

Information Technology Adoption on Supply Chain in Small and Medium Enterprises

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Abstract:- The adoption of information technologies (IT) in supply chain management (SCM) has a vital role within small and medium enterprises, it change data and behaviour, both in internal process of the supply chain process, in all the company process, and also in the business external relationships. Nowadays, the information technologies on supply chain management (ITSCM) are however more and more complex. Between the need and the complexity of ITSCM, SME have difficulties and barriers to adopt them. In this article, we propose to evaluation IT adoption as well as their obstacles and limitations in the context of Moroccan SME in their particular interest in their adoption in SCM.

Keywords:- Supply Chain Management, Information Technology, Factors, Barriers, Adoption.

I. INTRODUCTION

Supply chain management (SCM) is a field that emerges and growth rapidly; it has become the main source of competitive advantage [1]. In effect, SCM is defined as a planned process, execution, control, and monitoring of a set of activities, in order to integrate efficiently its links (manufacturers, suppliers, buyers, logistics, and customers) [2] for creating net value, improving performance and building a competitive infrastructure [3,4]. Successful supply chain management needs information exchanges and integration of these links. Therefore, a greater interest in information technology adoption for supply chain management is evident; many researchers' confirm that adopting information technologies is essential to supply chain management; it is beneficial for its performance and efficiency [5, 6, 7].

Information technology is increasingly deemed as crucial to facilitate the communication and information flow between various links of supply chain management, on the one hand. And on the other hand, small and medium-sized enterprises (SMEs) have a significant role on supply chain management process [8]. However, information technology is not largely adopted in supply chains of SME despite the growth of technology [1]. Some adepts are anxious about barriers to information technology in supply chain management; most of these studies are focus of large firms, while SME are treated in regard to large firms [9, 10, 11]. So, more research attention is required to study barriers to information technology on supply chain management in the case of SME. Then, this paper aims to discuss a key research issue and provide a

thorough understanding about barriers to information technology on supply chain management in the case of SME. In particular the study search to identify the main stakeholders influencing information technology adoption on supply chains and then explain their influence concerning the low its adoption within SME.

This paper is organized as follow. The second section present research questions and search methodology. In the third section the main theoretical barriers found are displayed in a literature review. Supply chain case studies in the fourth section and finally the last section discuss the findings.

II. RESEARCH QUESTIONS AND METHODOLOGY

➤ Research Questions

The main issue motivating this research study is the experts' need to understand and specify the different barriers that can prevent the information technology adoption on Moroccan SMEs' supply chains. Since the research literature in this field of Information Technology Management is still a little poor, and for having more studies that can be considered as guidelines in this field.

In turn the main issues that this paper attempts to respond are: What are the main barriers preventing supply chains' information technology adoption within SME? And what is the significance of each barrier in Moroccan SME?

➤ Research Methodology

The research methodology consist of, as first step, literature review for a better understanding of research issues where we criticize and summarize previous researchers findings, qualitative research consisting on making interviews with the stakeholders in three supply chains in different sectors from three Moroccan SME. After this exploratory, findings were combined with theoretical finding and analyzed to categorize final barriers.

III. LITERATURE REVIEW

The objective of this literature review is to study barriers to supply chains' information technology adoption, and especially, possible causes that leads to the difference in adoption between large firms and SME. The focus of this literature review is to identify stakeholders and reasons that make SME less likely to adopt supply chains' information technologies.

➤ *The Concept of SCM*

The concept of SCM is not new, it has always existed. Any company that manufactures or sells a product and / or service belongs to a supply chain, through the industrial and commercial links that have developed, on the one hand with suppliers and on the other with customers. What is new is its formalization as a key process of the company. From a structural point of view, the SC is presented as a network of companies (entities or links) for which a three-dimensional decomposition is proposed in the Figure 1.

