

DIGITAL MARKETPLACE FOR DEVELOPING COUNTRIES

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Abstract: In the networked economy firms are recognizing the power of the Internet as a platform for creating different forms of relationships and collaborations aimed to enhance value and achieve a sustainable competitive advantage. Digital Marketplaces represent one of the most powerful solutions adopted by firms to support the networking practices among firms, especially among SMEs. However in developing countries the potentialities of digital marketplaces remains largely unexploited. Different human, organizational and technological factors, issues and problems pertain in these countries, requiring focused studies and appropriate approaches. This article argues that in order for firms in developing countries to benefit from digital marketplace platforms it is necessary to root them in an assessment study which permits to understand the firms preparedness to use the digital marketplace in terms of technological infrastructure, human resources' capabilities and skills, integration and innovation level among firms. Based on the outcomes of this assessment it is then possible to find out a viable digital marketplace model that fits with actual readiness status of firms and helps them to develop progressively the necessary resources and capabilities to enhance their competitiveness in the current digital economic landscape.

1 INTRODUCTION

The widespread diffusion of e-Business and rising global competition have prompted a dramatic rethinking of the ways in which business is organized. The new internetworking technologies, that enhance collaboration and coordination of firms and foster the development of innovative business models, are increasingly important factors for firms competitiveness.

An important trend in various industries is the creation of Digital Marketplaces as a key enabler that allows firms to expand the potential benefits originating from linking electronically with suppliers, customers, and other business partners. The number of new digital marketplaces grew rapidly in 1999 and 2000 (White et al. 2007). In sectors such as industrial metals, chemicals, energy supply, food, construction, and automotive, "e-marketplaces are becoming the new business venues for buying, selling, and supporting to engage in the customers, products, and services" (Raisch, 2001).

Over the years digital marketplaces have produced significant benefits for firms, in terms of reductions in transaction costs, improved planning and improved audit of capability, which, if well

communicated, might provide strong incentives for other organisations to adopt (Howard et al. 2006).

On the other hand, it is widely believed that digital marketplaces offer increased opportunities for firms in developing countries by enabling firms to eliminate geographical barriers and expand globally to reap profits in new markets that were once out of reach.

However, it has been observed that although digital marketplaces are already appearing in almost every industry and country a very small number of them have been able to grasp the benefits and resist on time. In 2006 just 750 active digital marketplaces were registered on the directory of eMarket Services compared to 2,233 digital marketplaces identified by Laseter et al in 2001. the statistics show also that the use of digital marketplaces in developing countries is really low. The study conducted by Humprey et al in 2003 related to the use of b2b marketplaces in three developing countries shows that 77 per cent of the respondents had not registered with a digital marketplace. While of the remaining 23 per cent that had registered with one or more digital marketplace, only seven had completed at least one sale. These statistics demonstrate the low levels of adoption across firms as result of a number

of barriers faced for the adoption of digital marketplaces.

Humprey et al (2003) identifies as inhibiting factors for developing countries the perceived incompatibility between the use of digital marketplaces and the formation of trusted relationships; lack of preparedness, awareness and the need for training; sophisticated technologies.

Marketplaces' operators provide standardized solutions that do neither match the needs of developing countries nor allow this latter to exploit new technologies' potentialities.

In order for developing countries to grasp the advantages of digital marketplaces it is not feasible to simply transfer technologies and processes from advanced economies. ... people involved with the design, implementation and management of IT-enabled projects and systems in the developing countries must improve their capacity to address the specific contextual characteristics of the organization, sector, country or region within which their work is located (Avgerou and Walsham 2000).

Therefore, what can and needs to be done in these contexts is to find out a digital marketplace model that is rooted in an assessment study which permits to understand the firms preparedness to use the digital marketplace in terms of technological infrastructure, human resources' capabilities and skills, integration and innovation level among firms.

Moving away from these assertions, the aim of this paper is to provide a conceptual framework for finding out an appropriate digital marketplace business model for food firms in Tunisian context that matches with their specific conditions. In specific we have undertaken a study among food firms in Tunisia to assess their awareness and actual preparedness to use the digital marketplace. Based on the outcomes of that assessment we found out the appropriate digital marketplace model to start with as well as an evolutionary path that firms need to follow in order to enhance their competitiveness.

