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Probability destination of e-Business in the Wine Industry: The Case of the Moroccan Organizations

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Abstract

The paper discusses the new trends in the wine sector in Morocco. This sector is an important emerging market in Morocco and it is characterized by various types of organizational, strategic and technological dynamisms leading to its success in the agri-food sector. The paper presents various theories and hypothesis concerning the network effects of its productivity, the type of growth of its products and services and its IT-based knowledge sharing and creation. The research also proposes research methods based on interviews, questionnaires and web-based research in order to demonstrate the importance of the adoption of information and communication technologies at the intra and inter-levels of the organizations. And finally, the paper focuses on the specific case of customer relationship management in which e-business can play a major role for the continuous economic performance of this sector.

Keywords : Wine sector, e-Business, Information and communication technologies, Customer relationship management, Logarithmic scale, Network externalities, Products and services.

INTRODUCTION

The wine industry is an interesting emerging market in the country Morocco. It is knowing a shift paradigm from cooperatives and personal production to real business organizations or the newly creation of businesses. Since few years in Morocco, this sector increased production and economic performance thank to the adoption of new measurements regarding cultural and business acceptance of these products by retailers, wholesellers and suppliers of raw products as well. According to Cusmano et al. (2010), the emerging countries, newly entering the wine market, have provided various new strategies for economic success aligning scientific approaches with institutional creation and standardization. Also, the research of Cusmano et al. (2011) state that 'The New World' countries in which there are developing economies put in place various changes as technological modernization and organizational changes. The paper, which is an extension of a presented poster on the wine sector (Taifi, 2014), aims at the analysis of the different managerial and strategic aspects of this sector focusing on the presentation of some theoretical and statistical models based on the analysis of the products quantities, number of organizations and utilities of knowledge sharing and creation for the sustainable development.

The next section presents the state of the art of the sector focusing on the economic performance of the production and sales, and the research framework with more details about the research objectives and research questions. It also presents the research method that aims at the confirmation of the theories and hypothesis. The third section presents these theories and hypothesis concerning three important points that are the growth of products and services produced in this sector; the network externalities and effects since the various organizations in this sector are in a value and supply chain forming inter-organizational collaborations, and; the technological-based utility of knowledge sharing and creation. Finally, the section of the results and discussions focus on a specific case of technology-adoption, that is newly emerging in this sector, that is the use of IT-based technologies for customer relationship management.

Wine sector in Morocco

State of the art

The Moroccan organizational group named 'Brasseries du Maroc (BM)' uses diverse selling and marketing approaches for the objective of economic performance of the wine market. Recently in year 2011, the group BM could acquire significant selling growth rate of wine product at the local market. Also, at the export level, there was an increase of total revenue of 17,6% in the Maghreb thanks to products prices successive increase in February 2011 and in May 2012. Then, the 'Brasserie

Table 1: Types, sizes and ties in the supply chain of the wine sector

	- Cooperatives of raw materials (agriculture – grape fruits);
	- Producers of wine and distributors –SBM and SVCM;
Types	- Retailers and Wholessellers.
Sizes	Large, small and medium organizations.
Links and ties	Direct and indirect ties among the organizations in the supply chain.

du Nord Marocain' (northern BM) also made significant profits in the north of Morocco showing an increase in total revenue of 18,4 % in year 2011 thanks to production and prices increase.

Whereas, the other Moroccan organizations named 'Société de vinification and commercialization au Maroc' taking care of the production and commercialization of the wine products knew unfortunately a sales products decrease of 18,7% due mainly to the decrease of export sales but still compensated by the increase of 23,5 % of product sales made in collaboration with BM.1 (Table 1)

The wine sector in Morocco also consists in various types of organizations as mentioned above ranging from the suppliers of raw materials as the grapes fruits, the producers of wine, distributors and sellers that are in the local and international markets (Table 1). Also, these organizations have direct and indirect ties in the supply chain since some are producing and others are producing and selling and these ties and relationships are creating an inter-organizational configuration of collaborations.

