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Foreword

Tradition and Innovation – International Scientific Conference of (Agricultural) Economists
Szent István University, Gödöllő, 3-4 December, 2007

Tradition and Innovation – International Scientific Conference was held on December 3-6, 2007, in the frames of the anniversary programme series organized by the School of Economics and Social Sciences of the Szent István University. The aim of the conference was to celebrate the 50th anniversary of introduction of agricultural economist training in Gödöllő, and the 20th anniversary of the School of Economics and Social Sciences, which was founded in 1987.
The articles published in the special edition of Bulletin 2008 of the Szent István University were selected from the 143 presentations held in 17 sections of the conference and 30 presentations held at the poster section. The presentations give a very good review of questions of national and international agricultural economics, rural development, sustainability and competitiveness, as well as the main fields of sales, innovation, knowledge management and finance. The chairmen of the sections were Hungarian and foreign researchers of high reputation. The conference was a worthy sequel of conference series started at the School of Economics and Social Sciences in the 1990s.

Előszó

Tradíció és Innováció – Nemzetközi Tudományos (Agrár)közgazdász Konferencia
Szent István Egyetem, Gödöllő, 2007. december 3-4.

2007. december 3-6. között a Szent István Egyetem Gazdaság- és Társadalomtudományi Kara (SZIE GTK) által szervezett jubileumi rendezvénysorozat keretében került megrendezésre a Tradíció és Innováció – Nemzetközi Tudományos Konferencia, amelynek célja volt, hogy méltón megünnepelje a gödöllői agrárközgazdász képzés fél évszázada történt elindítását, s ugyanakkor a Gazdaság- és Társadalomtudományi Kar 1987-ben történt megalapításának 20. évfordulóját.
A Szent István Egyetem által kiadott Bulletin 2008 évi különszámában megjelentetett cikkek a konferencián 17 szekcióban elhangzott 143 előadásból, illetve a poszter szekcióban bemutatott 30 előadásból kerültek kiválasztásra. Az előadások jó áttekintést adtak a hazai és nemzetközi agrárközgazdaság, vidékfejlesztés, a fenntarthatóság és versenyképesség kérdései mellett az értékesítés, innováció, tudásmenedzsment, pénzügy fontosabb területeiről is. Az egyes szekciók elnöki tisztjét elismert hazai és külföldi kutatók töltötték be. A konferencia a Gazdaság- és Társadalomtudományi Karon az 1990-es években elkezdett konferencia sorozat méltó folytatása volt.

Dr. László Villányi
Dean / dékán

Contents / Tartalomjegyzék

Part I. / I. kötet

Agricultural and rural development and international view
Agrár- és vidékfejlesztés, nemzetközi kitekintés

Agricultural trade and marketing
Agrárkereskedelem, marketing

Sustainability and competitivness
Fenntarthatóság, versenyképesség

Part II. / II. kötet

Economic methods and models
Közgazdasági módszerek, modellek

Land utilization and farm structure
Földhasználat, gazdaságstruktúra

Innovation, education
Innováció, tudásmenedzsment

USING E-COMMERCE AS AN INFORMATION TECHNIQUE IN AGRI-FOOD INDUSTRY

BAHATTIN, CETIN – PARSEKER, ZEYNEP – AKPINAR BAYIZIT, ARZU– TURHAN, SULE

Abstract

The term of globalization that is popular nowadays appears thanks to the development of Internet. Internet technologies enables the flow of digital information across the world so that it has changed the ways in which people learn, work, communicate, consume and transact business. Also by means of Internet, it can remove the borders between countries in marketing their products. The idea of using data technologies in trading activities develops it rapidly. Becoming widespread of Internet increased the sharing of knowledge; therefore, e- commerce is gradually progressing all around the world. Customers are intended to reach information quickly and the firms are aimed at meeting the demands of the customers by e-commerce. The opportunities of electronic commerce in Turkish agri-food industries such as more transparent markets with easier access to information about possible transaction partners and their products provide interesting support options for establishing business relationships with other countries. The Internet's global connectivity and easy communication can improve business relations and also provide commerce in the global market. The Internet allows businesses to reduce their cost and with more people that use it will result in more money circulation. In this study, the impact and the consequences of the use of Internet and e-commerce on the marketing were evaluated. The data was collected from randomly selected agri-food firms.

