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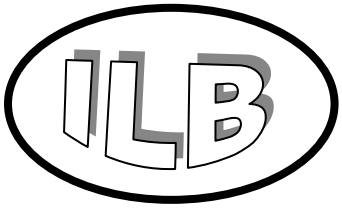

Requierements, Barriers and Advantages for the Adoption of E-commerce in the Spanish Agri- Food Sector

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Abstract

The following paper shows the work in progress in the frame of the specific support action Program "E-Trust". A initial qualitative study was carried out in order to find out evidences and opinions about the performance of e-commerce in the agricultural and food sector.
The paper shows a brief description of the barriers, advantages and e-business tools related with the adoption of e-commerce. In order to explore this topic, qualitative interviews were conducted. The results of this first stage related with gaps and barriers in the e-business agricultural sector. Some results are the concerns such as the reluctance to adopt e-commerce strategies, the challenge of making perceptible the sensory characteristics of perishable products, the vulnerability to "electronic mistakes" and the necessity of laws to allow persons to complain just in case.

Keywords: *Ecommerce, barriers-advantages, agrifood, Spain*

1. Introduction and Problem Description

The Agricultural, Food and Beverage sector which collects the activities related with production and transformation from raw products to human consumption, presents a lower rate of Internet and Communication Technologies (ICT) adoption than other sectors and less development of Business-to-Business strategies (European Commission, 2006-2007). Although the theoretical benefits of e-commerce in agricultural and food sector are already identified such us the promotion on information flow, transparency in market and prices, reduction or elimination of transaction cost and the increase in online cooperatives (Ferentinos, K. et al. 2006), the low rate of the adoption leads to the reflection about it.
Many characteristics of food products may only be analyzed after using them (experience characteristics); others, cannot be examined at all (credence characteristics). Furthermore, the lack of physical inspection of the product and contact between transaction partners make e-commerce too anonymous for the Agrifood sector transactions. This fact may cause a lack of trust, which could be responsible of the low adoption in the sector (Fritz et al. 2007).
In terms of the communication technology adoption there are several issues dealing with the application of Information Technologies in the Supply Chain Management. However, just a few articles relate the ICT with Supply Chain Management (Gunasekaran, Ngai, 2004) with Information Technologies aimed to e-business and focused in agricultural and food sector.

2. Background of the Qualitative Study

2.1 E-business The European Food & Beverages Industry

E-business can be defined as any business transaction that takes place using information and communication technologies. This broad definition includes three mainstream e-business

applications: commercial activities (such as buying and selling products and services electronically), business activities (such as enterprise resource planning, customer relationship marketing as well as collaboration in new product development) and social activities such as supporting social interaction and cultural enforcement (Vlachos, 2006).
Under the umbrella of the e-business activities and the information society paradigm a new behaviour and technical performance is needed for the agricultural and food products. There are different types of transactions according to the type of trading partner. These e-business applications are classified into several categories such as Business to Business (B2B), Business to Consumer (B2C), Business to Government (B2G) and Government to Citizen (G2C) and they deal with the adoption of new technologies, new way of making business and the developed of new products in the agrifood sector in order to reduce cost and promote market transparency.

2.2 E-Business applications and tools

Internet is an infrastructure which allows a communication network and together with software applications, it facilitates the performance of uses. The type of e-business applications can be classified into three categories according to the purpose it serves: informative purpose (i.e. corporative web site, business communication transactions, Extensible Markup Language (XML), etc) transaction purpose (facilitation current or future transactions with business partners and customer, for example, e-invoicing, EDI message, short business documentation, etc) and growth purpose (reduce transaction cost, spreading in new markets and customers, etc) (Vlacho, 2006).

2.3 Barriers to the B2B adoption in agrifood sector

Barriers to the adoption of in B2B environments are mentioned in different reports and studies. The European Business report 2006-2007, shows the following barriers not focused on agricultural and food sector: company too small, technology too expensive and complicated, incompatibility systems, legal issues and lack of reliable IT suppliers.
Other Spanish studies carried out by AECE [AECE, 2001] and the E-Commerce Observatory of Madrid Chamber of Commerce [Cámara de Madrid, 2003] added specific barriers to the Agricultural and Food sector: lack of standardized product and knowledge (specific human resources training), company culture (culture endurance and narrow minded), and some companies prefer to continue with old strategies, the ratio cost/benefit does not justify the investment.

