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## Investigating the Financial and Legal - Security Infrastructure Affecting the Electronic Marketing of Agricultural Products in Ilam Province

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### Abstract

This Study has been carried out to investigate Financial and Legal - Security infrastructures affecting the electronic marketing of agricultural products from the point of view of Jihad Agricultural Organization experts of Ilam Province through a survey descriptive framework. The current research is considered an applied one regarding the objectives and a field research regarding the data gathering method. Also it is an empirical study due to the fact that the independent variables are not completely possible. Regarding the methodology of the study it is considered a causal one. The statistical population of the current study includes all the experts working at the Jihad organization for agriculture in Ilam Province which add up to 463. The sample size was 210 participants, which was calculated by the Cochran's formula and the stratified random sampling method. The sample was asked to fill out a questionnaire as a means of gathering the required data. In order to confirm the stability of the questionnaire the Cronbach's Alpha Coefficient was used which was calculated to be 0.884, an acceptable range. The validity of the questionnaire was confirmed by the experts related to the field. The data analysis was carried out using SPSS software application version 19. The results of the study showed that there seems to be a significant relationship between the Financial and Legal - Security variables with the variable of electronic marketing of agricultural products in Ilam Province so that the three independent variables were able to explain 48 percent of the variance related to the electronic marketing of the agricultural products in Ilam Province.

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*Keywords:* Electronic marketing, Agriculture, Financial infrastructure, Legal- Security infrastructure

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## 1. Introduction

One of the issues related to the manufacturing cycle of agricultural products is marketing and accessing the customers, which is due to the dispersion of rural districts and the production sites of agricultural production and their distance from markets. Hence for the rural residents and farmers, which are considered small producers, going directly to the city markets and transporting the products directly is not cost effective resulting in the necessity to pay the middlemen (Gholamrezaee et al, 2008). Also they have to sell their products for a very cheap price due their low income and high monetary needs. This is while in today's age it is very much easy with the e-commerce emerging everywhere to gather information regarding the last prices in the market, the customers, and the major shopping centers and with this plethora of information one can definitely make a correct decision (Rasekhi, 2003). On the other hand we are witnessing the emerging sector of technology conscious customers who prefer the information technology based distribution systems to the traditional ways of acquiring these services. Satisfying the needs of this particular group of customers it is not that easy using the traditional structures of marketing systems and hence it is necessary to establish a proper context and acquire the needed technologies. With the development of electronic tools and e-marketing, manufacturing enterprises especially commercial agricultural product plants are highly affected. However, the presence of different problems and issues regarding agriculture product manufacturing as well as their marketing and distribution lead to the fact that in spite of high quality of the domestic products compared to the foreign ones, the Iranian agricultural products do not possess a high level of appearance in the international markets (Torkmani, 2001). And the current state is that the agricultural products are mostly purchased by the middlemen offering the lowest prices possible and are redirected to the main markets, which begs the necessity of fundamental changes in the Iranian agricultural products marketing system. One of the solutions which can be of great help in the current state of the agricultural products marketing system of Iran would be electronic marketing (e-marketing) due to the fact that the majority of Iranian agricultural products such as pistachio and saffron are considered commercial and appropriate for export, e-marketing can solve the major problems and issues of agricultural producers and it is also able to cut the middlemen in many aspects of the selling process (Woun, 2007; Alavioun et al, 2012).

Based on the data published by the telecommunication company of Iran in the year 2012 the total mobile penetration rate for Ilam Province was 5.61 percent which is higher than the national average. In this province there are 299 resident villages equipped with ICT offices. Also more than 95 percent of the resident villages in Ilam Province possess telecommunication connection (ringing phones). Based on the information retrieved from the website of the Iranian census and information bureau, annually 84086 acres of farming land are dedicated to the irrigated and rain fed crops in Ilam Province with the most common crops including wheat, barley, peas, canola, tomato, cucumber, rice, corn and so on. Many of the mentioned crops and other produced yields are usually traded using private marketing channels and without the government having any influence, so there is a lot of broker and middlemen interference and hence a small share of the final price of the products will be earned by the farmers. Generally the least efficient but most common marketing path in agricultural products supply, especially in Ilam Province, is the path depicted as producer-middlemen-wholesale-customers. This is while the best path for marketing agricultural products is depicted by producer-customers. Hence the presence of agricultural producers (farmers) in the final selling market will increase the efficiency of the market (Amirnejad, 2010). Among the barriers facing the farmers and agricultural producers to be present in the market as the sellers, we can mention high distance from the market (the distance aspect), the poor conditions of the roads, the poorness of the producers, lacking or shortcoming of transportation vehicles, uncertainty about the presence of customers in the market and so on. On the other hand the information index whether market information or goods information increases the likelihood of the participation of producers in the markets as the final sellers (Alavioun et al, 2012). Hence regarding the challenges facing the farmers and agricultural crops producers, particularly in Ilam Province, e-marketing can easily bridge the gap between the rural districts and the markets using electronic transactions and it can provide market information for the farmers and with the middlemen gone the presence of producers as the final sellers will be extremely facilitated. E-commerce with its higher speed and efficiency and reducing the transaction costs which is the most successful method of reducing the final cost of the products, has been able to provide a new arena of competition, so that losing the sight of this evolutionary process will lead to isolation in the international markets or a very small share of the market. In other words, marketing in the 21<sup>st</sup> century will be very different from what it has been up to now (Dehghan, 2004).

