers (Mols, 2000; Sheshunoff, 2000). Findings in Iran (Alizadeh et al., 2018) have indicated that ease of use, Website content, accessibility, privacy, transmission speed, and security have positive effects on the adoption of the Internet banking. The Internet technology has influenced the banking systems (Barkhordari et al., 2017) because of its capability to enhance the performance of financial operations. As a result, the Internet banking and online payment can influence E-commerce adoption. However, E-commerce expansion rates have been moderate or low. In other words, E-commerce as a source of competitive advantage in many business environments, especially agriculture companies (Cai et al., 2015; Canavari et al., 2010), is lagging behind, and more investment is required for its development. Moreover, according to a survey on agricultural marketing, agricultural marketing channels are inefficient and producers have a low share in consumer price (Anvieh Takieh, 2002; Ghorbani, 2008). The adoption of E-commerce applications has been largely influenced by factors related to technical and infrastructural factors as well as organizational attitudes and cultural factors (Datta, 2012; Taheri 2012). Companies are not equally inclined to develop and deploy new IT technology due to the hurdles and challenges of E-commerce. A literature review focused on barriers to E-commerce. (Kamalabadi et al., 2008; Sherafati et al., 2014), determined three main challenges to E-commerce implementation in Iran, including social and cultural factors, managerial factors, and technical factors. Some other researchers (Lawrence and Tar,
2010) brought up three main important barriers to E-commerce, including technological factors (perceived benefits), organizational factors (organizational readiness), and environmental factors (external pressure). For example, a study of the implementation of E-commerce in Iranian SMEs indicated that factors like human resource development, education and management, production scheduling, foreign relation management, communication systems, and financial management were critical causes of failure (Amiri and Salarzehi, 2010; Sherafati et al., 2014). Moreover, Hosseini et al. (2012) and Sherafati et al. (2014) emphasized the low internet speed, lack of security, and lack of E-commerce specialists as technical challenges to E-commerce. Beside various technical obstacles, other issues including online trading security, authentication, and tax policies have yet to be overcome (Kiang and Chi, 2001; Lawrence and Tar, 2010). Moreover, lack of trading partner readiness is a significant inhibitor (Kshetri, 2007; Zhu et al., 2002). Also, the high costs associated with E-commerce, lack of technical resources and expertise related to E-commerce, difficult E-commerce technology, and complexity in measuring return on investment were other barriers to E-commerce adoption (Almousa, 2013; Robert and MacGregor, 2005).

Since the efficiency of E-commerce is enhanced by focusing on the straightness of E-commerce (reducing weaknesses) and emphasizing E-commerce opportunities (minimizing or removing barriers), based on the review of the literature, we aimed to investigate the SWOT of E-commerce for exported agricultural commodities in Iran.

**MATERIALS AND METHODS**

SWOT analysis is a strategic planning and marketing tool used for regional assessment. In fact, it is an instrument that is generally used to place the analysis of external pressures (opportunities and threats offered by the outside region) besides internal capacities (strong and weak points inside the region) (Gretzky, 2010; Kazemiyeh et al., 2016). SWOT was used to provide a matrix of strategies. Table 2 schematically illustrates the framework of the SWOT model.

An appropriate SWOT analysis was designed in the form of tables and its stages were as follows:

- Providing a list of opportunities, threats, strengths, and weaknesses in the form of tables. (Tables 3 and 4)
- Explaining and interpreting each opportunity, threat, strength, and weakness.

The SWOT analysis technique was used to indicate the current constraints and future possibilities of E-commerce for the export of agricultural commodities in Iran. In this research, the random sampling method was used. The statistical population was composed of 96 experts from the Ministry of Agriculture. Seventy-five questionnaires were distributed to the experts (N= 75) using Morgan and Krejci's table, of which 59 questionnaires were filled (n= 59). The questionnaire was the main research instrument to collect data. All items of the

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td>S-O strategies$^a$</td>
<td>W-O strategies$^b$</td>
</tr>
<tr>
<td>S-T strategies$^c$</td>
<td>W-T strategies$^d$</td>
</tr>
</tbody>
</table>

$^a$ What Strengths do we have and how can we use them to take advantage of new or existing opportunities?  
$^b$ What strategies are needed to overcome weaknesses so that we can take advantage of opportunities?  
$^c$ What Strengths can be used to minimize Threats?  
$^d$ What strategies will minimize weaknesses and help us cope with Threats?
Table 3. Characteristic of external factor evaluation (EFE) Matrix.