Other barriers related with an e-business environment are [E-Thematic, 2003]:

- Organizational barriers: uncertainty about business models, the agrifood sector should deal with specific business models according to the food sector characteristics;
- Operational Barriers: changing procedures, lack of technological and human skills and fragmentation in the software market;
- Legal and jurisdictional issues: difficulty to understand how the law is applied to e-commerce because in some areas (digital signatures, tax laws, customs tariffs) it is confusing, how to dispute resolutions; Infrastructure and security issues.

Trust is not mentioned explicitly like a barrier these previous studies especially in agricultural and food sector. It is suspected that the lack of trust may be considered a threat for developing e-business strategies. It is considered that the lack of trust it is not enough explored in agrifood sector and it has been taken as a starting point in the research.

Some interviews were carried out in Spain in order to explore a first approach about if trust is a barrier in the food and agriculture sector.

2.4 Advantages and potential e-business adoption in agricultural and food sector

Many theoretical benefits of e-commerce in agricultural and food sector are mentioned: promotion of information flow, market transparency and price discovery, facilitation of industry coordination, reduction of elimination of transaction costs (Leroux N et al. 2001), increase in online cooperatives (Ferentinos, 2006), huge comparison and information availability, lack of infrastructure requirements when storing is needed, immediate transactions, permanent contact with suppliers and customers (Flavián, Gurea 2003), and freshness of products due to the fact that distribution channel may be reduced (Ricolfe, Escribá, 2003).

3. Methodology

3.1 Qualitative Interviews

In order to develop a qualitative approach towards trust in e-commerce in agrifood sector framed in the "Trust Model for Electronic Commerce in the Agrifood sector", several interviews were conducted with significant representatives and professional of ICT technologies of the Spanish sector. The purpose was to know how e-business and trust is performed to have a broad overview on the main problems faced in adopting e-commerce, interviewed were convenience chosen. The questionnaire consisted on a short list of twelve open questions. The main issues asked to the interviewees were related with the needs, opportunities, the preconditions for e-business adoption and the suitability of e-commerce for the agrifood sector. The types of representatives interviewed are listed in the table 1. The interviews were transferred to an extended summary.
The results obtained by the interviews make up a previous and qualitative scenario for later quantitative studies.

Table 1. Questionnaire

1. Do you use E-commerce in your business transactions? If YES, 1.1 When did you start? a) Less than 1 year ago b) Between 2 and 5 years c) More than 5 year 1.2 Which proportion of your business account e-commerce? (%) 1.3 Do you expect to increase e-commerce in your company? 1.4 Do you have a web page? 1.5 Others. If NOT, Which are the main reasons? 1.6 No interested in new technologies. 1.7 Difficult to understand 1.8 Do not suit my product- service requirements. 1.9 Difficult to operate. 1.10 Very expensive 1.11 Others
2. Please, identify the main elements which give you: Trust in e-business (What elements do you aim to trust in e-business? (I.e. Brand reputation, certification, legal control, on time deliveries). Distrust in e-business. (What elements do you aim to do not trust in e-business?)(I.e. Brand reputation, certification, legal control, on time deliveries).
3. What measures/technical elements give/would (if e-processes are not used) give you trust in your e-processes? (Web cameras, microphones, videoconference…etc.).
4. What elements/procedures do you miss/need in your e-processes which would give your more trust in them?
5. How do you create/perceive a "trusted market environment" for selling/buying your products) (Keep in mind typology 3. market environment: control institutions, informal institutions, legal institutions, reputation)
6 Describe which are the main factors to select your suppliers/customers to trust in them (Quality, price, location, confidence, reputation…)
7 In your opinion which are the main obstacles to use Internet and trust in the transactions (High cost and tariffs, lack of personnel expertise, lack of tangible, benefits…)
8 .In what business activities do you use e-commerce? In what activities do you think that e-transactions does not work related to trust? (Request of goods and services, to carry out payments, electronic reception of good and services…)
9 What barriers do you find for buying by e-commerce related with trust? (Difficulties for some products and services, small number of suppliers, cost of delivery, logistic problems, payment and contracts uncertainty…)
10 hat advantages do you find when buying-selling by e-commerce? (Cost saving, speed of the processes, simplification of the tasks, greater number of suppliers…)
11 How do you sell or develop activities by e-commerce? What do you show your partners to trust in you? (Through the web page and/or e-market place, description of product and services, certification, stamps)
12 Which are the activities developed by firms selling through e-commerce (information of products, services and prices, get orders and payments, deliver goods and services…)
13 What problems do you find in firms selling through e-commerce? (Lack of potential clients, payment uncertainty, contracts uncertainty, logistic problem, maintenance cost of the system, high priority of traditional channel…)
14 What are the advantages for selling through e-commerce? (Cost reduction, get new clients, market geographic expansion, better quality of the service, higher speed of the process, simplification of tasks, to avoid to yield quota market to companies already operating in e-commerce…)