The remainder of the paper is structured as follows. The next section discusses the concept of digital marketplace and their importance for firms. Next, we present the survey study undertaken with the objective to understand the e-readiness level among Tunisian food firms in order to propose a viable digital marketplace model that is appropriate to the context under study. We describe the survey and sample selection. Next we discuss the business model that fits with actual readiness status of firms for using new business models. The proposed model traces an evolutionary path in order for participating firms to get aware, to learn and adopt to new

business models as well as to develop progressively the necessary resources and capabilities (relational, technical and infrastructural) to enhance their competitiveness in the current digital economic landscape.

2 DIGITAL MARKETPLACES

Digital Marketplaces are an integral part of conducting business online (White et al. 2007; Soh et al. 2002; Gengatharen & Standing 2005; Markus & Christiaanse 2003; Kambil & van Heck 2002; Koch 2002). Simply speaking, this application can be defined as web-based systems that link multiple businesses together for the purposes of trading or collaboration (Howard et al., 2006).

Digital marketplaces are based on the notion of electronically connecting many buyers and suppliers to a central marketplace in order to facilitate exchanges of, for example, information, goods and services (Bakos, 1991; Bakos, 1998; Grieger, 2003; Kaplan & Sawhney, 2000).

Digital Marketplaces have become increasingly used across industries and sectors, nowadays, there exists different types and categories of these technological platforms. Some authors categorize them based on the functionalities they offer (Dai and Kauffman, 2002; Grieger, 2004; Rudberg et al., 2002) some based on number of owners and their role in the marketplace (Le 2005).

Three classes of marketplace ownership are commonly identified:

Third party or public marketplaces are owned and operated by one or more independent third parties.

Consortium marketplaces are formed by a collaboration of firms that also participate in the marketplace either as buyers or suppliers (Devine et al., 2001).

Private marketplace is an electronic network formed by a single company to trade with its customers, its suppliers or both (Hoffman et al., 2002).

Consortium marketplaces were identified as most likely to be sustainable (Devine et al., 2001), as the founders can introduce their own customers and suppliers to the marketplace, helping the marketplace establish a viable level of transactions – a ready source of buyers and suppliers not available to third party marketplaces (White et al., 2007).

According to Kaplan and Sawhney (2000) the digital marketplaces add value through two basic functions: aggregation and matching.

The aggregation mechanism involves bringing many buyers and sellers together under one roof, which facilitates “one-stop shopping” and thus reduces transaction costs.

The matching mechanism brings buyers and sellers together to dynamically negotiate prices on a real-time basis.

Howard et al.'s (2006) argues that there are significant evidences regarding the benefits that firms could realize by using digital marketplaces in term of reductions in transaction costs, improved supplier communication, improved planning and improved audit of capability. While Rask and Kragh, (2004), classify the main benefits for participation in a digital marketplace into three main categories:

- efficiency benefits (reducing process time and cost);
- positioning benefits (improving company's competitive position);
- and legitimacy benefits (maintaining relationship with trading partners).

However, most of the implemented digital marketplaces have failed to realize their core objectives and to deliver real value for their participants. According to Bruun, Jensen, & Skovgaard (2002), many digital marketplaces have failed as they have been founded on optimism and hope rather than on attractive value propositions and solid strategies.

Evidently, the benefits that could be created via digital marketplaces has generated tremendous interest. This has led to a large number of e-marketplace initiatives rushed online without sufficient knowledge of their customers' priorities, with no distinctive offerings, and without a clear idea about how to become profitable (Wise & Morrison, 2000). Digital marketplaces' operators provide standardized solutions that do neither match the needs of firms nor allow this latter to exploit new technologies' potentialities. Also they ignore the fact that most industries are dominated by small and medium enterprises that are far less likely to use new technologies as result of resource poverty, limited IT infrastructure, limited knowledge and expertise with information systems.

