



ISSN 2278 – 0211 (Online)

## A True Picture of Electronic Business on Agriculture Sector of Southern Punjab, Pakistan

**Ghulam Shabir**

National College of Business Administration and Economics, Lahore, Pakistan

**Naqvi Hamad**

Government postgraduate College, D. G. Khan, Pakistan

**Muhammad Anosh**

National College of Business Administration and Economics, Lahore, Pakistan

### **Abstract:**

*The agriculture sector is the most important sector of the economy that can help in alleviating poverty and supporting human development in Pakistan. Most of the population of Pakistan directly or indirectly depends upon agriculture sector. Agriculture plays a vital role in the Gross Development Products (GDP) and in the foreign source of income. The purpose of this research is to study the factors (education, computer skills, internet skills, internet access, E-agri markets, government support, and political support) which are influencing the scope of electronic business in agriculture sector of southern Punjab of Pakistan. This research is first time conducted in the region of Southern Punjab which is a rich agricultural land with cotton, wheat, sugarcane, rice and tobacco etc. The targeted population is the farmers of Southern Punjab which cultivates minimum 15 Acres. The data is collected through questionnaires and interviews. The sample size is 150 and the population is divided into strata. According to situation stratified random sampling method is used. Data is analyzed through empirical study and SPSS. Surprisingly the data analysis has shown no effect of factors on the E-agriculture business. Facts are that the main hindrance in the E-agriculture business sector in Southern Punjab are the lack of education, computer skill, internet skill, internet access, online markets, awareness of online E-business sites, Political support and the most important is government support or training centers that changes the trend of traditional agriculture business to Electronic agriculture business.*

**Key words:** *Electronic Agriculture Business, Computer Skill, Internet Skill, Internet Access, E-agriculture Websites*

### **1. Introduction**

Pakistan is blessed with a variety of climatic and geographic systems which are suitable to produce virtually all kinds of food, fiber and cash crops with fruits and vegetables. Wheat and rice are the core food crops while cotton and sugarcane are the main cash/industrial crops and the economy of the country is virtuously dependent on them. Agriculture employs 45% of total labour force and 60 % of the rural population in Pakistan. Agriculture sector a main source of employment, it helps to meet food and nutritional necessities of population and offers raw-material to agro-based industries like textiles, flour mills, and cotton ginning's etc. The contribution of agriculture in total exports of Pakistan is 21.4% for the year 2013(PES, 2013). The output of Wheat, sugarcane, cotton and rice is three quarters of the total crops output in 2013 (FAO 2014). The Southern Punjab consists of following districts Dera Ghazi Khan, Bhawalpur, Multan, Rahim Yar Khan, Bhawalnagar, Layyah and Ranjanpur.

Internet provides the companies, new channels of communication and interaction which brings them more closely in the subject of business relationships. Due to internet the companies built more cost effective relationships with customers in sales and marketing as well as in consulting and support. A company most preference regarding customers is provides ongoing information, service, maintenance and support, which can be achieved by using the web. If the companies can use the web, it creates positive interactions with customers that can serve as the foundation for long-term relationships and encourage repeat purchases. Latest approaches to customer service and support have been encouraged by the web and other network technologies. The web is used as a medium through which customers can interact with the companies, at their ease, and find information on their own that in the past required a human customer support skilled.

E-commerce refers to the advertising, buying, selling and contacting users and buyers through internet. The concept of E-business and E-marketing was originated in western countries with the development of internet-working. The contribution of E-commerce in the

world businesses is over all \$4 million every year. It is observed that the E-commerce is fastest growing business of the world today's. Improvement recorded in online retail sales that grow from \$172 billion in 2005 to \$329 billion in 2010, contributing 14 percent compound annual growth rate (Johnson and Teach, cited in Tong (2010)). The recent growth of technologies especially Information Technology (IT) and its entrance into the field of commerce and business, usually referred to as E-business and E-commerce. The customers consulting and support usually referred to as E-consulting and E-support. No doubt that E-business and E-commerce with their other customer relating E-consultancy and E-support have vital importance but their back bone is internet. E-business refers as the use of Information and Communication Technologies (ICT) which support the activities of business. ICT depends upon the internet without it E-commerce and E-business is impossible. ICT consists of an effective business resource as it provides a frequent communication infrastructure as well as vast business opportunities (Andreopoulou et al, 2008). Uzoka et al (2007) showed that developed countries are well aware with E-commerce and other technology implementation whereas developing countries have slow trend to the global digital market. ICT have an importance to contribute in the economic growth and to improve quality of life. For example, these technologies are incorporating value chains within and among firms, industries and economic sectors (Fong, 2009). Internet technology has now made it possible to explore for and find on-demand and necessary information very easily. Furthermore, the ease of advertising or selling products worldwide using E-business facilities has led to the rapid expansion of business activities including agribusiness. ICT is necessary for the market information's to enter in a global market, Sudaryanto and Soekartawi (2009). E-business uses web-based technology to advance relationships. E-Business Transactions performed can be classified according to the partners who elaborate: customers, trade, and administration. The main kinds of E-businesses are business-to-consumer, business-to-business, and consumer-to-consumer.