<table>
<thead>
<tr>
<th>E-commerce opportunities in exporting agricultural products</th>
<th>Average (n= 59)</th>
<th>Relative weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating with the changing trend of buyers</td>
<td>4.16</td>
<td>0.106</td>
</tr>
<tr>
<td>Cost-effectiveness of E-commerce in the export process</td>
<td>4.81</td>
<td>0.123</td>
</tr>
<tr>
<td>Creating a positive attitude toward E-commerce in the Ministry of Jihad-e-Agriculture</td>
<td>3.84</td>
<td>0.098</td>
</tr>
<tr>
<td>Creating innovation in the export process using E-commerce</td>
<td>4.05</td>
<td>0.103</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td>3.77</td>
<td>0.096</td>
</tr>
<tr>
<td>Direct communication with the consumers</td>
<td>4.01</td>
<td>0.102</td>
</tr>
<tr>
<td>Easier exchange methods</td>
<td>3.71</td>
<td>0.095</td>
</tr>
<tr>
<td>E-commerce flexibility</td>
<td>4.06</td>
<td>0.104</td>
</tr>
<tr>
<td>E-CRM Customer Relationship Management</td>
<td>3.91</td>
<td>0.100</td>
</tr>
<tr>
<td>Emphasizing products with relative advantage and off-season to maintain export target markets</td>
<td>4.08</td>
<td>0.104</td>
</tr>
<tr>
<td>Establishing companies in support of E-commerce services</td>
<td>3.69</td>
<td>0.094</td>
</tr>
<tr>
<td>Existence of diversity in the interests of global consumers with regard to the climate of Iran</td>
<td>3.5</td>
<td>0.089</td>
</tr>
<tr>
<td>Extending global interactions</td>
<td>3.93</td>
<td>0.100</td>
</tr>
<tr>
<td>Extensive business growth</td>
<td>3.94</td>
<td>0.101</td>
</tr>
<tr>
<td>Government’s determination to develop non-oil exports</td>
<td>3.86</td>
<td>0.098</td>
</tr>
<tr>
<td>Having high business efficiency</td>
<td>4.06</td>
<td>0.104</td>
</tr>
<tr>
<td>Having high information efficiency</td>
<td>3.77</td>
<td>0.096</td>
</tr>
<tr>
<td>High demand for global and regional markets for agricultural commodities</td>
<td>3.67</td>
<td>0.094</td>
</tr>
<tr>
<td>Improving customer engagement</td>
<td>3.81</td>
<td>0.097</td>
</tr>
<tr>
<td>Improving productivity</td>
<td>3.72</td>
<td>0.095</td>
</tr>
<tr>
<td>Increasing exports</td>
<td>4.03</td>
<td>0.103</td>
</tr>
<tr>
<td>Increasing exports, employment and production</td>
<td>4.16</td>
<td>0.106</td>
</tr>
<tr>
<td>Increasing financial opportunities</td>
<td>3.98</td>
<td>0.102</td>
</tr>
<tr>
<td>Interaction with regional and international E-commerce centers for the exchange of information and services</td>
<td>3.84</td>
<td>0.098</td>
</tr>
<tr>
<td>Making culture through advertising, media, etc. for the application of E-commerce in agricultural commodities</td>
<td>3.89</td>
<td>0.099</td>
</tr>
<tr>
<td>New markets, new customers, and competitive advantages</td>
<td>3.81</td>
<td>0.097</td>
</tr>
<tr>
<td>Raising the level of advertising and public awareness</td>
<td>3.71</td>
<td>0.095</td>
</tr>
<tr>
<td>Reducing local competition</td>
<td>3.93</td>
<td>0.100</td>
</tr>
<tr>
<td>Reducing operational costs</td>
<td>3.44</td>
<td>0.088</td>
</tr>
<tr>
<td>Removing world trade barriers</td>
<td>3.86</td>
<td>0.098</td>
</tr>
<tr>
<td>Saving time</td>
<td>3.79</td>
<td>0.097</td>
</tr>
<tr>
<td>Speeding up the swap</td>
<td>4.2</td>
<td>0.107</td>
</tr>
<tr>
<td>Strengthening Iran’s competitive position in the world</td>
<td>3.98</td>
<td>0.102</td>
</tr>
<tr>
<td>The possibility of attracting foreign investment in E-commerce</td>
<td>3.72</td>
<td>0.095</td>
</tr>
<tr>
<td>Top 24/7 access</td>
<td>4.01</td>
<td>0.102</td>
</tr>
<tr>
<td>Unlimited time (availability all the time)</td>
<td>4.1</td>
<td>0.105</td>
</tr>
<tr>
<td>Using educated agricultural labor force in agricultural exports</td>
<td>3.72</td>
<td>0.095</td>
</tr>
<tr>
<td>Using new technologies in export</td>
<td>3.98</td>
<td>0.102</td>
</tr>
<tr>
<td>Utilizing the role of advertising by providing brochures on agricultural products on the Internet</td>
<td>4.08</td>
<td>0.104</td>
</tr>
<tr>
<td>Total average</td>
<td>3.912</td>
<td></td>
</tr>
<tr>
<td>Total cumulative average</td>
<td>3.912</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E-commerce threats in the export of agricultural products</th>
<th>Average (n= 59)</th>
<th>Relative weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued…</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1646
### Continue of Table 3. Characteristic of external factor evaluation (EFE) Matrix.