RESEARCH FRAMEWORK

The state of the art shows that there are indeed various types of economic performances in the wine sector ranging from decreases or increases in the product sales at the local, northern morocco, or export level. So, the question is what drives these challenges. Also, there are various types of organizations involved in the wine sector consisting in the supply and value chain. As an example of research on the evolution of the wine sector, there is the research of Martinez-Carrion and Medina-Albaladejo (2010) studying the consumption, roles of exports, and marketing diffusion in a time of technological integration and wine organizations development. So, to further investigate on the dynamisms, empowering these types of changes in economic performance in Morocco, is more than a strategic topic to sustain this economy and further the understanding on the various mechanisms and systems of management. Also, the objective of the research is to show the future trends in technology adoption to reach customers – types of technologies adopted in various phases of the product development process and more precisely at the sales process (web-based selling and customer electronic targeting). For

instance, concerning research on wine sector, in a specific research on a wine production in a region, the authors state that the strategy is becoming more focused on marketing and reduction of intermediaries among production and consumption (Mora, 2006); The authors also state the importance of further research based on quantitative data and innovative methodologies (Mora, 2010). Also, at the marketing level, Lindgreen (2001) provides some strategic implications to the use of concurrent methods for marketing as for instance networks and interactions based on relationships.

Based on the state of the art of the wine sector and on the research framework, the research objectives of this paper is to further develop on the organizational aspects of the wine in the case of Morocco and on the marketing and production aspects as well. The research frames the following research questions (Figure 1):

- What is the organizational dimension of the wine sector in Morocco?
- What are the main drivers of evolution of this sector in Morocco?
- What is the technological dimension of this sector in Morocco?

The research method concerns the presentation of case studies based on interviews and questionnaires dedicated to the organizations in this sector. The main objectives of the data collection methods are:

- To identify the configuration of the various organizations in this sector;
- To analyze the technologies used in this sector ranging from computer-aided technologies for manufacturing and for design in the product and new product development process; and,
- To analyze the relationships among the mechanisms of the production of products and services and selling at an economic-based level (Table 2).

Also, the research method wants to confirm in a quantitative manner, the theories and hypothesis presented in the next sections based on the analysis of the organizations, their systems and technologies.

THEORY AND HYPOTHESIS

Logarithmic scale of products and services

First, the research argues about the type of scale of measurement that can be adopted concerning the growth of products and services and proposes that this environment follows a logarithmic scale-instead of a

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1 Rapport de Gestion SBM //http://www.brasseries-maroc.com/
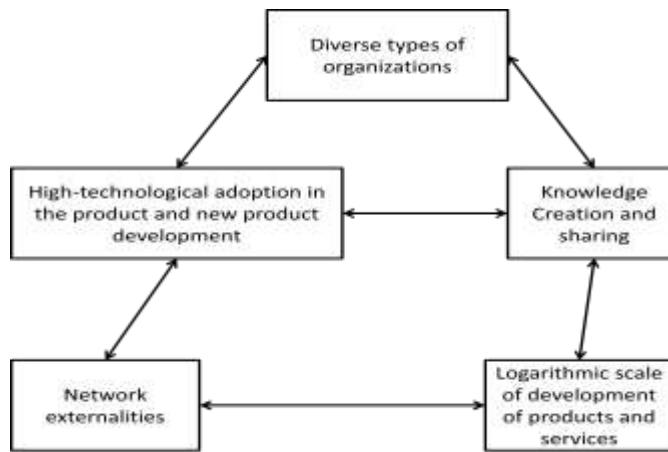
Figure 1: The different managerial and strategic mechanisms of the wine sector

Table 2: The unit of analysis of the research

Unit of analysis	Research objectives
Organizational management	Organizational configuration analysis
	Knowledge creation and sharing analysis at the intra and inter-levels
Technology management	
	Relationship analysis among production and selling
Portfolio management	

linear one- based on an exponential increase of products and services quantity. This proposition leads to the development of a mathematical model representing the type of growth in this sector. In this model, the following variables are taken into consideration (1):