Keywords: Electronic commerce, agri-food industry, global market.

Introduction

In the mid to late 1980s, the rapid growth in computer networks and online services directed companies including agri-food industry to use information and communication technologies (ICT). As a result of this progress, in order to remain competitive in the rapidly changing business environment of the twenty-first century small and medium sized enterprises (SMEs) need to change through the use of Internet and Websites (Cetin et al.,2004)

Nowadays, ICT become the most important sector in the world. Technological changes, non-separated part of daily life as for significant effects of ICT in economic and social life, contributes particularly to the development degree, competing power, capacity and income level of the countries. ICT has evidently an impact on both global and local markets.

Electronic commerce, commonly known as e-commerce, is described as the use of online facilities for doing business. Online facilities include the Internet, intranets, extranets, private networks, and any other facility that enables buyers to communicate with suppliers. (SANG-BAE 2001) E-commerce is changing the way organizations perform their tasks, interact with their customers and do business, and is not only concerned with the buying and selling of products and providing services via electronic means, but it also involves all the other activities that support the business process (Lu et al.,2001).

The evolutionary development and industry's increasing interest in and recognition of importance of technology is increasing and this increase is exhibited by the use of Internet (Wigand, 997, Thomas – Parkes, 2000). The Internet is the new method of transportation; it supports the electronic delivery of information, software, and entertainment (Watson et al., 1997). The emergence of e-commerce also significantly lowered barriers to entry in the

selling of many types of goods; accordingly many SMEs are able to use the Internet to sell goods. SMEs' existence and importance is gradually increasing and their contribution on economy, employment, and development can not be denied.

Companies should change their management practices when taking e-commerce into account, combining the real world with the virtual world so as to guarantee their competitive position in the market (Lima et al., 1999).

Within Turkish economic system, e-commerce must be seen in the context of markets, the places of exchange. A market is where supply and demand meets, and conceived to consist of all firms, government agencies, and individuals purchasing the commodity. When the market is competitive, it is characterized by many buyers and sellers, homogeneous products, easy entrance to and departure from the market, low costs for consumers who wish to choose among suitable goods from competing firms, and the availability of perfect information (Wigand, 1997).

Because of the adoption of new information technology, transaction based commercial activities such as information gathering, shopping, trading, brokering, banking, accounting, auditing, auctioning, financing, negotiating, collaborating, marketing, supplying, partnering, training, meeting, scheduling, manufacturing, distributing, servicing, and retailing are experiencing rapid change (Shaw, 2000)

All companies, either large or small, will face inevitable challenges brought about by the technologically enabled developments, which creates both risks and opportunities. E-commerce is in many ways an uncharted new frontier. Carefully thought-out business execution, strategy development, and research become important to understand all the rules and to identify rising opportunities to develop new competitive advantages. The information revolution is drastically reshaping global society and pushing the world toward an information-based economy. By effective usage of the Internet, these firms can be more innovative, have a faster response to environmental demands, and be able to adopt or change to attain a competitive advantage (Kleindl, 2000).

The Reasons of Using Internet By Agri-food Industries

As a consequence of research carried out by the Turkish agri-food SMEs directorate (KOBI), it was found that only 5% of agri-food SMEs in Turkey was using the Internet for their business (Cetin, et al. 2004). The challenges of the business environment for SMEs to contact with global markets are;

- lack of connectivity of these small firms with local and global markets,
- the need for more effective marketing availability of their products by Internet and web sites,
- providing authentic and organic food products to Turkish communities in other countries and to people with affinity to Turkey,
- enabling marketing facilities for people visiting Turkey in order to increase consecutive purchases (Cetin et al., 2005).

The main objective of internet is to provide and sustain competitive advantage. In addition to the challenges mentioned, there are many reasons of using Internet for the management of supply chain. These are;

- to reach any information in a quick way,
- to provide less transaction period and better customer service,
- to meet effectively the demand and the needs of customers,
- to increase the facilities of transport, and
- to reduce the cost of transport.