Finally, White et al. (2007) claim that developing and creating high-value-added services is challenging for digital marketplaces as technology is not in place to enable more sophisticated forms of real-time collaboration among multiple participants.

Therefore, offering simply a standard marketplace platform will result in a failure of the initiative as firms might not be prepared to use it, do

not see the value proposition and hence they remain disinterested in using the platform for integration.

According to Rayport and Jaworski (2002), the process of convincing organizations to join the digital marketplace is both long and expensive, despite the fact that the same offers its participants appropriate economic incentives. On the other hand, prospective buyers and suppliers will not join the digital marketplace only on “visionary predictions of the glorious future of B2B e-trade; they must see the benefits in it right now,” according to Lennstrand et al. (2001). Therefore, finding a business model that provides enough value to trading partners, to justify the effort and cost of participation is a substantial challenge associated with the creation of a digital marketplace (Rayport & Jaworski, 2002).

3 METHODOLOGY

In order to capture the state of the preparedness of firms to adopt a new internetworking platform a survey has been conducted to collect data. The sample of the study consisted on Tunisian food SMEs chosen according to the EU definition of firms with 10-250 employees.

The population of firms was derived from a database of the Tunisian industry portal containing data on Tunisian food processing firms.

The sample is made of 27 firms with 13 medium size enterprises and 14 small size enterprises. Out of the 27 firms surveyed, 18 questionnaires were useful for the survey producing a response rate of 67 %.

The data were collected in march 2008, over a period of three weeks, by means of face to face interviews and in some cases e-mail surveys (when managers didn't gave use the availability to realize a face – to face interview). We used the questionnaire as a tool to gather data. The final questionnaire included a 3 pages structured questionnaire with a set of indicators organized into the following modules:

- The technological networks in which are included indicators that measure the ICT infrastructure for networking in the firms in particular the use of Internet, the use of Local Area Networks (LAN) and Virtual Private Network (VPN) for remote access.

- The e-business activities that firms use to support and optimize internal business processes, procurement and supply chain integration, marketing and sales activities, use of e-business software;

- The level of awareness and use of digital marketplaces aimed to identify if firms use digital marketplace and/or are aware about the potentialities and benefits they can deliver.

- Limitations and Conditions to e-Business – aimed to identify the perceived factors and barriers that firms consider as limitation for the adoption and use of e-business models.

Data provided have been analysed by using a series of descriptive statistics processed into the Statistical Package for Social Sciences SPSS version 12.0 for Windows.

4 SURVEY RESULTS

The results of the survey regarding the ICT networking are displayed in the figure 1.

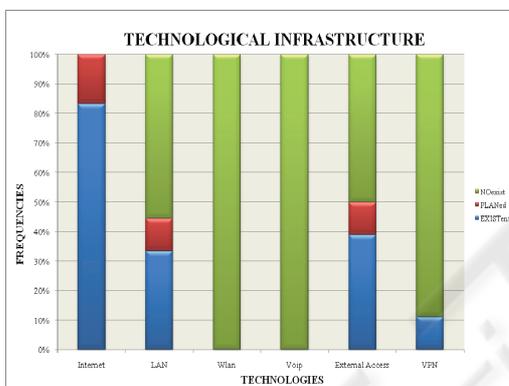


Figure1: Technological Infrastructure.

The results show a shortage of networking technological infrastructure. Generally, the surveyed firms have internet connection or plan to have it, but when it comes to technologies used to connect computers such as LAN, WLAN, VPN the firms surveyed reported to use them in a very low rate. LAN is existent in 33 % of firms surveyed, while just 11% of the firms have the VPN since it is inherent to the technology infrastructure of medium sized firm. The VOIP is inexistent in all firms and is not even planned to be used. The results also, confirmed the limited awareness of firms for ICT issues and a general lack of ICT skills within the industry. In fact, although firms surveyed do have an Internet connection or are planning to have one they don't have vision about its usage. Only 39% of the firms allow its employees to have an external access and 11% are planning to have it whereas the 50% remaining don't even plan for it.