Pakistan is one of the developing countries in South-Asia with a population of 200 million. Recently the government has set up energetic policies to endorse digital opportunities. The government of Pakistan trusts that ICT can be subsidized to generate income. It allows people and enterprises to capture economic opportunities by growing process efficiency and by promoting division in economic tricks and systems. In Pakistan the number of internet users is increasing with the passage of time. According to the survey of Pakistan in 1995, internet users were almost .01% but in 2010 these were 16% of the total population. People are interested in availing opportunity of E-trades. It shows that there is a lot of scope of E-commerce in Pakistan.

### 1.1. E-agriculture

The delivery of agriculture related services via information and communication technology (ICT) is called as E-agriculture. This type of services required access to PCs and internet. Following are the four different functions that an E-agriculture business performs by many farmers and organizations Information distribution, Input supply, Commodity trading; and, Logistics/supply chain management.

### 1.2. Current Agriculture market situation

Agricultural business activity starts from initial production and goes on until it reaches to hands of end consumers, all the business activities are done in the markets and the performance of these activities is called marketing (Kohls and Downey 1972). Consumers always want to purchase products at lower costs while farmers are interested in gaining the highest possible returns from the sale of their products. All the concerns like shippers, wholesalers, jobbers and retailers are doing their task in the markets for their own interests. Following are three types of functions that fairly performed in the market processes. First is exchange function that includes buying and selling. Second is a physical function that includes storage, transportation, and processing. The third is function that includes adjustment, supporting, risk-bearing, and market aptitude. Mostly the market strategies used by farmers are open-market strategy, closed-market strategy, or a combination of the both. In Southern Punjab three alternatives are used for marketing. One is open market channels and strategies that include direct sales to individual buyers, sales through auction markets, and sales through commission agents or brokers. Second one is closed market channels and strategies that include, forward contracts, crop contracts for future delivery and forward integration. While the last one is mixed marketing strategies that includes open market and forward contracts: small scale farmers prefer using group marketing rather than individual strategies due to the limited quota of planting area. In Southern Punjab the agriculture market is running at traditional manners. Farmers sell and purchase their required goods through the following models.

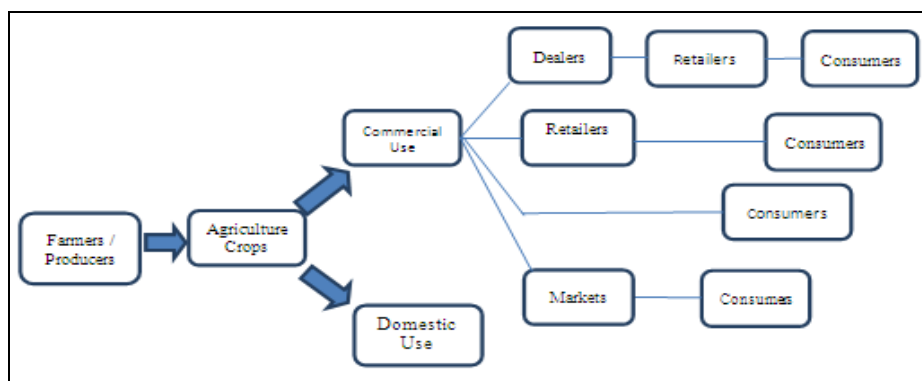


Figure 1: Producers selling model

According to this products selling model the farmers grow their products for domestic and commercial purposes. Commercially the farmers sell their products in four ways; to dealers, to retailers, directly to the markets and directly to the consumers. Similarly the product purchasing model is