<table>
<thead>
<tr>
<th>E-commerce opportunities in exporting agricultural products</th>
<th>Average (n= 59)</th>
<th>Relative weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the environment, law and regulations</td>
<td>3.5</td>
<td>0.085</td>
</tr>
<tr>
<td>Creating new business rivals</td>
<td>3.47</td>
<td>0.084</td>
</tr>
<tr>
<td>Existence of commercial fraud</td>
<td>4.08</td>
<td>0.099</td>
</tr>
<tr>
<td>Existence of fake websites</td>
<td>3.91</td>
<td>0.095</td>
</tr>
<tr>
<td>Failure to accept electronic documents by the judiciary (with credit equivalent to paper documents)</td>
<td>3.86</td>
<td>0.094</td>
</tr>
<tr>
<td>Failure to create a legal information system and define intellectual property rights</td>
<td>3.76</td>
<td>0.091</td>
</tr>
<tr>
<td>Failure to introduce the authority to issue a digital signature certificate in the country and confirm the authentication of the buyer and seller</td>
<td>3.93</td>
<td>0.095</td>
</tr>
<tr>
<td>Failure to legislate domestic laws that are consistent with international unions</td>
<td>3.89</td>
<td>0.094</td>
</tr>
<tr>
<td>Failure to provide information security</td>
<td>3.91</td>
<td>0.095</td>
</tr>
<tr>
<td>Failure to set up fast and reliable communication lines</td>
<td>3.81</td>
<td>0.092</td>
</tr>
<tr>
<td>Fierce competition in the supply of agricultural products in global markets</td>
<td>3.86</td>
<td>0.094</td>
</tr>
<tr>
<td>Future legal requirements</td>
<td>3.81</td>
<td>0.092</td>
</tr>
<tr>
<td>High advertising costs</td>
<td>3.57</td>
<td>0.087</td>
</tr>
<tr>
<td>Improper brand name</td>
<td>3.59</td>
<td>0.087</td>
</tr>
<tr>
<td>Inappropriate cooperation of foreign financial institutions and banks with exporters</td>
<td>4.37</td>
<td>0.106</td>
</tr>
<tr>
<td>Incomplete policy making and planning</td>
<td>3.98</td>
<td>0.097</td>
</tr>
<tr>
<td>Increasing global health indicators on production</td>
<td>3.77</td>
<td>0.091</td>
</tr>
<tr>
<td>Increasing illegal and legal importing licenses</td>
<td>3.49</td>
<td>0.085</td>
</tr>
<tr>
<td>Insecurity in banking interactions</td>
<td>3.81</td>
<td>0.092</td>
</tr>
<tr>
<td>Investment weakness</td>
<td>4.03</td>
<td>0.098</td>
</tr>
<tr>
<td>Lack of a business-friendly model to help develop E-commerce</td>
<td>3.84</td>
<td>0.093</td>
</tr>
<tr>
<td>Lack of a legal framework for E-commerce</td>
<td>3.84</td>
<td>0.093</td>
</tr>
<tr>
<td>Lack of a secure government system to gain confidence in having online business</td>
<td>3.83</td>
<td>0.093</td>
</tr>
<tr>
<td>Lack of a unit of agricultural products in the stock exchange</td>
<td>3.94</td>
<td>0.096</td>
</tr>
<tr>
<td>Lack of active private sector</td>
<td>3.66</td>
<td>0.089</td>
</tr>
<tr>
<td>Lack of attention of exporters to customer satisfaction</td>
<td>3.94</td>
<td>0.096</td>
</tr>
<tr>
<td>Lack of budget in establishing E-commerce in the company</td>
<td>4.13</td>
<td>0.100</td>
</tr>
<tr>
<td>Lack of effective management system with a trustee in E-commerce</td>
<td>3.96</td>
<td>0.096</td>
</tr>
<tr>
<td>Lack of experienced managers</td>
<td>3.72</td>
<td>0.090</td>
</tr>
<tr>
<td>Lack of familiarity with global markets</td>
<td>4.15</td>
<td>0.101</td>
</tr>
<tr>
<td>Lack of personal service</td>
<td>4.05</td>
<td>0.098</td>
</tr>
<tr>
<td>Lack of proper information systems</td>
<td>4.15</td>
<td>0.101</td>
</tr>
<tr>
<td>Lack of proper packaging compared to competitors</td>
<td>3.45</td>
<td>0.084</td>
</tr>
<tr>
<td>Lack of using E-business capable staff in exporting companies</td>
<td>3.93</td>
<td>0.095</td>
</tr>
<tr>
<td>Long delivery time</td>
<td>3.96</td>
<td>0.096</td>
</tr>
<tr>
<td>Need for additional funds in the adoption of E-commerce at the onset of the work</td>
<td>4.4</td>
<td>0.107</td>
</tr>
<tr>
<td>Non-defining individual rights in relation to the confidentiality of personal information</td>
<td>4.47</td>
<td>0.109</td>
</tr>
<tr>
<td>Non-membership in the WTO and strong regional organizations</td>
<td>4.03</td>
<td>0.098</td>
</tr>
<tr>
<td>Not using modern technologies to accelerate international trade</td>
<td>3.94</td>
<td>0.096</td>
</tr>
<tr>
<td>Weak marketing infrastructure</td>
<td>3.66</td>
<td>0.089</td>
</tr>
<tr>
<td>Worrying about collapse of privacy</td>
<td>4.27</td>
<td>0.104</td>
</tr>
<tr>
<td>Total average</td>
<td>3.9092</td>
<td></td>
</tr>
<tr>
<td>Total cumulative average</td>
<td>3.9092</td>
<td></td>
</tr>
</tbody>
</table>
Table 4. Characteristic of Internal Factor Evaluation (IFE) Matrix.