T: total number of products or services
S: number of products or services sold
P: number of products or services produced

$$\log_S T = \frac{\log_P T}{\log_P S} \tag{1}$$

And since the number of products sold can be equal to the number of product produced, the total number of products and services can be both, thus converting the produced number to sold numbers of products and services or vice versa (2).

$$\log T = (\log_P T)[\log P] = (\log_S T)[\log S] \tag{2}$$

Network externalities and effects

The analysis of this study shows that there are many organizational and strategic aspects that can lead to its success as inter-organizational collaborations at the regional, national and international levels representing the density of the networks' creations. Thus, the research also argues about the effect of the logarithmic scale that can be the impact of the network externalities of this environment; as co-opetition and competition. This proposition leads to the development of a mathematical model representing the network externalities based on the following variables:

B: brand of the products or services
T: total number of products or services
N: number of organizations
t: time in which the products and (1) es are in the market

$$T = \int_1^N \frac{dt}{t} \quad e = \lim_{B \to \infty} \left(1 + \frac{1}{B}\right)^B \quad e^T = \lim_{B \to \infty} \left(1 + \frac{T}{B}\right)^B \tag{3}$$

Which means that the total number of products and services on the market depends on the brands of the organizations; the exponential growth of products and services on the market is happening a as there are brands of the organizations (3). (2)

T: number of types of organizations
R: number of types of collaborations
t: time in which the products and services are in the market

$$T = \int_1^N \frac{dt}{t} \quad e = \lim_{R \to \infty} \left(1 + \frac{1}{R}\right)^R \quad e^T = \lim_{R \to \infty} \left(1 + \frac{T}{R}\right)^T \tag{4}$$

Figure 2: Technology management and integration in the PD and NPD of the wine sector

- PD: Product development process
- NPD: New product development process
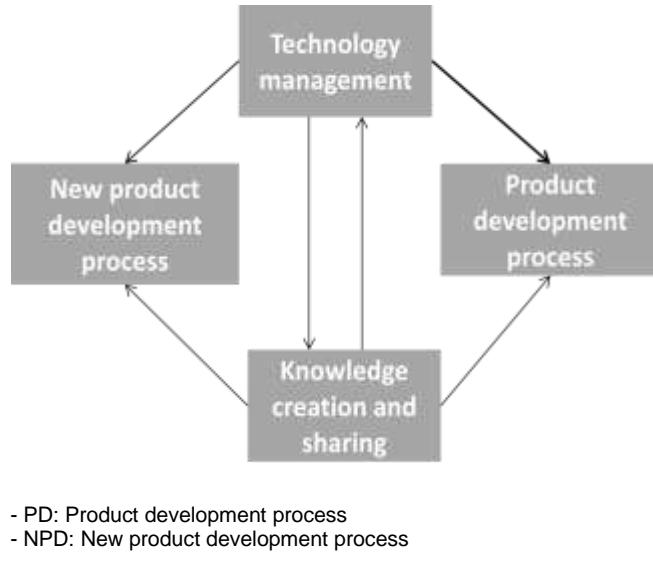
The context of this model and its variables is in a network externalities effects environment in which there are various types of collaborations and organizations. And these collaborations are either in the form of co-opetition or competition, assuming that the same types of organizations have different brands and then it means that as long as there are various types of organizations, there are various types of collaborations (4). Finally, the types of collaborations depend on the number of organizations, which means that the exponential increase of types of collaborations is happening as long as there are organizations (5).

$$T = \int_1^N \frac{dt}{t} \quad e = lim_{T \to \infty} \left(1 + \frac{1}{T}\right)^T \quad e^R = lim_{T \to \infty} \left(1 + \frac{R}{T}\right)^T \quad (5)$$