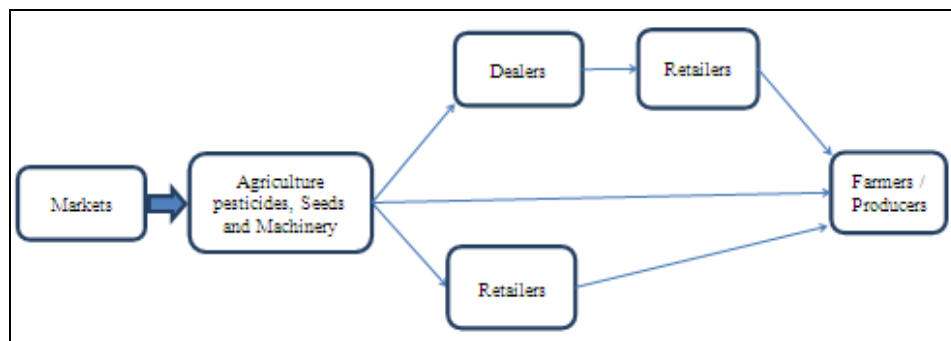


Figure 2: Producer purchasing model

Farmers or producers purchase their required goods through three ways; from retailers which purchase from direct market, from retailers which purchase from dealers, and farmer purchases from direct markets. As many parties involved in the selling or purchasing of goods there may increase in the expenses because the middle men (brokers) also take their marks up on each sale and purchase.

## 2. Literature Review

Agriculture comprises the major sector of Pakistan economy. Bulk of the population, directly or indirectly, is dependent on this sector. It includes 21.4 percent of Gross Domestic Product (GDP) and is the main source of foreign exchange incomes. In America commercial cotton exchange was established in the electronically oriented marketplaces late 1970's, (Sporleder, 1983). The development of agriculture and manufacturing sector of China is due to the adaptation of technical efficiency. The involvement of technical change and efficiency are about 53% in the state industrial sector, 55% in the agriculture sector and 58% in the rural industrial sector of China (Yanrui, 1995). It was observed that in Pakistan agriculture and manufacturing sectors had an input demand of technological change and technical efficiency. According to their findings in these sectors the major contributors to value-added growth were customary factors of production. In these sectors contribution of Technical change and technical efficiency resulted labour saving and capital uses (Ali and Hamid, 1996). The development of farmers farming in the Dominican Republic is due to the changes of technical, economic and allocated efficiencies. Agriculture sector was 70% by the survey of 1988 (Bravo-Ureta and Pinheiro, 1997). Chinese rice growth rate during reforms period was 3.11% but after the technical change experienced an average growth rate of 6.98% during the reference period (Fan, 1999). Bulgaria and Hungary use the technical change and technical efficiency regarding the age of farmers and women education for the productivity and efficiency of agriculture sector. These strategies affect positive relationships between experience and technical efficiency (Mathijs and Vranken, 2000). USDA's annual national Agricultural Resource Management Study, Demonstrated that the internet access to farms had is 29 percent by 1999 and E-business performed on internet about 15 percent of those, that mostly to purchase crop inputs (Morehart and Hopkins, 2000). If the non-price related terms of exchange, such as the logistics of assigning vendors and consumers together, and ways of relating products and concluding business are found, then the focus bends to a value focused negotiation (Henderson, 2000). A comparison with other neighboring countries regarding the productivity growth in Pakistan was lower as compared to in India, Sri Lanka, Bangladesh, Malaysia, Taiwan and Korea. The reason of this low growth was less contribution of technological change, technical efficiency in the agriculture sector Kemal and (Ahmed, 1992 and Kemal *et al.* 2002). It was recorded that the retail sales through the Internet are about 1% of all retail sales in the American economy (DOC, 2001). To consider at the effectiveness of E-commerce in agricultural input delivery would greatly benefit of contributors and planners. The general population continues growing of computer adoption at a stable rate as does internet use (U.S. DoC, 2001). Agriculture business operating in remote rural areas, the internet based technologies recommends the prospect of defeating drawbacks relative to urban areas, particularly those related to social isolation. Agriculture is fragmented structure, relatively isolated trading community and so inefficient supply chains mean that the Internet provides sufficient scope to reduce costs and improve service levels (Warren, 2002). Herselman argued that for agriculture development in rural areas depend upon the ICT. ICT represents the development of knowledge in rural areas of developing world which can share the knowledge and information effectively harvested (Herselman, 2003). Internet is the key component of technologies like ICTs (Information and Communication Technologies). Internet is becoming very important in every activity, including agriculture sector (Pickernell *et al.* 2004; Michailidis, 2007; Roldan and Wong, 2008; Mishra *et al.* 2009; Sudaryanto and Soekartawi, 2009). In most of the developing countries, huge financial, political, as well as scientific efforts have particularly determined on raising agricultural production yet, the results from civilizing the overall living situation in rural areas are, on the whole, quite poor. One of the reasons that is stated again and again even in new literature, is the neglect of agricultural marketing as a partial feature in the included development processing the rural sector (Jan, 2007). In different countries the ICT is playing an effective role in the agriculture progress and the decision making of farmers communities (Cash, 2001; Galloway & Mochrie, 2005; Opara, 2008; Taragola & Van Lierde, 2010). In Malaysia,