<table>
<thead>
<tr>
<th>E-commerce strengths in exporting agricultural products</th>
<th>Average (n= 59)</th>
<th>Relative weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A way for buying faster and easier</td>
<td>3.18</td>
<td>0.227</td>
</tr>
<tr>
<td>Access to appropriate distribution networks for agricultural products</td>
<td>3.32</td>
<td>0.237</td>
</tr>
<tr>
<td>Application of coding system for agricultural commodities</td>
<td>3.74</td>
<td>0.267</td>
</tr>
<tr>
<td>Climatic variation in agricultural production</td>
<td>3.59</td>
<td>0.256</td>
</tr>
<tr>
<td>Comfortable introduction of export agricultural commodities</td>
<td>3.64</td>
<td>0.26</td>
</tr>
<tr>
<td>Comparison of prices and varieties of agricultural products</td>
<td>3.45</td>
<td>0.246</td>
</tr>
<tr>
<td>Division of target markets in the export of agricultural products</td>
<td>3.61</td>
<td>0.257</td>
</tr>
<tr>
<td>Establishing a system for the exchange and tracing of products on their way to target markets</td>
<td>3.66</td>
<td>0.261</td>
</tr>
<tr>
<td>Establishment of appropriate contracts with chain stores in target countries for export crop</td>
<td>3.44</td>
<td>0.245</td>
</tr>
<tr>
<td>Existence of relative advantage in the production of some commercial products</td>
<td>3.64</td>
<td>0.26</td>
</tr>
<tr>
<td>High production potential in export agricultural commodities</td>
<td>3.76</td>
<td>0.268</td>
</tr>
<tr>
<td>Monopoly on production in export of some agricultural commodities</td>
<td>3.05</td>
<td>0.217</td>
</tr>
<tr>
<td>No need for the physical launch of agricultural exporters</td>
<td>3.49</td>
<td>0.249</td>
</tr>
<tr>
<td>The absence of commercial boundaries in the electronic trading of agricultural products</td>
<td>3.38</td>
<td>0.241</td>
</tr>
<tr>
<td>Total average</td>
<td>3.4964</td>
<td>------</td>
</tr>
<tr>
<td>Total cumulative average</td>
<td>------</td>
<td>3.4964</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E-commerce weaknesses in the export of agricultural products</th>
<th>Average (n= 59)</th>
<th>Relative weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraints on the testing of the physical quality of agricultural products</td>
<td>3.3</td>
<td>0.137</td>
</tr>
<tr>
<td>Disregarding market preference in the production of agricultural products</td>
<td>3.94</td>
<td>0.164</td>
</tr>
<tr>
<td>Failure to create a standard agricultural product code assignment system</td>
<td>3.52</td>
<td>0.146</td>
</tr>
<tr>
<td>High cost of final products compared with global prices</td>
<td>4</td>
<td>0.166</td>
</tr>
<tr>
<td>Higher transportation cost of agricultural products in E-commerce</td>
<td>3.84</td>
<td>0.16</td>
</tr>
<tr>
<td>Inadequacy of information on the developments of target markets in the export of agricultural products</td>
<td>3.27</td>
<td>0.136</td>
</tr>
<tr>
<td>Inappropriate banking system for exporting agricultural products</td>
<td>3.94</td>
<td>0.164</td>
</tr>
<tr>
<td>Lack of a unit of agricultural products in the stock exchange</td>
<td>3.44</td>
<td>0.143</td>
</tr>
<tr>
<td>Lack of active presence of exporters at national and international exhibitions</td>
<td>3.38</td>