Four Effects of Information Technology on E-Commerce

Information technology is vital for a modern firm's optimal performance today, as it increases the firm's capability to coordinate business transactions within the firm, but also among firms such as between buyers and suppliers. There are four effects of information technology that reduced transaction and coordination costs (Wigand, 1997): (i) the communication effect, the advances in information technology allow more information to be communicated in the same unit of time, thus reduce transaction costs, (ii) the electronic integration effect, which has a close relationship with electronic linkage between buyer and seller, (iii) the electronic brokerage effect, an electronic marketplace where buyers and sellers come together to compare offerings, and (iv) the electronic strategic networking effect, the information technology enables the design and deliberate strategic deployment of linkages and networks among cooperating firms intended to achieve joint, strategic goals to gain competitive advantage.

Two Important Missions of Agri-Food Industries

If the company wants to be successful, it will survive not only based on its product but also it must have a competent management team, good post-sales services, well-organized business structure, network infrastructure and a secured, well-designed Website. The company shoul have technical and organizational aspects as well as being customer-oriented.

Good business planning and the fundamental laws of supply and demand are the technical and organizational aspects of e-commerce strategy. The company should not only supply an easy and secured way for customers to make transactions but also provide reliability and security.

Sellers can attract potential customers at a competitive price through the Websites which provides value, service and performance.

Benefits of Internet

The Internet's global connectivity and ease of use can improve business relations or provide commerce over interconnected networks using Web-based or Internet technologies in the global market (O'Brien, 1999).

By making real-time exchanges of information quick and easy throughout the value chain (from the creation of a product or service to its delivery), the Internet allows businesses to cut costs and cycle times, raise efficiencies, and provide more information, choice and value to consumers (Rao, 2003).

The benefits of ICT are:

- Increase an organization's geographic coverage beyond its traditional heartland,
- Reach to new customers,
- Providing a low cost, effective way of transacting with customers compared to traditional selling costs,
- Providing of customer convenience via a site that is open for business all day,
- Being a fast and flexible communications tool,
- Reshaping communications according customer needs based on account histories and other data,
- Enabling effective two-way dialogues between customer and organization to help achieve acquisition and retention objectives as an interactive marketing tool
- Providing vital measurement of events and accountability for marketers with importance to secure budget increases,
- Providing opportunities to source new supplies and distributors to maintain competitive advantage for global reach,
- Pass cost of sale savings onto customers and offer very competitive pricing,

- Providing marketers with a rich source of marketing data for decision-making purposes,
- Being best place for products or campaigns (Gay, 2007).

Advantages and Disadvantages of E-Commerce

E-commerce offers buyers maximum convenience. Consumers can visit the Websites of multiple sellers to compare prices and make purchases, without having to leave their homes or offices from around the globe. In some cases, consumers can immediately obtain a product or service. For sellers, e-commerce offers a way to cut costs and expand their markets. They do not need to build, staff, or maintain a physical store and distribute mail by ordering catalogs. Automated order tracking and billing systems cut additional labor costs, and if the product or service can be downloaded then e-commerce firms have no distribution costs involved. Because the products can be sold over the global Internet, sellers have the potential to market their products or services globally and are not limited by the physical location of a store. Internet technologies also permit sellers to perform the interests and preferences of their customers with the customer's permission and then use this information to build an ongoing relationship with the customer by customizing products and services to meet the customer's needs. E-commerce; however, has some disadvantages. Consumers are hesitant to buy some products online because of using their credit cards. Many people also consider shopping a social experience. For instance, they may enjoy going to a store or a shopping mall with friends or family, an experience that they cannot duplicate online. Consumers also need to be reassured that credit card transactions are secure and that their privacy is respected.

Material and Methods

The main aim of this study is giving empirical insights regarding the use of Internet-based applications in agri-food industries by questionnaires made by field studies as well as face-to-face interviews. These data are collected and evaluated from selected agri-food firms. The questionnaire was designed to measure management functions of firms such as production, purchasing, marketing, finance, usage frequency of Internet, their selling capacity and success criteria in food industry sub-groups.

