

International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: www.ijarcsms.com

The implementation of ICT in Moroccan SMEs: Case of Tangier - Tetouan and Alhouceima

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Abstract: *Despite more than fifty years of intense research on the impact of Information and Communication Technologies (ICT) on the organization, the problem remains unresolved. The transformation of organizations is today a reality, discreet but in progress, its process is amplified by the digital revolution and the evolution of new technologies. The first part of this article is devoted to studying the impact of ICT on trades and businesses by focusing on three main points: the structure, organization and the ability of companies to act. The second part is centralized on ICT and organizational change: ICT causes difficulties for companies or rather opportunity for companies in difficulty.*

Keywords: *Organizational change, decision-making, ICT, structure, SMEs.*

I. INTRODUCTION

SMEs are a major component of the economic fabric of most economies, both developed and developing. SMEs play an important role in economic dynamics and are real factors in promoting employment and wealth sharing.

Studies on companies in difficulty are more relevant than ever. The difficulties, which still remain, lie in the economic modeling of the disparate profiles of SMEs in particular Morocco: low human resources, and technical reinforced by a lack of managerial incentive policy, combined with a lack of control of market trends, delays in administrative procedures, low investment capacity, difficult access to finance and lack of training. All these constraints may seem unacceptable when one takes into account the increased requirements in terms of quality and competitiveness of exports in a liberal economy largely affected by the consequences of the international economic crisis.

ICT has been a key driver of change in business because the many opportunities it has offered to the pace of innovation have responded to the needs of the economy. The evolution of the information system has been marked by successive waves of centralization, such as automation in the 1950s or the commissioning of integrated management software packages, and decentralization, such as the arrival of personal computing or more recently internet technologies. However, the equipment rates show significant variations according to the size of the company and the sector of activity. Information systems, however, have not undergone a systematic renewal cycle and the stock of hardware and software has generally grown without its new components being systematically integrated with the existing one.

The last decade has been marked by the strong development of ICT mobility (laptops, mobile phones, smartphones, tablets), which should continue, as well as the growth of embedded systems¹.

¹ Michel Gollac, "The Information Technology Trades", April 2003.

FINDING AND PROBLEMATIC OF THE RESEARCH:

Recent years have witnessed the rapid development of information and communication technologies (ICTs), the importance of which continues to grow. ICT has become a dynamic, strategic and indispensable asset for an organization in fulfilling its mission and objectives.

The impact of information and communication technologies (ICTs) on productivity, innovation and competitiveness of small businesses (SMEs) is now recognized as being real, and has so far been addressed by several authors and is the subject of several publications. Given the globalization of the economy and the competition that exists in the majority of economic sectors, it remains quite relevant to ask to what extent ICTs allow SMEs to distinguish themselves on the world stage.

II. LITERATURE REVIEW

The literature review focused on publications related to ICT analysis within SMEs, these specificities, as well as its role in managing organizational change. However, to pose the problem of the impacts of ICT on the organizational change of SMEs requires that the concepts and notions underlying the management of SMEs have been analyzed beforehand.

The changes brought about by the introduction of new technology, particularly ICT, are the result of mutual influence between actors and context. We will first show that the change is emerging and then in a second time that Pettigrew's contextualized approach is a relevant approach to study this phenomenon.

It seems to us, according to the theoretical approaches in matters of TIC, that the latter is a need for the SMEs in particular in difficulties and vulnerable, had to face the reality of the field. To do this, a qualitative approach of contextualization is in progress. This approach, exploratory and descriptive, will allow us to know Moroccan SMEs. In addition, it will help us better understand the practice of ICTs in small and medium-sized enterprises. The results of our qualitative and quantitative approach are still validations. Some research has shown that a new technology such as the Intranet fits in the history of a firm. It influences and is influenced by it according to a process that is gradually emerging (E. Vaast, 2000). They sometimes carry an implicit view of the organization (Moisdon, 1999). It is not only the intranet technical characteristics that are progressively integrated into a set of organizational evolutions but also the representations of the actors associated with it. Giddens' theory of structuring (1987) also makes it possible to show that there is an influence between the human actions and the structural features of the organization in which the technology participates.

We propose to operationalize the metrics of a successful implementation used in two studies of how to implement enterprise resource planning (ERP) in the enterprise. We chose these two studies in that the implementation of an ERP is, like the implementation of a new structure, an organizational innovation.

Researchers	Measuring items
Wang et al., 2006	The speed of information flow A timely response Improved interactions within the company Accelerating business processes Improving the relevance of the manager's orders Improving the level of innovation of the company
Hong et Kim, 2002	The cost of the ERP project is significantly higher than the planned budget The ERP project takes significantly longer than expected The performance of the ERP system is significantly below the expected level The anticipated profit of the ERP system has not materialized