94% of the farmers used internet for the seeking of agriculture information while 85% farmers used the text messages to get the information (Hassan et al., 2010). Farmers give preference to watch television for the seeking of information about weather and markets regularly. So television technology is one of the good sources of agriculture information among farmers in developing countries (Fara 2009, Goyal 2010). ICT, in agriculture and rural development has spread very quickly over last two decades. It also plays an important role in the development of rural society (Fawole & Olajide, 2012). In the perception of Pakistan ICT in agriculture was progressively being accepted in Pakistan. It delivered the dual benefit of advance access to information for the poor farmers and different rural populations. Total tele-density has reached 65%, and as Pakistan is mostly a pre-paid market where rural people and farmers could afford these technologies such as mobile phones (Siraj, 2011). 480 cities and towns of Pakistan are not availing the facilities of broadband services, the major communities includes in this lack is rural area (Iftikhar, 2012). Technologies are not only providing instruction and information's to the farmers for the development of agriculture products, also provides the information regarding market for sell their products in virtuous rates (Ferroni & Zhou, 2012). Changes in the structure of agriculture have also contributed to the recognition of the current generation of information technologies. In the conventional farm supply system products moved from the manufacturer to a series of wholesale distributor's before reaching the retailer and finally the producer. Every link in this chain did most of its business with its fellow citizens on either side had little markups were added at every step.

### *2.1. E-agriculture Business in Pakistan*

There are many Internet companies vigorously involved in business-to-business E-commerce through a network of partner companies and farmers organizations in Pakistan. The primary goal is to increase efficiency and reduces costs. Following are the main electronic sources for agriculture development in Pakistan. In Pakistan the first largest agriculture information sharing web portal is Pakissan.com. It provides a source where the entire agri-community can join with each other, experiences, sharing ideas, and information. This portal offers features like the latest news and issues from all around the world as well as inside Pakistan. It also provides advisory, report and business center sections, including a regular special report on important aspects of agriculture. To promote the site, Pakissan.com starts a digital mobile van in 2002. The internet-ready van travels around the country to publicize rural farmers with the utilization of information technology in the agricultural sector, and how it can improve their profitability. Government site is also available that provides the agriculture information to the farmers, amis.pk; helps the farmers and consumers regarding agriculture sector of Pakistan. Dkeng.com; is an independent International trading company specializing in buying and selling of new and used earthmoving equipment on a worldwide basis since 20 years. Another website is alibaba.com; deals in import and distributes agricultural hand knapsack sprayers, trigger sprayers etc. The website paktower.com; is the leading exporter and importer in food stuff. The company site aliazrice.com; deals in exporters of rice in Pakistan. The website akriceint.com; deals in rice grower, processor, supplier and exporter of Pakistani Rice. The site phonebook.com; is Rice & food stuff items exporter & whole seller. On line web based company farooqfeeds.com; is offering main agriculture products raw material of animal feeds, feed stuff and cotton seed etc.

### **3. Methodology**

Methodology used is empirical and graphical representation of data. Data is collected from remote area of the Southern Punjab which consists of following districts Dera Ghazi Khan, Bhawalpur, Multan, Rahim Yar Khan, Bhawalnagar, Layyah, and Ranjanpur. Questionnaires and interviews are used to collect the data. The questioner is divided into five parts; first part includes demography, second for computer skills, third for internet skills, fourth for knowledge about E-agriculture markets and fifth for government supports and political supports regarding the E-agriculture business. The sample size is 150 and the response is 100% after the follow-up. The population is divided into eight strata. Each district is considered as strata and random sample is selected from strata through proportional allocation. The targeted population is farmers of Southern Punjab who cultivate 15 Acres or more. The reason for taking population of 15 Acres or more is that the farmers cultivating less than 15 Acres use crops for their domestic purposes.

### **4. Conceptual Framework**

The conceptual frame work is design to understand the factors that may effects the E-agriculture business in the Southern Punjab. According to framework the main factors that influenced the E-agriculture business in Southern Punjab are education factor, computer skills, internet skills, internet access, E-agriculture markets, government support and political support.