E-business activity - The results regarding the business solutions used by Tunisian Agrifood firms are displayed in the figure 2. According to the results, Enterprise Resource Planning (ERP) systems are the most diffused among Agrifood Industry. Also, there is a wide range of firms that are planning to implement the ERP. The firms that neither have ERP nor plan for it argue on the fact that the size of their firm is manageable without any IS that require tremendous efforts and investments. This is consistent with the fact that accounting application (excel, software, in house solutions) are widely diffused.

Even though some firms do have the Intranet as a mean of intra organizational communication, its level of use remains relatively low and its functionalities under used. Although, Intranet exist yet the purpose of use and its outcome is relatively low.

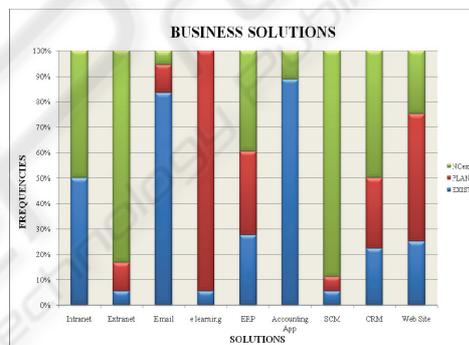


Figure 2: e - Business Solutions.

Only one of the medium sized enterprises use or plan to use the Extranet whereas the small firms have no plan for adopting the extranet as a business solution that will connect them to their trading partners. The elearning application is not highly diffused. However, the firms consider it very important and the results show that all our sample plan to have it. This is consistent with the government politic as it is providing incentives and support for elearning adoption.

The findings concerning the level of diffusion of extranet are consisting with the findings concerning the Supply Chain Management (SCM). The managers of SMEs in agrifood sectors believe that the SCM overpasses their needs and it is an extra expense. Therefore, we find out a high rate of firms that don't even plan to implement SCM.

The level of diffusion of web sites remains relatively low and the firms do not get the point with such an investment and its benefits. In fact, a lot of managers-especially in small size companies-believe

that a web site's requirements in term of investment are higher than the expected returns and benefits. Our findings are consistent with the e-BusinessW@tch (2006). In fact, according to e-Business W@tch ERP is largely adopted among agrifood firms since it allows process integration and synergies.

E-Marketplace Awareness – Some questions regarding the level of knowledge, the willingness and the likelihood of adoption of a trading platform as a business solution were inserted in the study, as well. The survey data reported that 27.8% of the firms were aware of the digital marketplace and able to provide a brief description of it. Among the firms aware of digital marketplace only one firm is a small size one. In contrast, 72.3% of the firms plan to undertake e-business activities without any intent to integrate their system with their main trading partners.

Limitations and Conditions to E-Business - The questionnaire was also aimed to identify the main obstacles and limitations that companies encounter in performing online transactions and e-business activities. In particular we asked them to identify the most important constraints they face in an attempt to use different ebusiness platforms or models. Nine main indicators resulted as most influential:

Lack of human capital (HC); Fear of loosing privacy and confidentiality of the company's information (PCI); Lack of financial resources,(FR); Lack of top management support, (TMS); Strict government regulation, (SGR); Lack of regulations for online payment (ROP); Our partners do not use e-business (PU); Benefits of using e-business are not clear, (BEB); IT and software integration problems (ITSI). The results are displayed in Figure 3.

In general terms, the results show that the lack of regulations for online payment is the main inhibitor of e-business followed by the fact that business partners using e-business and the lack of resources especially human capital. In fact, past studies on e-business highlighted some challenges that

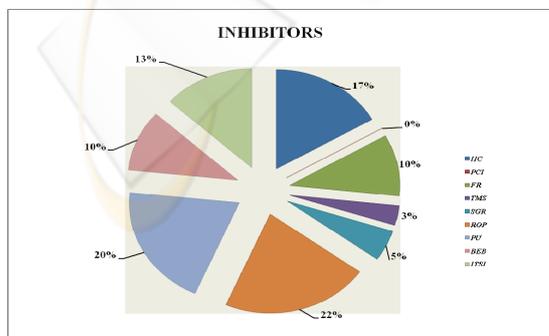


Figure 3: Factors inhibiting eBusiness adoption.

e-business adopters might face. Notice that training and finding qualified e business employees are among the most critical challenges that e-business adopters might face.