Table 1: Operationalization of the implement the ICT in the enterprise

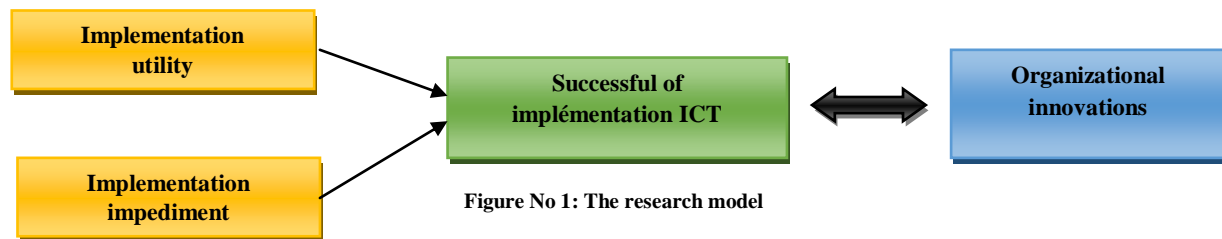
III. RESEARCH MODEL AND HYPOTHESIS

Implementing ICT means tackling head-on a complex set of elements dealing with both the evolution of procedures, the relationships between actors and the modes of decision-making. It is then considered that technology, whatever its quality,

cannot alone contribution and responses. On the contrary, it cannot be ignored, because it cannot be reduced to a banal tool devoid of any structuring capacity.

This study examines the relationship between the implementation of ICT in the SMEs with implementation utility and implementation impediment.

This study focused on determination of four factors that affect organizational innovation which are the successful of implementation ICT. The research model is presented in figure n °1.



H1: The implementation of ICT in SMEs positively affects the adoption of organizational innovation.

H2: The implementation of ICT in SMEs negatively affects the adoption of organizational innovation.

H3: The utilities of ICT implementation in SMEs positively affect the adoption of organizational innovation.

H4: Barriers to implementing ICT in SMEs negatively affect the adoption of organizational innovation.

IV. RESEARCH METHODOLOGY

The aim of this work is to describe the organizational practices of SMEs in the Tangier-Tetouan region. Since the number of variables studied is important, we have opted for one-dimensional analysis.

We consider this research as a necessary prerequisite for formulating a number of hypotheses concerning the set of organizational practices (implementation utility an implementation impediment) in relation to the determinants of the ICT and organizational innovation.

As regards the data collection approach, we opted for the quantitative method via a survey of a sample of 50 companies in the region.

On the other hand, the data collection procedure, in this case the questionnaire, is subdivided into three parts: the first relates to the identification of the entity in question and the second concerns the specificities of the organizational structure and the third part on organizational innovation.

V. RESULT

1. PCA outcome for ICT implementation utility dimension

	Component	
	1	2
T6: Managing a crisis situation	,906	-,062
T7: Project a better image of the Company vis-à-vis our partners	-,780	-,459
T2: Better HR and Operations Management	,460	-,129
T1: Adopts the strategy of opening up to an external market	-,020	,817
T5: Fostering business development	-,044	,791
Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. a. The rotation converged in 3 iterations.		

Table 1: Matrix of components after rotation a

The CPA of this construct shows that the effect of the adoption of an information system allows (C1: 32,87%) the improvement of the management systems (T2, T6) without having a significant effect on the image of the company towards its partners (T7). However, this adoption has a positive effect on openness to external markets and consequently business development (C2: 30.50%). It should be noted that we have to eliminate items (T3 and T4) to meet the critical threshold of KMO.

2. ACP outcome for the ICT implementation barriers dimension:

	Component	
	1	2
T9: useless given the internal organization of the directors and executives of my company	,883	-,221
T16: Your IO project takes significantly longer than expected	-,765	-,142
T8: useless given the nature of my activity	,764	-,304
T10: useful but complex to manage	,080	,901
T17: The performance of your IO is significantly below the expected level.	-,366	,693
Extraction method: Principal component analysis.		
Rotation method: Varimax with Kaiser normalization.		
a. The rotation converged in 3 iterations.		

Table 2: Matrix of components after rotation a

The CPA of the main items hindering the implementation of an information system reaches an explained variability of more than 70%. The C1 component (41.78%) shows that the effect of this adoption is incompatible either with the organizational structure (T9) or with the type of activity (T8) of the companies surveyed, or requiring more time for the implementation (T16). Whereas, the C2 component (29.08%) shows that in the case where this implementation is compatible, it is either complex to manage (T10) or with an unexpected performance level (T17). It should be noted that we had to eliminate items (T15 and T18) to meet the critical threshold of KMO.

VI. CONCLUSION

The problem of the impact of ICTs on the transformation and change of organizations as a source of difficulties for companies or as a way of getting them out of their difficulties can be tackled in several ways.

The transformation of organizations, as a means of prevention to the difficulties of the companies or as a source of opportunities for their support and their recovery, must be integrated into the societal debate, at least in its behavioral and societal component.

This process of transformation, decomposition and recomposition of work and workspace is only in its infancy in Morocco. It would be the cause of many changes but also of difficulties of companies ignoring or refusing the silent revolution underway in the world of economy and enterprise. It raises many questions that deserve a societal debate, serene, responsible, structured and urgent.

The manifestation of many factors of change at the same time means that there is no ICT-related determinism. The same technologies do not produce the same effects, because everything depends on the other innovations and the way in which their implementation took place.

ICTs play a key role in the functioning of SMEs, but the benefits they derive from them are more differences in management and management of the human factor than technical differences. Beyond the aims of technological choices, the modalities of managerial practices such as structure and time management are then deterministic factors in the management of organizational change.

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