Marketing comes in different types including exchange marketing, database marketing, interactive marketing and the network marketing. With the dawn of internet and e-commerce, the fifth kind of marketing, e-marketing, was introduced. E-marketing is defined as the process of using internet and other communication technologies as a means of connecting the seller and the customers (Brodi et al, 2007). Agricultural e-marketing will greatly help the omission of middlemen, decreasing the costs and finding the customers. The majority of the farmers own small farms and they have a tight budget. Hence the most important issue here is how to design in system which helps the farmers to electronically sell their produced crops (Woun, 2007). Using the information technology in different economic sectors including the agricultural sector is gaining much more driving force in many different countries. For instance in South Korea 56 percent, in Singapore 50 percent, in Cuba 45 percent and in Egypt 20 percent of the farmers use the information technology tools such as internet in their career (UNCTAD, 2010). But unfortunately the economy of Iran bears a deep digital gap with the average world economy. In 2010 Iran's rank in digital economy was 69 and in the rank related to electronic government it landed on the 102 stage of the world (EIU, 2010). Digital economy is a set of six measures including the communication index, the commerce index, socio-cultural index, legal index, government policy index and users-enterprises index. Electronic government is a set of three indices including communication index (landline, mobile, internet access and bandwidth), online services index and human resources index (Alavioun, 2012). Hence regarding the fact that in modern days there are significant developments in the information technology field, many service enterprises provide their goods through internet, on the other hand with the widespread global trade, Iran have to embrace the electronic services in order to stay up to date with the global players because the global conditions dictate that service and goods distribution systems should be based on information technology and as mentioned before in today's world the customer prefer acquiring different services using electronic means and the development of e-marketing has been influencing the commercial agricultural products as well. So in this study, with a special attention to the importance of agricultural products marketing, using this technology in marketing is dealt with from three points of view; namely technical, managerial and communicative aspects of agricultural products in Ilam Province. However since agricultural products marketing includes all the operations and services which accompany the products from the farms to the consuming centers, studying marketing needs a certain framework one of the most common is the practical approach which categorizes marketing activities into exchange activities, physical activities and facilitative activities. Exchange activities include buying and selling, physical activities include inventory, conversion and transportation and finally facilitative activities include grading, standardization and packaging (Abyar and Zaad, 2007). Hence we decided to study different aspects of this issue regarding the importance and position of the agricultural sector in the national and provincial development as well as issues related to agricultural products marketing. We hope that the results of the current study can provide guidelines for designers, planners and policy makers for improving the agricultural conditions of the region and also realizing the objectives of rural development. Hence the main question of the current study is that how much can the Financial and Legal - Security infrastructures be effective in the e-marketing of agricultural products?

## **2. Literature Review And Hypotheses**

### *2.1. Literature Review*

Regarding the topic of the current study, several theoretical and empirical researches have been carried out which generally only briefly deal with the subject. In the following section some of these studies are mentioned.

Alavian et al (2012) in a study with the objective to evaluate the feasibility of e-marketing rice in Rasht City District showed that around 80 percent of ICT office managers and 68 percent of paddy cultivators have a high tendency of using e-marketing for the rice crop and more than 70 percent of the participants chose ICT office networks as the best option for e-marketing. Finally based on the results of the study two models were proposed. The first model of exchange between the farmer and the customers involves a website for catalogue selling and the second model is carrying out the exchange using the ICT offices as the middleman between the farmer and the customers. Rural ICT offices had a middleman role in both of the models for carrying out the buying and selling processes. Mira and Najafi (2009) investigated and analyzed the penetration and success factors as well as the challenges and barriers of e-marketing using short message service (SMS). They concluded that advertisement is