<td>0.140</td>
</tr>
<tr>
<td>Lack of familiarity of exporters with modern advertising techniques</td>
<td>3.96</td>
<td>0.165</td>
</tr>
<tr>
<td>Lack of planning and coordination between trusted agencies in agricultural exports</td>
<td>3.94</td>
<td>0.164</td>
</tr>
<tr>
<td>Lack of proper infrastructure for export of agricultural commodities</td>
<td>3.72</td>
<td>0.155</td>
</tr>
<tr>
<td>Lack of specialized software and statistics on agricultural products and demand</td>
<td>3.89</td>
<td>0.162</td>
</tr>
<tr>
<td>Lack of subsidies and export facilities to exporters</td>
<td>3.23</td>
<td>0.134</td>
</tr>
<tr>
<td>Lack of supply chain of agricultural commodities with a comprehensive “farm to fork” plan</td>
<td>3.64</td>
<td>0.151</td>
</tr>
<tr>
<td>Lack/weakness of trade associations (E-commerce) for production and trade of agricultural products</td>
<td>3.86</td>
<td>0.160</td>
</tr>
<tr>
<td>Limitation of advertising agricultural products in E-commerce</td>
<td>3.66</td>
<td>0.152</td>
</tr>
<tr>
<td>Limitation of target markets for agricultural exports</td>
<td>3.62</td>
<td>0.150</td>
</tr>
<tr>
<td>Non-comprehensive look at the policy of developing export of agricultural products</td>
<td>3.61</td>
<td>0.150</td>
</tr>
<tr>
<td>Non-specialized agricultural products in return with global standards</td>
<td>3.91</td>
<td>0.162</td>
</tr>
<tr>
<td>Restrictions on agricultural products displayed on the site</td>
<td>4.66</td>
<td>0.194</td>
</tr>
<tr>
<td>Weak standards in agricultural production</td>
<td>4.03</td>
<td>0.167</td>
</tr>
<tr>
<td>Weakness in the implementation of supportive policies in exporting agricultural products</td>
<td>3.86</td>
<td>0.160</td>
</tr>
<tr>
<td>Weakness of marketing operations in exporting agricultural products</td>
<td>4</td>
<td>0.166</td>
</tr>
<tr>
<td>Total average</td>
<td>3.7591</td>
<td>------</td>
</tr>
<tr>
<td>Total cumulative average</td>
<td>------</td>
<td>3.7591</td>
</tr>
</tbody>
</table>
questionnaire were selected on a five-point Likert scale (1= Very low, 2= Low, 3= Medium, 4= High, and 5= very high). A list of strengths, weaknesses, opportunities, and threats to E-commerce development was prepared using the Delphi technique by reviewing the opinions of 15 experts from the Organization for Development and Trade, 10 experts from the Office for Export Development of Commodities in the Ministry of Agriculture, and 20 experts from the AREEO (Agricultural Research, Extension and Education Organization), five E-business experts from the Ministry of Agriculture, eight professors from the Department of Economics and Agricultural Education and Agricultural Education at Tarbiat Modares University, as well as a review of secondary resources. The final questionnaire included four sections (strengths with 14 questions, weaknesses with 24 questions, opportunities with 39 questions, and threats with 41 questions) with predefined intervals. Then, the respondents were asked to answer the questionnaire based on their opinions about the internal and external factors affecting E-commerce in the field of exported agricultural commodities. SPSS software was used to analyze the data.