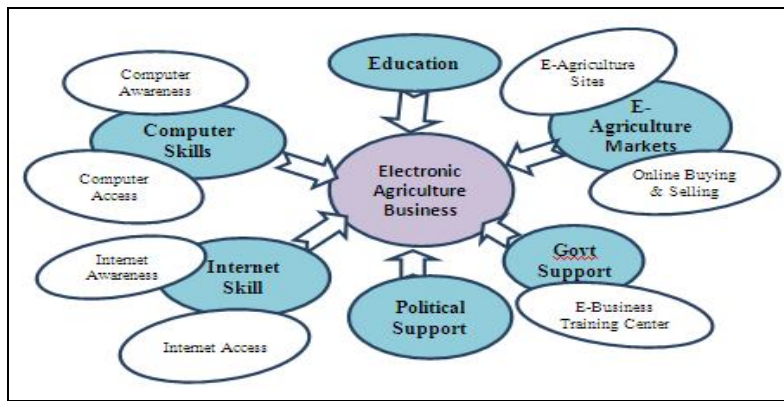


Figure 3: Conceptual framework

The E-agriculture business is dependent variable while all others are independent. Additive model is used here. Equation for the representation of the models is given as,  
 $Y_i = \alpha + \beta x_i + \epsilon_i$

Here is,  $Y_i$  represents the dependent variable,  $\alpha$  denotes the constant,  $\beta$  is regression coefficient of independent variables,  $x_i$  represents the independent variables also called as explanatory variables and  $\epsilon_i$  denotes the random error. So equation representing our conceptual frame work is given as,

$$Y (EAGB) = \alpha + \beta (EDU) + \beta (CS) + \beta (IS) + \beta (IA) + \beta (EAGM) + \beta (GS) + \beta (PS) + \epsilon_i$$

Here is,  $Y (EAGB)$  represents the dependent variable electronic agriculture business,  $\beta (EDU)$  is independent variable and represents the education factor.  $\beta (CS)$  represents the independent variable computer skills,  $\beta (IS)$  represents the internet skills independent variable,  $\beta (IA)$  is independent variable represents the factor internet access,  $\beta (EAGM)$  represents the independent variable electronic agriculture markets,  $\beta (GS)$  denotes the independent variable represents the government support, and the last one independent variable is  $\beta (PS)$  that denotes the political support.

**5. Hypothesis**

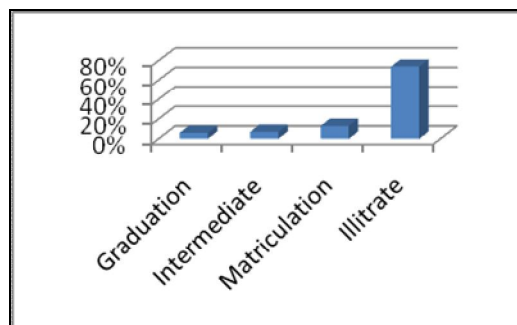
Electronic Agriculture business is dependent variable while the computer skill, internet skill, internet access, online markets, online selling, online purchase and government support are independent variables. Following hypothesis are generated on the basis of conceptual framework.

- Hypothesis H1: Computer skills have no significant and positive relation with E-agriculture business?
- Hypothesis H2: Internet skills have no significant and positive relation with E-agriculture business?
- Hypothesis H3: Internet access has no significant and positive relation with E-agriculture business?
- Hypothesis H4: Online agriculture markets have no significant and positive relation with E-agriculture business?
- Hypothesis H5: Government support regarding the E-agriculture business has no significant and positive relation with E-agriculture business?
- Hypothesis H6: Political support regarding the E-agriculture business has no significant and positive relation with E-agriculture business?

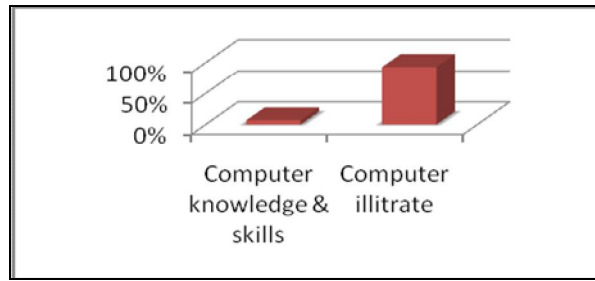
**6. Data Analysis**

The % age analysis of factors influencing the E-agriculture business in the region of Southern Punjab showed in the conceptual framework is as follows,

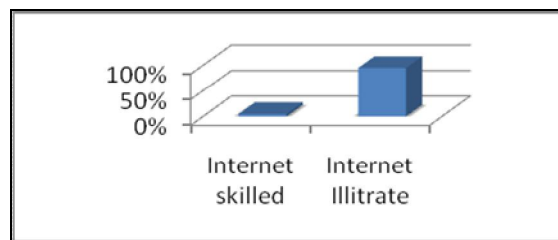
- **Education:** Education is the main factor which influenced directly to the E-business. 6% of the farmers have the graduation qualification, 7% of the farmers have intermediate education, 13% of the farmers have matriculation education and 74% of the farmers are illiterate.