very important in marketing and a new method of advertisement is by using SMS. Ali Ahmadi and Rezaee (2008) in a paper titled “identifying different e-marketing models regarding the development of e-commerce” stated that at the time of introducing new technologies in different parts of the world, proper and improper usages for them emerge. This scenario in the technology importing states has got a higher likelihood of improper usage due to improper implementation and wrong attitudes. They finally reached the conclusion that traditional marketing and e-marketing should be implemented in congruity which leads to synergy and for realizing this objective an extensive marketing strategy should be devised. Mamdouhi and Seyyed Hashemi (2008) in a study titled “marketing strategy implementation barriers: providing a categorization and rating scale for the Iran Khodro company” reached the conclusion that in a eight-stage categorization the stage for managerial barriers is the most important one and then structural barriers, cultural, cognitive, strategic, operational, human resources and resources are ranked respectively. This means that in this company scarcity of the resources was not a barrier in carrying out the marketing strategy and regarding this aspect the company did not suffer a shortcoming, rather other stages and aspects form the main barriers. Seyyed Javadin et al (2007) in a study deal with the investigation of marketing strategies in e-markets of dominant manufacturing firms in Iran and their results showed that the marketing strategies in e-markets can be categorized into four classes namely exchange marketing strategies, database marketing strategy, relation marketing strategies and knowledge-based marketing strategies. Moreover investigating the status of the Iranian dominant companies showed that the majority of these firms are looking for adopting exchange marketing strategies which are not in congruity with the modern economics. Kalantari et al (2005) evaluated the marketing conditions of livestock and poultry production cooperatives in the chosen provinces. They finally concluded that products distribution and transportation channels from the producer to the cooperation to the retailers and at last the customers of dairy products had not got the attention it deserved. Also in the majority of cases the dairy products had been delivered to the wholesale retailers instead of direct delivery to the customers. Dehghan (2004) in a study investigated the necessary alteration in the marketing process in the world’s food producing firms in order to realize the e-marketing. In this study the researcher investigated the required conditions for the realization of e-marketing in Iranian food industries and then in order to direct the marketing managers of the food production companies of the country they proposed a model for implementing e-marketing. His results show that the required conditions for realizing the e-marketing process in the food production companies have not been met but the proposed model is accepted by the marketing managers of the food production companies. Shahrokhi Yeganeh (2001) in a research deals with evaluating the feasibility of applying information technology (internet) in order to decrease the transportation problems and the pollution of Tehran City. The variables studied in this research include: personality traits of the individuals, car access rates, computer access rate, familiarity with computer and the internet, the internet usage rate, people’s work activities, educational and academic activities of the individuals, recreational activities of the individuals, buying goods and services and the effects of using internet on decreasing the transportation problems of Tehran. Also he shows that using internet in Tehran City can have a very effective role in reducing the transportation problems. Particularly this technology can have a great role in reducing the pollution rate of Tehran City. Kumar et al (2010) carried out a study on 200 farmers from 40 poor and remote villages in India and reached the conclusion that three important factors are effective in accepting ICT which include the rural resident environment, education difference, and income difference. Then they investigated the barriers of using ICT in agriculture which showed that factors such as lacking the proper knowledge about the technology, uncertainty about the agricultural crop markets, lack of infrastructure in the village and lack of financial facilities were the most important barriers in implementing information technology tools in the Indian agricultural sector in the studied regions. Woun (2007) proposed a commercial system for electronic sale of agricultural products which deals with selling, financial analysis and market prediction and includes three main parts: 1- the financial part, 2- the order part which is responsible for product information gathering and status analysis, and 3- the managerial part which supervises buying and selling. Also a database section was considered which records the fundamental information such as the selling rate, the selling costs, orders, market price and so on. Martin and Jagadish (2006) in a study investigated the marketing range and marketing system efficiency in fresh crops of New Guinea using the supply chain model. Their results confirmed the dynamic nature of the marketing system which in turn means the development of New Guinea markets in the current conditions. Marketing services were carried out by the private sector and the market activists competed for creativity in the development of these services and they consider the customers’ needs. The infrastructure’s weaknesses led to limited services and increasing related costs. Finally they

concluded that using the supply chain framework can provide a great understanding about the agricultural marketing systems efficiency in developing economies. The Hawaiian agricultural organization (2006) investigated factors such as computer competency of the farmers, internet infrastructures and product delivery to the market in order to investigate the feasibility of e-commerce in small agricultural firms and then they designed a website which was able to host a shopping cart model as well as electronic payment. The farmer delivers his crops to the agricultural firms and a central firm will take the responsibility of delivering the goods to the customers. This plan was backed up by the agricultural ministry of the USA and in 2006 it started with 24 agricultural firms. Shahata et al (2006) interviewed 147 cooperative managers in order to evaluate the feasibility of e-commerce in agricultural cooperative companies. The results showed that almost 46 percent indicated their tendency towards using e-commerce and among them 33 percent indicated that they needed technical assistance and 19 percent were willing to invest in this plan.