To understand the Web practices across food industry, a through case and content analysis of the food firms was conducted. Content analysis is a common method for investigating the written documents such as Web pages and has been extensively used in marketing, advertising, and information system literature (Babbie, 2001, Liao et al., 2006).

According to content analysis the agro-food firms were sub-grouped as i) meat and meat products (*69*), ii) milk and dairy products (*131*), iii) fish and shellfish (*52*), iv) bakery (*106*), v) fruits and vegetable (*121*), vi) edible fats (*66*), vii) sugar (*3*), viii) confectionary and cacao products (*108*), and ix) others (*176*).

Results

The perceiving degree of basic management functions is examined on Table 1. Management functions are considered in different degree by food-industry sub-groups; however, production and marketing functions are perceived more important than other functions.

The highest importance degrees given to the marketing function are by meat and meat product industries (*91%*), fruit and vegetables (*89%*) and milk and dairy industries (*87%*). The lowest degrees are from sugar industry (*60%*) and edible fats industry (*61%*).

It is observed that some food industry sub-groups give importance to marketing and production while they give less perception to research and development function, human

resources and logistics. The function of research and development (RD) minds to be most important in confectionary and cacao products as well as fruit and vegetable processing industry. Logistics function is perceived as secondly important after marketing by milk and dairy products industry. Finance as a management function is found highly important in fruit and vegetable processing industry with fish and shellfish industry, as 83% and 76%, respectively.

Marketing function can be explained as transporting products or services to the customers who desire to buy it; otherwise, offering appropriate products and services at suitable time, place and price to the customers. Marketing operation by Internet enables companies to be in international and national trade within an inexpensive and fast way.

Table 1. Perceiving Degree of Management Functions by Firms (*%*)

Food Industry Sub-Groups	**Management Functions**						
	Production	**Marketing**	**Purchasing**	**Logistics (Preparation and Distribution of the product)**	**Finance**	**Human Resources**	**Research and Development**
Meat and Meat products	83	91	75	82	60	70	73
Milk and Dairy products	79	87	72	85	58	67	75
Fish and Shellfish	73	67	81	75	76	70	70
Bakery products	56	61	50	52	70	45	54
Fruit and vegetable processing	70	89	74	79	83	65	77
Edible fats	60	62	55	56	71	56	51
Sugar	54	60	51	71	55	48	50
Confectionary and Cacao products	77	83	60	76	60	57	80
Others	80	72	63	68	70	55	75

It is found that among different food industry sub groups the use of Websites and Internet as a marketing tool is common in fruit vegetable processing industry with confectionary and cacao products industry, followed by fish and shellfish (*83%*) and milk and dairy products (*81%*).

In respect of findings, firms that use Internet in their marketing transactions as being confectionary and cacao products with fruit vegetable processing industries take part at the first place in turn in order value of 4.37 and 4.14. Average of frequency usage of milk and dairy products (4.05) and meat and meat products (3.90) with these values remain at the second place. The lowest average frequency usage of Websites and Internet are observed in bakery (2.20) and sugar products sub-groups (2.33).

Firms that use ICT more than 8-10 years are classified as “modern” and that use less are described as “traditional”. Evaluation of firms showed that modern firms use Internet technology and Websites more than traditional firms. Among modern firms of confectionary and cacao products with fruit vegetable processing industries have the most frequent users of ICT, as 92% and 91% respectively. On the other hand, edible fats industry, although being one of the important ingredient for many food processing industry has the lowest usage value of 67% (Table 2). For traditional firms, confectionary and cacao products with milk and dairy

products industries displayed the highest usage frequency where bakery products group has the lowest value of 45%.