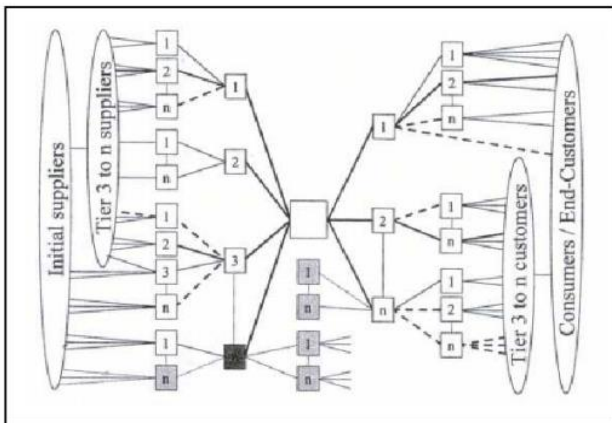


Fig 1:- Three-Dimensional Decomposition of SCM

➤ *Barriers to Supply Chain Information Technology Adoption*

The main stakeholders that react as barriers to information technologies adoption in SMEs' supply chains most discussed in the literature are lack of planning and strategy in the chains, firm or department size,

organizational culture, expertise and knowledge (including owners and users), and external influences.

[12] Propose that poor planning and adoption strategy can lead to prevent the adoption and use of information technologies rather than full adoption, integration and use on technologies, and unfortunately SME don't do a prior information technology adoption planning. [13] suggest that the size of firm is positively related to information technology adoption and highlight that smaller firms are less likely to adopt and use technologies in their chains than large firms and affirm that SME have a limited access to resources, in this sense [1] recognize that resource poverty is one of main barriers to supply chain information technology integration. [14] confirm, by an integrated model that the owner/manager is the main influencing factor of information technology adoption in small businesses, and approve that the lack of owners' perception of benefits, attitude, knowledge, engagement, readiness and acceptance are influencing negatively SMEs' decision to adopt and invest on technology. While [15] highlight that organizations less developed, with a limited information technologies' infrastructure and business culture are also some important determinants that prevent information technology adoption in SME. Finally, [1] identify some external major barriers. They affirm that customer pressure or the lack of customer use of technology seem to act as an important role in influencing SME supplier to adopt and use information technology and act as an inhibitor to that. The main barriers found from the literature are summarized in Table 1.

Barriers	Key references
Lack of planning and strategy	[12]
Firm size	[1,13]
Organizational barriers	[14,15]
External barriers	[1]

Table 1:- Barriers to Supply Chains' Information Technology Adoption.

However, despite this significant research on barriers to supply chains' information technology adoption, to date there is a limited empirical research examining this issue within SME. The findings from this research review were used to design a qualitative study of Moroccan case.

IV. SME CASE STUDIES

This section present results of three supply chain case studies. The supply chains' data are provided in Table 2.

Supply Chain	Business sector of SME	Supply chains' technology
Supply Chain 1	Industry	SAP (purchase, finance and accounting sale, stock).
Supply Chain 2	Air Traffic	Clipper: ERP for industrial SME
Supply Chain 3	International Logistic	SPEED wms: information technology for supply chain management.

Table 2:- Supply Chain Case Studies.

The results of this case study state that organizational barriers such as: organizational culture, owner skills, attitude, engagement, expertise, and limit access to resources are the most important barriers leading to the lack of supply chains' information technology adoption Moroccan in SME. These results are conforming to the findings of [14]. It also goes in line with results of [15] who found that organizational culture is an important determinant preventing information technology adoption.

Therefore, it concluded that information technology adoption in these cases is more affected by internal barriers than external. External barriers have a weak influence on its adoption. These results are unlike [1] who stressed that customer pressure is one of major influencing barriers on supply chains' information technology adoption, integration and use.

V. DISCUSSION AND CONCLUSION

The research results generally help to understand the influence of different technology's' stakeholders and environments within SMEs' supply chains. This study has concluded that internal barriers have a significant impact on information technology adoption. A lot of attention was given to research structure. As result it's hoped that this paper contributes to give a significant understanding of the research field.

However, as other research studies, this study have some limitation, the study is focused only on a small extract and limited sectors, it's necessary to test the study on other sectors and fields. As a next step of this research, it's necessary to deepen this study in different contexts and sectors and develop a research model within this study.

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