### *2.2. Reserach Hypothesis:*

In this study two main hypotheses are analyzed:

1. There is a relationship between Financial infrastructure and agricultural products marketing.
2. There is a relationship between Legal- Security infrastructure and agricultural products marketing.

## **3. Methodology**

### *3.1. Research Goal*

The main objective of the current paper is to investigate the Financial and Legal - Security factors affecting e-marketing of agricultural products in Ilam Province during the time period from 2012 to 2013. To test the propositions, a field survey using questionnaires was conducted.

### *3.2. Sample and Data Collection*

The current paper is an applied study regarding the objectives and a field survey regarding the data gathering method. Also it is an empirical study due to the fact that the independent variables are not completely possible. Regarding the methodology of the study it is considered a causal one. The statistical population of the current study includes all the experts working at the Jihad organization for agriculture in Ilam Province which add up to 463. The sample size was 210 participants, which was calculated by the Cochran's formula and the stratified random sampling method. The sample was asked to fill out a questionnaire as a means of gathering the required data. In order to confirm the stability of the questionnaire the Cronbach's Alpha Coefficient was used which was calculated to be 0.884, an acceptable range. The validity of the questionnaire was confirmed by the experts related to the field. The independent variables of the study include Financial and Legal - security variables and the dependent variable of the research is the feasibility of e-marketing for the agricultural products of Ilam Province.

### *3.3. Analyses and Results*

The data analysis task was done using the SPSS software application and it was carried out in two levels; namely descriptive statistics (center-oriented statistics and distribution) and analytical statistics (Spearman's Correlation Coefficient in order to test the correlational hypotheses of the research) and multiple regression analysis in order to determining of overall impact of Independent variable on the variances of dependent variable.

**4. Result and Discussion**

*4.1. Financial Infrastructure*

Table 1 shows the status of financial factors related to implementing e-marketing of agricultural products. In order to identify the most important effective factors in implementing agricultural products e-marketing, coefficient of variation (CV) was used. The ranking results show that respectively the factors of Existence of necessary financial factors and investment to create necessary infrastructure in order to produce agricultural production (mean: 3.95, CV: .28), and Existence of necessary liquidity for creation and development of ICT offices (average: 3.77, CV: .29) were the most effective Financial factors. Moreover the factor of Existence of Financial Resources for setting up high speed internet in order to advertisement the sale of agricultural products was the least effective and important factor for implementing agricultural products e-marketing.

Table 1: The Status of Financial Factors Effective in Implementing Agricultural Products Electronic Marketing

Item	Very Much	Much	Average	Little	Very Little	Mean	SD	CV	Rank
Existence of necessary financial factors and investment to create necessary infrastructure in order to produce agricultural production	44.3	22.9	18.6	12.4	1.9	3.95	1.13	.286	1
Existence of necessary liquidity for creation and development of ICT offices	33.3	26.2	28.6	8.6	3.3	3.77	1.1	.291	2
Investment about extend of internet Literacy among agents of Jihad Agricultural Organization	35.7	26.2	16.2	21.9	0	3.75	1.15	.306	3
Existence of Financial Resources for setting up high speed internet in order to advertisement the sale of agricultural products	42.4	23.3	16.7	13.8	3.8	3.86	1.21	.313	4

Scale: 1= very little 2=little 3=average 4=much 5=very much

*4.2. Legal Infrastructure*

In order to evaluate the managerial Legal-Security factors effective in implementing agricultural products e-marketing some questions in the ordinal scale and in Likert format were chosen due to the fact that they are related to Legal-Security aspects and their importance had been showed before. The participants were asked to show how much they agree with them. As it can be seen from Table 2. the most important Legal-Security factor effective in implementing agricultural products e-marketing is Existence of Rules relating to the offices of ICT, for establish and developing electronic marketing (mean: 3.95, CV: 0.25) and Existence of necessary laws to following the Customer zed Packages Via Internet (mean: 3.62, CV: 0.31) was the least important and effective factor.