Table 2. Using Internet and Frequency Usage in Marketing Function by Firms

Food Industry Sub Groups	User Ratio (%)	Order	Frequency Usage		Traditional Firms		Modern Firms	
			Average (%)	Order	Average (%)	Order	Average (%)	Order
Meat and Meat products	79	6	3.90	4	61	5	85	4
Milk and Dairy products	81	4	4.05	3	67	2	88	3
Fish and Shellfish	83	3	3.17	6	58	6	84	5
Bakery products	68	7	2.20	9	45	9	70	8
Fruit and vegetable processing	89	1	4.14	2	64	4	91	2
Edible fats	65	9	2.58	7	55	7	67	9
Sugar	67	8	2.33	8	50	8	72	7
Confectionary and Cacao products	85	2	4.37	1	70	1	92	1
Others	80	5	3.56	5	65	3	82	6

5 Range Scale for Frequency Usage (1=Very rare……5=Very Frequent)

Table 3 summarizes the marketing performance of firms of food industry sub-groups. The change in marketing capacity for the last five year period is evaluated in a six range scale from unchanged to more than %100. After implementation and use of ICT the marketing performance is increased in confectionary and cacao products, milk and dairy products with fruit vegetable processing industries (Table 3).

Although it is observed that in all food industry sub-groups there is an increase in marketing performance after implementation of Websites and using Internet, the increase in bakery and sugar industries are less than other industry groups as these products are necessary for human need and their demand elasticity is very low.

It is determined that increase in marketing capacity of confectionary and cacao products with milk and dairy product industries are more than 25%. These are followed by fruit and vegetable processing industry (Table 3).

In order to sustain competitive in global market food processors or promoters should adopt Internet technologies. The struggle with technology, lack of the necessary skills and knowledge (Webpage, e-mail, etc) as well as economic problems may result in reduction in marketing power.

The ICT has become a major component of the marketing strategy and operations of businesses. In the aftermath of the evolution of the competitive market environment from a physical marketplace to one encompassing the physical and electronic marketplaces, researchers in marketing have focused on myriad issues relating to competing in the new environment (Kalaignanam et al., 2007).

Table 3. Marketing Performance of Firms after Implementation of Website

Food Industry Sub Groups	Change in Marketing Performance (%)						
	Unchanged	>%10	%10-25	%25-50	%50-100	>100	
Meat and Meat products	5.1	20.7	32.6	29.9	10.4	1.3	100.0
Milk and Dairy products	-	5.8	24.2	30.8	36.4	2.8	100.0
Fish and Shellfish	3.9	16.6	15.3	20.6	37.5	6.1	100.0
Bakery products	15.1	36.7	20.5	10.2	17.5	-	100.0
Fruit and vegetable processing	4.8	14.3	10.7	25.3	42.7	2.2	100.0
Edible fats	6.9	20.4	35.4	15.8	20.5	1.0	100.0
Sugar	10.3	24.9	32.8	22.3	9.7	-	100.0
Confectionary and Cacao products	2.1	14.1	9.2	26.1	39.6	8.9	100.0
Others	3.4	14.7	30.4	25.6	20.3	5.6	100.0

Table 4 gives the firms' sights about their own active Websites. ICT exhibits specific media characteristics or so-called 'Web features' that distinguish it from other types of media (i.e. TV, radio or newspaper). These media characteristics encompass several dimensions ranging from technical features, content-related criteria, features related to user interaction, to the management of information on the Web or even social or community-related aspects. It is often reasoned that in order to be successful, companies should make implementations on their Websites or in related business processes. Websites are mostly evaluated under technical, or other aspects of very limited conceptual breadth, with which 'success' is measured, for example design, usability, features, acceptance of Webpages, trust aspects, customer satisfaction, etc. (Bennett – Koudelova, 2002, Shim et al., 2002).

Although a Web design guideline may seem to be as trivial as an individual advice to a Web design problem and solution strategies, its integral importance can be inferred from its strong tie with usability and Website design, which also influence Web performance.

It is difficult to assess the business value from implementing Web features on companies' marketing performance or success in cyberworld. It is evident that the implementation of measures on companies' Websites is crucial for success in general.