This study was composed of the following phases:
 Designing external and internal factor matrixes;
 Analyzing SWOT matrix (space matrix),
 Prioritizing identified strategies.

RESULTS AND DISCUSSION

Designing External and Internal Factors Evaluation Matrix

At this phase, the matrices of External Factor Evaluations (EFEs) and Internal Factor Evaluations (IFEs) that affected the E-commerce system of agriculture export products was designed based on the strengths, weaknesses, opportunities, and threats of the prioritizing questionnaire. The EFE matrix evaluated opportunities and threats, while the IFE matrix evaluated strengths and weaknesses (David et al., 2009; Zulkarnain et al., 2017). The items were individually evaluated and ranked. The coefficient of importance ratio was identified using a panel of experts. EFE matrices are presented in Table 3. As indicated in Table 3, cost-effectiveness of E-commerce in the export process, speeding up the swap, and coordinating with the changing trend of buyers in E-commerce are the most important E-commerce opportunities for exporting agricultural products. Also, the reduction of local competition is one of the least important E-commerce opportunities for exporting agricultural products (Table 3). This finding suggests that issuers’ managers do not care much about the opportunities created through the domestic market by gaining more share of global markets. Moreover, the analysis of threats to E-commerce in agricultural exports shows that unclear individual rights about the confidentiality of personal information, the need for additional funds in the adoption of E-commerce at the onset of the work, and inappropriate cooperation of foreign financial institutions and banks with exporters (Table 3) are among the most important threats to progress. On this basis, it can be said that effective organizations in E-commerce have not seriously addressed the issue of E-commerce training and familiarizing exporters with E-commerce and have not set up a single document for them. Therefore, with changes in global markets, exporters are somewhat confused and inconvenient to deal with the issue. On the other hand, the lack of proper packaging in comparison with global competitors has made the market more attractive and customer satisfaction and their loyalty to re-purchase the Iranian brand is unlikely to lead to the loss of business opportunities in global markets. According to analysis of external factor identification in Table 3, the relative weight of the opportunities (3.912) was deducted from the relative weight of the threats (3.9092) to yield the external factor score (0.0028). Its positive sign indicates that the opportunities of advanced electronic trade in exporting agricultural commodities were greater than its threats. Evaluating the ranking of E-commerce strengths in agricultural exports using the relative weight of each item (Table 4) suggests that high production potential in export of agricultural commodities, application of coding system for agricultural commodities as well as establishing a system for the exchange and tracing of
products on their way to target markets are the most important strengths of E-commerce in exporting agricultural products. However, unclear individual rights about the confidentiality of personal information, the need for additional funds in the adoption of E-commerce at the onset of the work as well as inappropriate cooperation of foreign financial institutions and banks with exporters are the most important weaknesses of E-commerce in agricultural exports.

The first part of SWOT analysis depends on external issues that cannot be controlled but can be managed to enhance or reduce their business impact. The EFE matrix is a good management tool that is often used to check current business conditions by visualizing and prioritizing opportunities and threats. The benefits of external analysis include higher managerial awareness of environmental changes, better resource allocation, and facilitated risk management (Amoozad Khalili and Maleki, 2011; Riston, 2008).

The EFE matrix was processed through the following steps:
- Gathering a list of external factors and dividing them into opportunities and threats;
- Calculating the average value of the existing factors;
- Calculating the relative weight of each factor (cumulative average/total);
- Summing the relative weights of all factors.

The IFE matrix is a kind of strategic management tool used to evaluate the strengths and weaknesses of functional business areas. The IFE matrix and EFE matrix were combined into a strategy-formulation tool to evaluate the performance of a company to identify the internal strengths and weaknesses of a company. The IFE matrix was created using the following steps:
- Identifying key internal factors including strengths and weaknesses;
- Calculating the average value of existing factors;
- Calculating the relative weight of each factor (cumulative average/total);
- Summing the relative weights of all factors.

According to the internal factor identification in Table 4, the relative weight of the weaknesses (3.7591) was deducted from the relative weight of the strengths (3.4964) to get an internal factors score (-0.2631). The negative sign indicates that E-commerce trade weaknesses in the export of agricultural products outnumber opportunities.

There exist four types of strategies, aggressive, conservative, defensive and competitive. The Strategic Position And Action Evaluation (SPACE) matrix was used to determine what type of strategy a business should undertake. However, SPACE matrix analysis functions upon two internal and two external strategic dimensions (Figure 1). Horizantal axis indicates the algebraic sum of

![Figure 1. Space of internal and external evaluation factors matrix, in E-Commerce export of agricultural commodities in Iran.](image-url)
IFE items while the vertical axis indicates algebraic sum of EFE items. Since the internal factors score is negative and the external factor score is positive, the WO strategies are achieved.