However, even though we notice some degree of e-business awareness, the volume of transactions via Internet is still of an issue. There are no transactions on line since SMEs are not linked to an agency that secures electronic certification. Further, the problems of payment security still persist along with logistic and quality problems. Therefore, the only symptoms of EC in Tunisia are e-mail, e-catalog and information portals and at some exceptions the possibility to order online. The rest of the transaction is done via classical way. Thus, we cannot really talk about EC in Tunisian SMEs as it still needs time to emerge.

5 THE DIGITAL MARKETPLACE BUSINESS MODEL

The research findings show that Tunisian food firms didn't get the full use of e-business nor get tangible benefits. The managers proved a good level of the theoretical knowledge concerning e-business and its benefits however practical cases didn't bubble up yet. This is due to managerial and technical inhibitors that our prospects expressed.

Such results suggest avoiding the choice of solutions which tend to use sophisticated technologies, require high level of integration and collaboration among supply chain actors or that point directly to the integration firms. Rather, it is reasonable opting for 'lighter' solutions, to start involving a limited number of operators, particularly aware and interested, but not necessarily equipped, around a simple solution that requires lower levels of innovation and coordination capabilities by local firms. It is important to note that the design of a marketplace is not a given, it highly depends on users ability to recognize opportunities, benefits as well as the barriers to be faced by them. However, in most cases a kind of intermediary actor is needed which bring buyers and sellers together and tries to create awareness among them by providing the platform

The intermediary actor arrange and direct the activities and process of the digital marketplace. The role of intermediaries can be played by a confederation of the industry, industry associations or other types of representative organizations that are able to secure a critical mass of users to the

digital marketplace.

This marketplace model is known in literature as Consortium marketplace. Different authors have identified it as most likely to be sustainable especially for fragmented industries and SME (Devine et al., 2001), as the founders can introduce their own customers and suppliers to the marketplace, helping the marketplace establish a viable level of transactions.

In contrast to a private marketplace, a consortium marketplace by definition is open to a number of buyers and suppliers in the industry, if not all, increasing the likelihood of participation and use.

Thus, in this initial stage the digital marketplace will serve as aggregator of buyers and sellers in a one single market in order to enhance products promotion and commercialization. It is aimed at offering a one-stop procurement solution to firms by matching buyers and sellers through its website.

The digital marketplace in this case will serve as a context to initiate a change management process aimed at creating, overtime, the necessary technological and organizational prerequisites for any further intervention aimed at developing and enhancing the competitiveness of firms. Simple trading services such as e-Catalogue, e-mail Communication, Request for Quote, Auction are suitable for firms in this stage. These services do not support new processes, they just replicate the traditional processes over the Internet, in an effort to cut costs and accelerate the process (POPOVIC, 2002).

However, this is just the first step of an evolutionary learning process of creation, development, consolidation and renewal of firms competitiveness through e-Business.

This stage is a prerequisite for increasing the firms awareness regarding the potentialities and the benefits of e-Business solutions. Any solution, no matter how simple, will not be automatically adopted if not framed in a wider awareness initiative aimed at informing the relevant stakeholders of the impacts and benefits that this solution can have for them over the short and the medium-long term. To further increase the awareness of SME and for building the local SMEs capabilities some training programs that tap on ICTs could be of great support for firms.

Starting to use the basic services offered by digital marketplaces in this initial stage is an indispensable phase for creating the right conditions for pursuing an evolutionary pathway towards more collaborative configurations. For example the use of eCatalogues or Auction services involves

information sharing or data exchange between trading parts. Through communication with trading partners firms starts to pull inside the marketplace other supply chain firms with which they realize trade.

In this way firms start to move towards more collaborative settings where suppliers, customers, and partners share more information and data between them, create strong ties as well as longer-term supplier-customer relationships.