With respect to the results of the present work a commercially successful Website should mainly have the following characteristics:

- to be found in the WWW
- fulfillment of the customer requirements and expectations (attractivity, communication, content)
- having a convincing effect (like a product with convincing quality criteria)
- concentrating on the essence of the information
- providing an immediate benefit for the visitor
- being fast and distinct (loading times, navigation, clearness)
- working correctly with differing browsers, computer-systems, -configurations and -displays

There are differences among food industry sub-groups for sufficiency and success criteria of Websites. All industries use Internet to have an open vision and mission, and particularly to

communicate with customers to fulfill their requirements. The main reasons to have an active Website for the agro-food industry companies appear as i) to sustain competitive in marketing, and ii) to perform e-commerce, the function of modern marketing. In addition, having an integrated network system is in the first place for fruit and vegetable processing industry (4.80), confectionary and cacao products (4.67) with others (4.85).

Table 4. Firms' Own Sight about Sufficiency of Their Websites

Food Industry Sub-Groups	Success Criteria						
	Open Vision and Mission	Customer Satisfaction	Having Integrated Network System	Scheduling Sale Period	Sufficiency Administration Personnel	Marketing Experience	Up-To-Date of Website
Meat and Meat products	4.24	4.18	3.98	4.18	4.22	4.11	4.08
Milk and Dairy products	4.65	4.45	4.27	4.40	3.96	4.07	4.24
Fish and Shellfish	4.10	4.20	3.90	4.07	3.89	3.94	3.14
Bakery products	3.76	3.97	3.54	3.10	3.28	2.88	3.00
Fruit and vegetable processing	4.61	4.73	4.80	4.05	3.99	4.54	4.22
Edible fats	3.98	3.67	3.77	3.70	3.25	3.45	3.41
Sugar	4.05	3.60	3.81	3.66	3.14	3.56	3.07
Confectionary and Cacao products	4.68	4.53	4.67	4.45	4.36	4.65	4.41
Others	4.46	4.71	4.85	4.76	4.45	4.72	4.52

5 Range Scale (1=Unimportant,……, 5=Very Important)

Conclusions

The paper focuses on how sustainable growth of Turkish agri-food companies in the global market can be accomplished through the use of the Internet and evaluates the forms of promotional marketing facilities undertaken by agri-food SMEs in Turkey.

Food industries in Turkey will increase the chance of competition related with constituting an effective, productive and appropriate work conditions. To improve the work conditions, to provide information security and technology can easily compete in international arena.

E-commerce models assist firms in establishing new markets and determining selling capacity. Putting communication technologies together with low cost and security in marketing, firms can directly get more profit with an increase in selling capacity.

By using Internet in agri-food industries in Turkey, there will be a significant increase in job opportunities; selling products become easy, advertisement, promotion, support before and after selling are used more effectively; come into contact with more customers by automatic information distributor system; business productivity analyses and planning are done more easily.

Food industries should be in electronic atmosphere in order to reach international markets, otherwise, market's share will decrease. Firms that do not have a Website and do not even use

e-mail, will have difficulty in developing their business, setting up new job connection and increasing their marketing power.
In summary, the marketing function for designing an active Website is the main driving force for meat and meat products, fruit and vegetable processing, milk and dairy products industries.
Fruit and vegetable processing with confectionary and cacao products industries use ICT more than other agri-food industry sub-groups as a marketing tool.
The main objectives for implementing a Website are i) product promotion, ii) sales and iii) company promotion, with some variations due to intensive/nonintensive use.
To have an open vision and mission, to fulfill customer requirements, to offer variety of new products within a scheduled selling period are the most important features of Websites for determining feasibility.
There are a number of potential barriers for conducting business on the Internet; i) technical factors such as access to broadband (ADSL or ISDN) and application of appropriate e-commerce software, ii) risk aversion, iii) resistance to change, iv) lack of financial resources, v) inefficient firm/product promotion, vi) lack of the necessary skills, and vii) poor quality.
The use of the Internet by Turkish agri-food companies is important particularly for "business to business" uses. It can be concluded that the challenge of how to sustain growth in a global market can be responded to by enabling small Turkish agri-food firms to gain access to the Internet, link to international markets, develop "more user-friendly" websites, and establish a long-term costumer base by the use of the internet and e-commerce.
Reasonable support is needed for adoption of e-commerce as a critical success factor for marketing in the future. The adoption of ICT is important to encourage the establishment of technology-enabled agri-food SMEs.

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