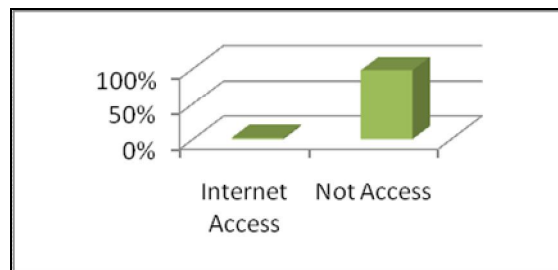
- Computer skills:** Computer knowledge and skills is another factor computer which influenced the online business. Without the knowledge and skills of computer no person can run business online. The data shows that only 7%farmershave the knowledge of and 93%have no computer knowledge and skills.



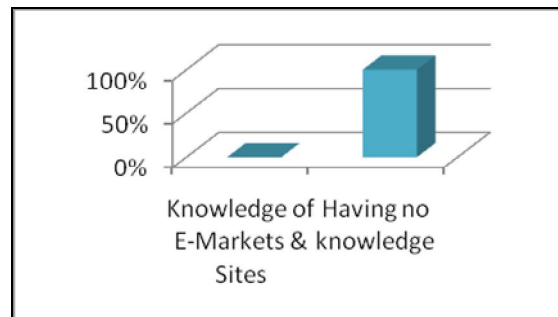
- Internet skills:** According to data collected only 5% farmers knows about the internet and 95% have no knowledge of internet.



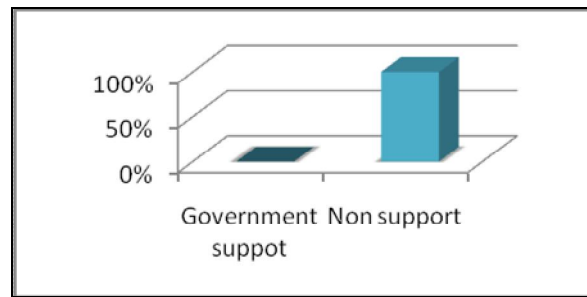
- Internet access:** Data shows that only 2%of the farmer’s have the access to the internet while 98% has no access to the internet.



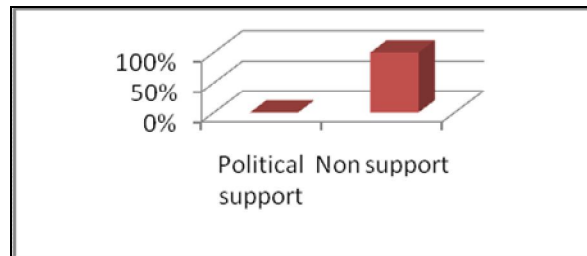
- Electronic markets and sites:** Data shows that farmers have no knowledge about the electronic markets and web-sites for E-agriculture business.



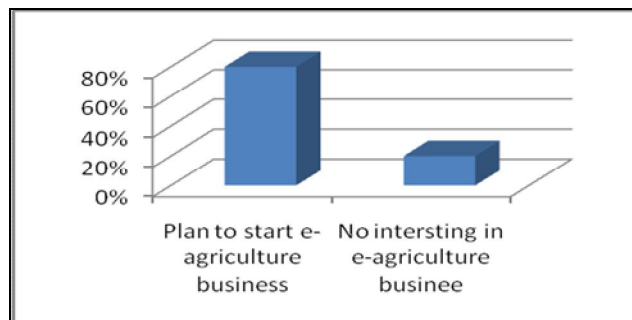
- Government support:** Data shows that farmers have no any support from government regarding the establishment of E-agriculture business in Southern Punjab.