Then, to support this new type of relationships created among participating and to provide more value added for them the digital marketplace needs to evolve towards the development of new services that reinforce the relationships among different actors, create new ones and exploit partnerships in order to enhance services. More advanced collaborative technologies could be implemented in order to connect, suppliers, customers and partners in a global supply network where critical knowledge and information about demand, supply, manufacturing and other departments and processes is shared instantaneously. More value added services could be provided at this stage such as – online orders, transactions, bid aggregation, contract management, transaction tracking, logistics, traceability etc - which permits the supply chain actors to integrate their operations and processes.

The use of such services as bid aggregation, logistics, traceability etc doesn't simply enable firms to exchange knowledge and information and but also to develop it together in order to better understand customers and market trends.

Thus a further stage of digital marketplace could be developed to leverage on the integrated and collaborative culture of the firms to create distributed knowledge networks, composed by a set of dynamic linkages among diverse members who are engaged in deliberate and strategic exchanges of information, knowledge and services to design and produce both integrated and/or modular products. Networking services could be implemented in this stage such as Virtual Project Workspace (VPW) for product development teams, elearning services, knowledge management, virtual communities.

The approach proposed suggest that firms need to go through a sequential stages where the activities are cumulative. This means that firms in stage 2, for example, undertakes the same activities as those in stage 1, that is communicating with customers and suppliers via email and using the web for realizing catalogues, but in addition they start collaborating and transacting online with other actors of the supply chain.

6 CONCLUSIONS

The thesis underpinning this paper is that the context features shapes the type of the business models for digital marketplaces. It is argued that before starting a digital marketplace initiative it is necessary to undertake a context assessment that permits to understand the firms preparedness to use the digital marketplace in terms of technological infrastructure, human resources' capabilities and skills, integration and innovation level among firms.

On this basis a specific evolutionary approach has been presented. The aim is to provide developing firms with solutions that match their needs and that help them to get aware, to learn and adopt to new business models as well as to develop progressively the necessary resources and capabilities (relational, technical and infrastructural) to enhance their competitiveness in the current digital economic landscape.

Our approach also presents important implications. The concept of digital marketplaces is useful for firms in developing countries, however despite the promise they remain largely unused because of the inadequacy of solutions to context features. We argue that the success of a digital marketplace initiative needs to be rooted in an assessment study of the context that permits to understand the firms preparedness to use the digital marketplace in terms of technological infrastructure, human resources' capabilities and skills, integration and innovation level among firms.

Based on the outcomes of this assessment it is then possible to find out a suitable business model for the digital marketplace that show sensitivity to local realities and ensure the effective participation of the firms.

It is essential to start with feasible initiatives and build up steadily the qualifications necessary for facing hindrances. However, starting at the right point and in the right way doesn't automatically guarantee success and competitive advantage to destinations, but can represent a way to start admitting the fundamental role of the innovation, according to the need to survive in a high complex environment.

In today's business environment firms and destinations need to continuously upgrade and develop organizational structures, assets and capabilities, the social and customer capital to enhance to enhance their competitiveness. Thus firms need to adopt a co-evolutionary that stimulate collaboration and coordination among firms. The active role of an intermediary is crucial especially at

the earliest stages, to raise awareness, assure firms participation, build and maintain wide commitment and involvement.

The ideas that we propose need to be refined in further conceptual and empirical research. First, a field analysis is needed in order to appraise and to validate the evolutionary path proposed in this paper. Second, it will be important also to monitor the process of adoption of digital marketplace and their specific impacts on firms competitiveness. Third, further research could also focus on how to realize digital marketplace solutions that integrates internal business systems with a common platform. The research can be oriented toward identification of a unifying solution for SME, in which there is a convergence and integration of activities, considered as part of a joint entity. This solution may be able to generate a high number of benefits, related to the opportunity to decrease errors and mistakes in the transactions, to reduce the duplication of activities, to manage business in a simple and fast way.

Further research could be also focused on understanding the factors that inhibit or support the passage of firms from one stage to another of the evolutionary model.

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