SWOT is the first step of planning and it helps planners focus on key subjects. The SWOT method is a key tool used by businesses to formulate strategic plans. The SWOT matrix comprises four strategic groups consisting of SO (using Opportunities based on the Strengths of the business), WO (proper exploitation of environmental Opportunities due to the Weaknesses of the business), ST (using the business's Strengths to reduce or eliminate the effects of environmental Threats), and WT (alleviating the effects of environment Threats by taking the Weaknesses of organization into account). According to the results of IFE factors and EFE factors, weaknesses and opportunities are achieved, respectively. Based on the SPACE matrix (Table 5), conservative strategy is suggested for developing E-commerce in the field of exported agricultural commodities in Iran.

CONCLUSION

The analysis of SWOT is a framework for helping planners and managers identify strategies to realize their goals. This technique is used to analyze the strengths, weaknesses, opportunities, and threats of businesses. E-commerce has played an important role in exporting products, especially agricultural commodities. Identified strategies based on the analysis of SWOT have a vital role in enhancing the export of agricultural commodities. Important strategies that must be considered are including of reducing operational costs, enforcing laws, providing effective incentives to reduce production costs relative to global prices, accelerating exchanges in E-commerce, and making exchange transactions easier to save on the delivery of agricultural products. Moreover, creating innovation in the export process using E-commerce and using new technologies in exports to strengthen standards in agricultural production. In addition, establishing companies in support of E-commerce services, increasing financial opportunities, interacting with regional and international E-commerce centers to increase the security of banking interactions, and improving the banking system for the exportation of agricultural products. Also, using modern export technologies, direct consumer communication and high demand in global and regional markets for agricultural products to strengthen the competitive position of Iran and its marketing operations in agricultural product exports. In addition, onsiering market preferences in agricultural production such as diverse needs of global consumers and the climate of Iran using electronic management, E-CRM customer communication, and alignment changing buyer trends. Moreover, establishing an effective management system for planning and coordinating the agencies responsible for agricultural exports using the well-trained agricultural labor force in agricultural product exports to create a positive attitude towards E-commerce in the Ministry of Jihad-e-Agriculture as well as interacting with regional and international E-commerce centers to exchange information and services and finally, strengthening and implementing supportive policies for the export of agricultural commodities along with the government’s decision to expand non-oil exports to attract foreign investment in E-commerce to reduce local competition.

Base on the analysis of SWOT results, it is recommended that E-commerce organizations prioritize barriers and backwardnesses of E-commerce in order to maintain their position and eliminate internal weaknesses. Therefore, it is necessary to design program to achieve these goals and take advantage of the opportunities ahead constantly. For example,
Table 5. SWOT matrix in E-commerce export of agricultural commodities in Iran.

<table>
<thead>
<tr>
<th>Internal factors</th>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S&lt;sub&gt;1&lt;/sub&gt;: A way for buying faster and easier</td>
<td>w&lt;sub&gt;1&lt;/sub&gt;: Constraints on the testing of the physical quality of agricultural products</td>
</tr>
<tr>
<td></td>
<td>S&lt;sub&gt;2&lt;/sub&gt;: Access to appropriate distribution networks for agricultural products</td>
<td>w&lt;sub&gt;2&lt;/sub&gt;: Disregarding market preference in the production of agricultural products</td>
</tr>
<tr>
<td></td>
<td>S&lt;sub&gt;3&lt;/sub&gt;: Application of coding system for agricultural commodities</td>
<td>w&lt;sub&gt;23&lt;/sub&gt;: Weakness in the implementation of supportive policies in exporting agricultural products</td>
</tr>
<tr>
<td></td>
<td>S&lt;sub&gt;4&lt;/sub&gt;: Climatic variation in agricultural production</td>
<td>w&lt;sub&gt;24&lt;/sub&gt;: Weakness of marketing operations in exporting agricultural products</td>
</tr>
<tr>
<td></td>
<td>S&lt;sub&gt;13&lt;/sub&gt;: No need for the physical launch of agricultural exporters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S&lt;sub&gt;14&lt;/sub&gt;: The absence of commercial boundaries in the electronic trading of agricultural products</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External factors</th>
<th>Threats (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T&lt;sub&gt;1&lt;/sub&gt;: Changes in the environment, law and regulations</td>
</tr>
<tr>
<td></td>
<td>T&lt;sub&gt;2&lt;/sub&gt;: Creating new business rivals</td>
</tr>
<tr>
<td></td>
<td>T&lt;sub&gt;3&lt;/sub&gt;: Not using modern technologies to accelerate international trade</td>
</tr>
<tr>
<td></td>
<td>T&lt;sub&gt;4&lt;/sub&gt;: Weak marketing infrastructure</td>
</tr>
<tr>
<td></td>
<td>T&lt;sub&gt;41&lt;/sub&gt;: Worrying about collapse of privacy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities (O)</th>
<th>WO strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>O&lt;sub&gt;1&lt;/sub&gt;: Coordinating with the changing trend of buyers</td>
<td>WO&lt;sub&gt;1&lt;/sub&gt;: Reducing operational costs, enforcing laws, and providing effective incentives to reduce production costs relative to global prices, accelerate exchanges in E-commerce, and make exchange transactions easier to save on deliveries of agricultural products</td>
</tr>
<tr>
<td>O&lt;sub&gt;2&lt;/sub&gt;: Customer satisfaction</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;3&lt;/sub&gt;: E-commerce Flexibility</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;4&lt;/sub&gt;: Extending global interactions</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;5&lt;/sub&gt;: Improving Productivity</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;6&lt;/sub&gt;: Increasing financial opportunities</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;6c&lt;/sub&gt;: Speeding up the swap</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;6f&lt;/sub&gt;: Increased exports, employment and production</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;8c&lt;/sub&gt;: No limited time (Availability all the time)</td>
<td></td>
</tr>
<tr>
<td>O&lt;sub&gt;9c&lt;/sub&gt;: Reduce local competition</td>
<td></td>
</tr>
</tbody>
</table>