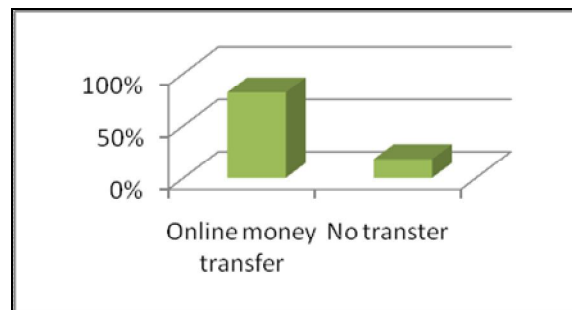
- Political support:** Pakistan is a democratic country. No doubt that Pakistan remained under the control of martial law administrators for a long period but democracy had been avail many chances to the administration of government. But no developing had been done in the E-agriculture business of Pakistan during the democracy and as well as in martial.



- Plan to start E-agriculture business:** Data collection shows that when the benefits of E-agriculture business were disclosed of to the farmers 80% of them are willing to start E-agriculture business instead of traditional.



- Online money transfer:** 82% farmers have the knowledge of online transfer of money and also use ATM and easy paisa services in Southern Punjab. This factor indicates those farmers are transferring money online because they have the facilities of ATM and easy paisa services. So if government provides them to services centers of E-agriculture business, they must use it because 80% farmers want to do E-agriculture business.



6.1. Regression Analysis

Regression analysis revealed good exploratory power of the model indicating R2 value i.e. the model explains 5.4% of the variance in E-agriculture business.

Mode	Std. Error of the Estimate	R Square	Adjusted R Square
1	.46399	.054	.008

Table 1: Model summary  
Predictors: (constant), PS, IA, EDU, GS, CS, IS, EAGRM

The  $R^2$  in the model is .054 which means that the independent variables (EDU) education, (CS) computer skills, (IS) internet skills, (IA) internet access, (EAGM) electronic agriculture markets, (GS) government support and (PS) political support can explain 5.4% of change in the dependent variable.

The adjusted  $R^2$  demonstrates that 0.8% of the variances were explained in this model. In this model standard error of estimate is 46% that explains the standard deviation of the estimate (Factors in this model which could not affect electronic agriculture business).

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.762	7	0.252	1.17	.324 <sup>b</sup>
	Residual	30.571	142	0.215		
	Total	32.333	149			

Table 2: ANOVA  
Dependent Variable: EAGRB  
Predictors: (constant), PS, IA, EDU, GS, CS, IS, EAGRM

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.145	0.044		26.258	0
	EDU	-0.102	0.076	-0.191	-1.342	0.182
	CS	0.641	0.302	0.36	2.119	0.036
	IS	-0.373	0.596	-0.143	-0.626	0.532
	IA	1.294	0.833	0.39	1.552	0.123
	EAGM	-1.388	1.128	-0.393	-1.231	0.22
	GS	0.5	0.568	0.124	0.88	0.38
	PS	0.059	0.485	0.018	0.121	0.904

Table 3: Coefficients

Beta explains the contribution of each independent variable. (CS) computer skills with beta coefficient of .641 and sig. value of .036 makes the low unique contribution in explaining electronic agriculture business. (EDU) education ( $\beta = -.102$ ;  $p=.182$ ), (IS) internet skills ( $\beta = -.373$ ;  $p=.532$ ), (IA) internet access ( $\beta = 1.294$ ;  $p=.123$ ), (EAGM) electronic agriculture markets ( $\beta = -1.388$ ;  $p=.220$ ), (GS) government support ( $\beta = .500$ ;  $p=.380$ ) and (PS) political support ( $\beta = .059$ ;  $p=.904$ ) all these independent variables shows no impact electronic agriculture business significantly. The statistical tests applied in case, all these independent variables also suggest there is no strong relationship between independent variables and electronic agriculture business.

Correlation		EAGRB	EDU	CS	IS	IA	EAGM	GS
EDU	Pearson Correlation	-0.012	-					
CS	Pearson Correlation	0.057	.763**	-				
IS	Pearson Correlation	-0.024	.656**	.798**	-			
IA	Pearson Correlation	0.01	.418**	.508**	.770**	-		
EAGM	Pearson Correlation	-0.03	.494**	.601**	.863**	.942**	-	
GS	Pearson Correlation	0.092	.206*	-0.033	-0.026	-0.017	-0.02	-



PS	Pearson Correlation	0.062	.253**	-0.04	-0.032	-0.02	-0.024	.814**
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Table 4: Correlation analysis

\*\* Correlation is significant at the 0.01 level (2-tailed)

\* Correlation is significant at the 0.05 level (2-tailed)