Table2. The Status of legal Factors Effective in Implementing Agricultural Products Electronic Marketing

Item	Very Much	Much	Average	Little	Very Little	mean	SD	CV	Rank
Existence of Rules relating to the offices of ICT, for establish and developing electronic marketing	.9	52.9	25.7	8.6	3.8	3.54	.91	.25	1
Existence of laws relating to handling couriers employed customized and securing them by the Post Office	21.4	34.3	35.2	6.7	2.4	3.65	.96	.26	2

Existence of necessary laws to following the Customer Packages Via Internet	.2	38.1	30.5	7.1	4.3	3.62	1.01	.27	3
Scale: 1= very little	2=little		3=average		4=much		5=very much		

4.3. Correlation Studies (Relationships between variables)

In the current study Spearman’s Correlative Coefficient is used for testing correlational hypotheses of the study namely the relationship between financial and legal infrastructure with the variable of the feasibility agricultural products e-marketing in Ilam Province. The obtained results are summarized in Table 3.

Table 3. The Correlation Coefficient among the Research Variables

Hypothesis	The first variable	The second variable	r	P value	Result
1	financial infrastructure	E- marketing	.49**	.000	H <sub>1</sub> Accepted
2	legal infrastructure	E- marketing	.44**	.000	H <sub>1</sub> Accepted

The results of the correlation analysis using the Spearman’s correlation coefficient shows that there is a significant relationship between the independent variables of Financial and Legal-Security factors with the dependent variable of the feasibility of agricultural products marketing in the 1 percent level. Hence, the research hypothesis indicating the effectiveness of the above-mentioned factors in agricultural products e-marketing in Ilam Province is confirmed.

4.4. Multiple regression analysis

In this study for explaining the cumulative role of the independent variables of the research on the dependent variable we used multiple regression with ENTER method. In this section in order to better understand the effective factors on the feasibility of implementing agricultural products e-marketing in Ilam Province, multiple regression analysis was used. The results of multiple regression analysis are presented in Table 4. Those independent variables will be used in multiple regression analysis whose significant relationships with the dependent variable are confirmed in correlation analysis. In other words, all the independent variables which had a significant relationship with the variable of the tendency of the participants were entered into the multiple regression analysis. Moreover in order to determine the linearity between the independent variables the Variance Inflation Factor (VIF) test was used. If the value of the statistic is between 1 and 5, the problem of linearity does not exist (Hejazi et al, 2011). As can be seen from the results of VIF statistic in Table 4, there is no linearity between the independent variables.

Also the Fisher statistic (F) is in 0.01 level of significance, hence it can be deduced that there is a significant relationship between the independent variables present in the regression model and the dependent variable in 99 percent significance level. Moreover, the multiple regression results show that model determination coefficient ( $R^2$ ) equals 0.413 which indicates that 41.3 percent of the dependent variable variations are determined by the model’s independent variables. Based on the obtained model determination coefficient in this study it can be stated that several factors affect the implementation feasibility of agricultural products e-marketing with the factors studied here could explain 64.3 percent of those factors.

In order to determine the importance and role of the independent variables in predicting the dependent variable beta values should be used. Since the beta values are standardized we can determine the relative importance of the independent variables based on them. High values of beta show the relative importance and role of the variable in predicting the dependent variable. Hence, it can be concluded that respectively managerial infrastructure and then information and communication infrastructure exert the highest impact on the implementation feasibility of agricultural products e-marketing.

Table 4: Simultaneous Multiple Regression for Investigating the Effective Factors on the Implementation feasibility of Electronic Marketing

Independent Variable	B	Beta	t	Sig	VIF	Tolerance
X Intercept (constant)	0.817	-	3.59	0.000	-	-
Financial Infrastructure (X1)	0.197	0.194	2.35	0.02	2.11	0.473
Legal- Security Infrastructure (X2)	0.242	0.258	3.12	0.002	2.11	0.474
R=0.642    Adjusted R <sup>2</sup> = 0.488    F=51.64    Sig= 0.000						

Based on the results of Table 4 the linear equation obtained from the regression analysis is:

$$Y = .817 + .19X_1 + .24X_2$$

Where *Y* denotes the implementation feasibility of agricultural products e-marketing, *X*<sub>1</sub> denotes the information and communication infrastructure, and *X*<sub>2</sub> denotes the managerial infrastructure, and *X*<sub>3</sub> is the technical infrastructure.

### 5. Conclusion

This study was carried out in order to investigate the effects of Financial and Legal- Security, infrastructures on the implementation feasibility of agricultural products electronic marketing. The results of the study show that all two sets of factors affect agricultural products marketing in a way that all the two infrastructures; namely Financial and Legal- Security, infrastructures were able to explain 48 percent of the variance in the implementation feasibility of agricultural products marketing in Ilam Province. The results of the current study confirms the results obtained by Alavian et al (2012), Ali Ahmadi and Rezaee (2008), Mamdouhi and Seyyed Hashemi (2008), Dehghan (2004), Shahrokhi Yeganeh (2001), Woun (2007), martin and jagadish (2006) and Shehata et al (2006).

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