Technological-based knowledge sharing and creation

The different types of organizations have different roles in the wine sector; these are ranging from suppliers to sellers and from research centers and universities in both the product development and new product development process; There is this interesting research of Giuliani et al. (2009) stating that wine sectors producers and sellers do collaborate with universities and researchers for innovation but these collaborations depend on various factors as the linkages of the researcher with the academics, and the age and sex of the researcher. Besides, the actual research supposes that these organizations know an exponential increase in the adoption of technologies in both product and new product development (Clark and Fujimoto, 1991) because of their awareness about the utility of the

technologies for knowledge creation and sharing (Nonaka and Takeuchi, 1995) (Figure 2). This leads to other models based on the following variables:

T: Total technologies for knowledge sharing and creation
TP: Technologies for knowledge sharing
TI: Technologies of knowledge creation
r: risks of non-awareness about the importance of technologies

$$U(T) = U(TP) + U(TI) \qquad U(TP) = 1 - e^{-rTP} \quad U(TI) = 1 - e^{-rTI}, \quad (6)$$

This model means that the sector knows an exponential utility of IT-based knowledge sharing and creation in which there is the important factor of risks of non-awareness about the importance of technologies (6). Thus, the sustainable development of the wine sector depends on the continuous introduction of information and communication technologies in the various phases of knowledge creation and sharing and the continuous increase of the awareness about the importance of technologies.

Technological Adoption: Case of the importance of customer relationship management

From the previous sections, through the increasing adoption of information and communication technologies in every phase of the product and new product development process, the phase of customer relationship management is also adopting increasingly technologies (Figure 3). More precisely, the paper states that there is high probability of e-business usage for customer satisfaction and high economic performance
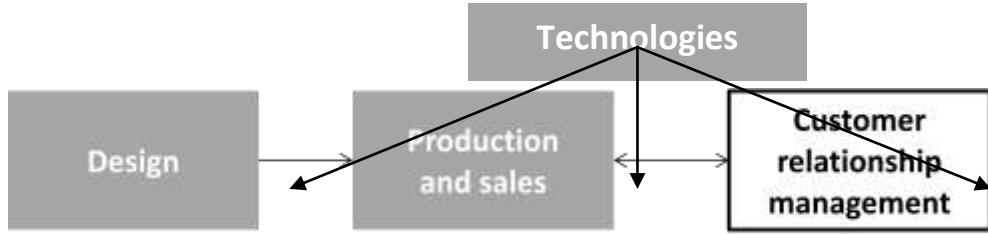
Figure 3: Technology adoption in the customer relationships management
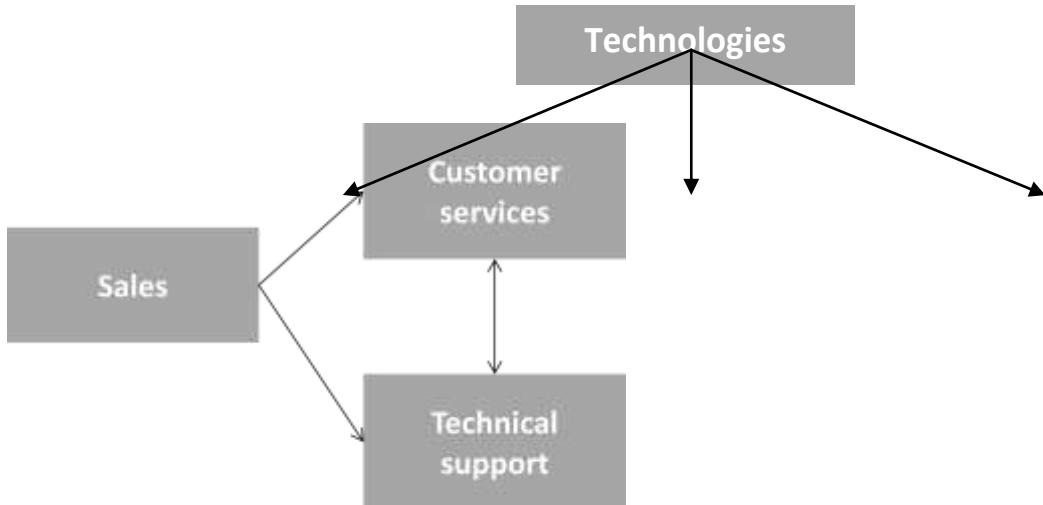
Figure 4: Technologies for the different phases of the customer relationship management

and it knows an exponential increase in the adoption of technologies for the customer relationship management. Also, these technological adoptions can lead to a better innovation management (Afuah, 2003) by the integration of customer knowledge in the new product development process. For instance, the research of Spawton and Walters (2003) analyze how wine customers extract value from the wine products. This leads to other models based on the following variables: (Figure 3)