## 7. Results and Discussions

The regression analysis shows that there is no significant impact of independent variables on dependent variable electronic agriculture business. Also the correlation analysis shows that the correlations between variables are as follows, Education has correlation significant at 0.01 levels with computer skills, internet skills, internet access, political support, and electronic agriculture markets. Computer skills have correlation significant at 0.01 levels with internet skills, internet access, and electronic agriculture markets. Internet skills have correlation significant at 0.01 levels with internet access and electronic agriculture markets. Internet access has correlation significant at 0.01 levels with electronic agriculture markets. Political and government support also have the correlation significant at level 0.01 with each other's. Government support and education has the significant correlation at the level 0.05 with each other's. Electronic agriculture business has shown low correlation with computer skills; internet access, government support and political support while the remaining variables have negative correlation with each other's. The results of correlation and regression analysis support all hypotheses i.e., the factors have no significant and positive relation with dependent variable electronic agriculture business in the region of Southern Punjab. The reason for this effect is that the factors are not presented at sufficient levels in the Southern Punjab. When one thing is not present then how much it shows the positive relationship.

## 8. Conclusion and Suggestions

Online agri-business in Southern Punjab is not working properly due to lack of knowledge of computer skills, internet skills, internet access, government and political supports, and E-agribusiness markets. Pakistan economy depends upon the agriculture sector. The data analysis results show that the independent variables have no significant and positive relation with dependent variable electronic agriculture business in the Southern Punjab. So these results support our entire hypotheses that are defined above. The reason is that factors which can impact the result are not present in the population. If Pakistan does not apply IT to agricultural marketing in order to make it more efficient into day's global environment, many thousands of farmers in Pakistan will fall behind and Pakistan will ultimately drop to the competition. From the data analysis we observed that the farmers which were illiterate but they transfer their money through easy-paisa (online money transfer scheme). If government provides the facilities of E-agriculture business centers to the farmers, they must do their business online. On the basis of this study we suggest that the following are the initiatives that may increase the scope of E-business in the agriculture sector of Southern Punjab. These are as follows,

- To determine the parameters of the state of affairs, specifically spending and perception patterns of agri-business in light of the internet.
- To develop ideas for educational programs by the department of agricultural, environmental and development economics at Southern Punjab and agribusiness associations.
- There are problems with the Internet bandwidth and security used by Pakistan, which need to be taken into consideration. Pakistan also lacks a comprehensive environment for E-commerce, including relevant laws, regulations, and mechanisms for guarantee.
- The government's role is to make sure that producers and buyers meet in a marketplace. The government must provide the facilities of market exchange centers and investment missions where the different producers and buyers can meet. However, this is easier said than done. With E-commerce, we can explore the possibility of creating a virtual marketplace.
- Production of agriculture is still on a traditional basis its need to be commercialized by providing facilities of modernized packing, storing and food processing specially in the field of fruits, vegetables and live stocks.
- In Pakistan the agriculture sector has been the main absorber of labour force but without any general or technical education. These labours must attain mechanization and modernization to compete global agriculture business. So there is more demand for technically and professionally trained labour force.
- Agriculture research and development activities must be strengthening by government like vocational and technical training and agro-based professional education so that agriculture sector can be made more commercial and competitive.
- Government should establish the exchanges of E-services and also should encourage the use of these services.
- Government should establish standards (rules and regulations) of electronic trade, to avoid copyright and other cybercrimes that are great hindrance to new business or a barrier to E-commerce. Furthermore, governments should specify and enforce data shield laws, so that the public can have confidence in electronic transactions.
- Government should set up a broad transportation infrastructure to support E-commerce. The E-commerce is commonly used for the sale of consumer products.
- Government must remain careful about revising laws and regulations so that the monopolies in the field of telecommunication are stopped.
- Government should develop the system of electronic supply chain to overcome the load of market.
- Government should establish training sessions of farmers like workshops, exhibitions and literature in the form of handbooks in easy language forms and publications about the E-agriculture business.

- For the technical and marketing information government should established public net for skills through agriculture institutes and research and marketing groups.
- Most of the farmers live in the rural areas instead of cities the telecommunications in the rural areas are not as advanced as in the cities. Infrastructure of telecommunication in rural areas is improved so that farmers avail the chance for E-commerce which is not possible without internet.
- Literacy level in the farmers of Southern Punjab is very low than other field workers and very few farmers have computer skills. So government should make arrangements increase the literacy level and to make farmers computer literate.
- Government should maintain a marketing website that provides timely information to the farmers so that they may avail the opportunities immediately.

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