Table 2. Interviewed persons

Sector	Type of Company	Company size (number of employees)	Level in value chain	Function of the respondent	Sector	Type of Company	Company size (number of employees)	Level in value chain	Function of the respondent
Grain	Grower-Transformer	2 More than 500	national National-international	Wholesaler ICT manager	Fruit & vegetable	Dairy Cooperative	More than 29 growers +technical staff	national international	Directive and Cooperative member
	Transformer Retailer	2	local	Owner/manager		Family enterprise-Grower	2	national	Manager
	Grower-buyer	9	local-regional national	Manager		Wholesaler	Around 20	national	Manager
	Transformer	87	national	Quality Manager		Transformer	Around 100	national-	Purchase
Olive oil	Bottler		National	Technical Director	Meat	Growers-Transformer	5 5500	regional Regional international	Veterinary Key Account Manager
	Grower-Bottler	More than 500	National International	Marketing Manager					
	2nd grade	20	National	Sales Manager		Transformer	- -	national	Quality Director
	2		National	Producer ,		Wholesaler	20	National	

Source: Authors

4. Results

Regarding to the requirements for not adopting the ICT tools in agricultural and food B2B sectors, some reasons were constantly mentioned. B2B is not aimed for all products in the food sector. It suits those that are not perishable with a high added value and with a low distribution cost in relation to the final price (i.e., wine, high quality olive oil, traditional products, etc). In order to supply the raw inputs the e-relations becomes more complicated in terms of trust to assure the organoleptical attributes of the raw products (quality, freshness, taste…). The degree of differentiation of some agrifood products makes the e-transactions very difficult, and when the business relationship concerns with not standardized products e-commerce does not work easily.

Other important characteristic that influences the adoption of B2B is the intrinsic and social characteristics of agricultural and food sector. The traditional way of transacting (knowledge by acquaintance and physical approaches) seems to be the most guaranteed and proved one. Moreover, if there is not a common intention and a strict request (by clients) to access to a new way of transacting, no concrete advantages seems to come from accessing e-commerce. Operators underlined also the need for "signals" in e-commerce, in order to be assured (institutional, legal, financial signals). Information and communication are key factors which can help the development of e-commerce, but reputation of business operators and their position in traditional markets seem to be still considered very relevant in the decision to access e-marketplaces and e-environments. However, under the "umbrella" of e-business a lot of administrative transactions are carried out specially exchange of information, search of new suppliers and data exchange.

Within the interviews some preconditions for e-business adoption were able to be found out. One of the preconditions is getting standardized products with enough quality attributes. The less suitable products to e-business are those food products less processed and with less long life time.

The interviewed persons have a special concern about trust issues. They showed themselves worried about how and where complaining and the necessity of physical documents to complain. Moreover, there are worries about the ignorance of the players who take part in the bu-

siness process, the possibility of phishing and spying or intromission in key company data. Regarding sectors the main conclusion found is that de ICT adoption depends on the place that the company is located along the supply chain and it does not depend on the sector.

5. Conclusions

Interviews show that e-commerce needs some more time to be culturally accepted in agricultural sector. The interference with traditional ways of doing business is seen as a real problem, together with the lack of the perception of virtual environment as a business tool. Institutional guarantees are seen as important, but reputation seems to play a key role in this environment, together with marketing and business players' decisions. Technological aspects need to be improved in order to better satisfy each products' needs. Regarding to the suitable agricultural products the interviews show that entrepreneurs are reluctant in adopting new technologies, especially in fresh products because it is a big challenge to make perceptible the freshness quality attributes of the products to the potential customers. E-commerce is more suitable for those products with high added value and with possibility to be easily stored. Regarding the virtual environment, it is mentioned a special worry about the spreading of the personal data, business partners, etc., and to be vulnerable to "electronic mistakes". A legal environment where the rules of the game are established is a crucial issue. It is very important as well to have "evidence" and proof just in case of complaint.

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