(Conservative) Suggested strategies
business entities in the country must prepare a well-designed and well-planned planning process for the sale of "exported products in line with global standards" in order to maintain and improve the competitiveness of agricultural exporters at the global level. Also, it is necessary to pay attention to the packaging of agricultural products in accordance with customers' tastes in global markets.

**ACKNOWLEDGEMENTS**

The authors wish to thank Tarbiat Modares University (TMU) for providing the grant, facilities and resources to accomplish this work.

**REFERENCES**


تجزیه و تحلیل نقاط قوت، ضعف، فرصت و تهدید در تجارت الکترونیک برای صادرات محصولات کشاورزی در ایران

ف. حسینی، ح. صدیقی، س. ا. مرتضوی، و ه. فرهادیان

چکیده

تجارت الکترونیک (E-commerce) یک فناوری محوردیت در حوزه تجارت الکترونیک و یک ابزار کلیدی است که اساساً تغییر در نحوه انجام کسب و کار را نشان می‌دهد. این مقاله از استراتژی های تجارت الکترونیک برای تجارت کالاها و خدمات کشاورزی توصیف می‌کند. هدف از این مقاله افزایش بهره وری تجارت الکترونیک در صادرات کالاها و خدمات کشاورزی است. از آنجا که روش SWOT یکی از کلیدی‌ترین ابزارهای استفاده شده در انتخاب جمعیت آماری از روش ممکن محیطی تصادفی استفاده شده است. جامعه آماری شامل 96 کارشناس جراحی از وزارت کشاورزی بوده است. هفتاد و پنج پرسشنامه دربین کارشناسان (57 نفر) با استفاده از جدول مورگان و گرجسی توزیع گردیده که از این 159 پرسشنامه جمع آوری گردیده است (57 نفر). پرسشنامه شامل نقاط قوت، نقاط ضعف، فرصت و تهدیدهای توسعه تجارت الکترونیک با استفاده از تکنیک دلی به شده است. نتایج مهم از استفاده از تجزیه و تحلیل SWOT، جارجیوی برای کمک به برنامه ریزی مدیران در دستیابی به اهداف و افزایش صادرات کالاها و خدمات کشاورزی می‌باشد. تجزیه و تحلیل ماتریس استراتژی محافظه کارانه (WO) در منطقه ساف و از استراتژی محوردیت استفاده شده که برای بهره برداری مناسب از این بهبودی محیطی، ضعف های مزمن از نظر گرفته شود. همچنین این مقاله شامل برخی از استراتژی‌های پیشنهاد شده دیگر نیز می‌باشد. برخی از استراتژی‌های پیشنهاد شده مهم اجرای قوانین و اجرا انگیزه‌های مورث برای کاهش هزینه‌های تولید در مقایسه با قیمت‌های جهانی و همچنین ایجاد نوآوری در فرآیند صادرات با استفاده از تجارت الکترونیک است.