TCRM: Number of technologies for customer relationship management

C: number of customers

t: time in which there is the use of technologies of CRM.

$$TCRMT = \int_1^C \frac{dt}{t} e = \lim_{C \to \infty} \left(1 + \frac{1}{C}\right)^C e^{TCRM} = \lim_{C \to \infty} \left(1 + \frac{TCRM}{C}\right)^C \quad (7)$$

This means that the use of CRM depends on the number of customers there is on the wine market; If there are no customers, there is no usage of CRM and this thus is in relation with the number of technologies put in place for the CRM. This leads to the conclusion that there is an exponential increase in technologies for CRM based on a logarithmic scale. The e-Business adoption leads to

the integration among the technologies for sales and CRM; This is the technological base. And, through economic performance, there is an exponential increase in technologies for both sales and CRM – customer services and technical support (Figure 4).

TCRM: total number of technologies for customer relationship management;

TS: number of technologies for sales

TCS: number of technologies for customer services

TTS: number of technologies for technical support

$$\log_{TCS} TS = \frac{\log_{TTS} TS}{\log_{TTS} TCS} \qquad \log_{TTS} TS = \frac{\log_{TCS} TS}{\log_{TCS} TTS} \qquad (8)$$

Based on the assumption that sales and CRM technologies are integrated, the exponential increase in technologies for sales can depend on both the increase in technologies for customer and technical support (8).

$$\log_{TS} TCS = \frac{\log_{TTS} TCS}{\log_{TTS} TS} \qquad \log_{TTS} TCS = \frac{\log_{TS} TCS}{\log_{TS} TTS} \qquad (9)$$

Also, the increase in technologies for customer support depends on both the increase in technologies for sales and technical support. And, the increase in technologies

Table 3: The matrix of the different logarithmic scales of the sales and CRM technologies.

	Base 2	TS	TCS	TTS
Base 1	**LOG**			
TS	TS	N/A		
TCS	TCS		N/A	
TTS	TTS			N/A

- TCRM: total number of technologies for customer relationship management
- TS: number of technologies for sales
- TCS: number of technologies for customer services
- TTS: number of technologies for technical support

for technical support depends on both the increase in technologies for sales and customer support (9) (Table 3).

$$\log_{TS} TTS = \frac{\log_{TCS} TTS}{\log_{TCS} TS} \qquad \log_{TCS} TTS = \frac{\log_{TS} TTS}{\log_{TS} TCS} \quad (10)$$

Sometimes, the technologies for customer services and technical support can be the same or converted since in e-business there can be in this case at once technical support as the delivery of the product and customer services as the online shopping (11) (Table 3).

$$\log TCRM = (\log_{TCS} TCRM)[\log TCS] = (\log_{TTS} TCRM)[\log TTS] \quad (11)$$

CONCLUSIONS

The paper argues about the state of the art of the wine sector in Morocco proposing research methods and more specifically pertinent theories and hypothesis about the growth of the sector at the knowledge, organizational, technological and product levels. These research are linked to the organizational, technological and strategic levels of the wine sector and analyzes the diversity of this environment. The theories and models presented are proposing new types of dynamisms of the knowledge, innovation, technological, production, and network management of this sector.

The results present a case study on the customer relationship management and more precisely the importance of further moving toward the adoption of the ICTs at this level. The future research of this study is to further identify the various organizations in this sector and to further apply the research methodology related to the investigation on the dynamics and mechanisms of this environment in order to end up with further theoretical and managerial implications.

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