Organizational factors explaining the introduction of digital technology in the company: A qualitative analysis with managers of SMEs in Agadir city

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Abstract:
Today, digital technology is being introduced everywhere in companies, which increasingly look to improve their assets in order to best meet the needs of customers, better communicate with suppliers and achieve profitability on all levels. However, there are several factors that influence the implementation of digital technologies and impact their development, they are of various types: cultural, environmental, technological and organizational...

The objective of this article is to expose the main organizational factors that act on the introduction and improvement of digital technologies in organizations.

We have to do this, and after having carried out a theoretical study concerning the literature review related to our research subject, conducted a qualitative study with a sample of nine managers of SMEs from various sectors of activity in the city of Agadir. The analysis of the results was carried out using the IramuTeQ software.

The results of our study showed that organizational factors, including the support of top management and the role of senior management in the decision-making process as well as the participation of employees in technological projects are the most determining factors in the introduction of digital technology within the companies studied, without forgetting the availability of surplus resources and financial means.

Keywords: Digital technology, organizational factors, managers, company.

1. INTRODUCTION:

Until today, organizations continue to spend on digital technologies and their budgets are increasing, even in the face of economic crises. Digital technology is now being established everywhere in companies, which are increasingly looking to improve their assets in order to best meet the needs of customers, better communicate with suppliers and achieve profitability on all levels. However, there are several factors that influence the implementation of digital technologies and impact their development, they are of various types: cultural, environmental, technological and organizational ... The main objective of this article is to unveil the organizational factors that influence the introduction of digital technologies and their improvement in companies.

2. LITERATURE REVIEW:

In their article "Determinants of Strategic Utilization of Information Systems: a Conceptual Framework" (Masrek and all, 2009) the authors cited the different factors that influence the use and quality of Information
Systems within organizations (technological, environmental, etc.). Among these factors, those of an organizational type seem to occupy an important place, this mainly concerns the management support. Based on the importance of the role of the top management for organizations, it is not surprising that their support has been one of the organizational factors most discussed in several studies on the adoption of Information Technologies.

Top management support refers to the extent to which senior management understands the importance of the technologies function and its degree of involvement in its activities (Jarvenpaa & Ives, 1991). The top management who are interested in this function will allow the implementation of an enabling environment facilitating success and improving the quality of these technologies, while providing the necessary resources such as time, space, equipment and people. King and Teo (King & Teo, 1994) have made it clear that support from senior management facilitates the successful deployment of strategic Information Systems applications. In support of this idea, that of Järvenpää and Ives (Jarvenpaa & Ives, 1991) who discussed the role of senior management support in improving the use of digital technologies and who considered it as a necessary ingredient for progressive use of these. The researchers also suggest that "when the vision or objectives are shared within the community organization and constantly communicated and supported by management, this will make it possible to identify common objectives with regard to technological progress and the quality of the Systems Information set up" (Masrek and all, 2009). The knowledge of managers in Information Technology influences this factor since the experience of senior management in technology directly and positively impacts the extent of its use in an organization.

Sultan Mohammed Said (Sultan, 2012), for his part, considered the nature of the organizational environment in which technologies are used as one of the most important factors facing the application of information systems. For him, the fact that the technology depends, fundamentally, on individuals in the supply, synthesis, production, dissemination and interpretation of data, can influence its objectivity. In addition, the perception of technologies as an innovation generates a certain degree of resistance to change, in particular by considering evolution as innovation.

Another organizational factor relates to excess resources which refer to the extent to which a reserve of resources is perceived to be in excess. Indeed, the "Slack Resource Theory" suggests that past financial performance provides excess funds (Zeribi-Benslimane & Boussoura, 2007) these funds may be channeled towards future technology investments. If the company has additional resources, it can allocate them more to excel in technology. The existence of these resources means that the organization can afford costly innovations, bear the costs of implementing developed systems and explore new ideas and technologies in advance of a real need.

Information intensity is also considered to be an organizational factor that influences the quality and success of technologies, since products characterized by information intensity are generally more complicated to order or use, and require other complementary and explanatory information which accompanies them, which multiplies the tasks and the data. Indeed, information-intensive businesses will have a greater need to operate them properly and will find it more difficult to process them daily efficiently than other businesses. "Previous studies have shown the effect of information intensity on the adoption and use of e-mail, mobile internet and ERP (Sultan, 2012)".

Other organizational factors that influence the quality and proper functioning of technologies have been considered in related studies in the literature, in this sense we cite the decision-making structure of the organization. Previous studies (Boynton and all., 1994) have found that decentralized decision-making can be considered one of the greatest facilitators for the adoption of inter-organizational systems and the use of digital technologies.

On the other hand, there were studies (Brown & Bostrom, 1994) that indicated that centralized organizations are achieving better efficiency in IT management and they tend to adopt more successful and better developed Strategic Information Systems applications.

Other related studies add to the above factors "manager style". It is in this sense that Lu and Wang (Kalkana and all., 2011) treated the relationship between management styles, user participation and the success of technologies during the various stages of system development. Their findings produced unified results. On the one hand, they found that management styles were linked to success and improvement of the system differently during the stages of its growth. Indeed, during the development and maturity phase of the system, the two people-oriented styles or those focused on the execution of tasks have a significant positive relationship with the success of the system. However, they have no effect on the success of the systems at the initial stage.

In addition, firm size was rated as one of the most important organizational factors for technology adoption, "a large size of the company offers more possibilities and opportunities to apply developed technologies. Other
studies have also found that enterprise size is strongly associated with the delivery of ERP, e-commerce and web services (Masrek and all, 2009). Company size can therefore influence the degree and efficiency with which a company uses technology to promote its products. In fact, there are many reasons why large companies started using more flexible and better technologies compared to small companies, "they have more resources and are more able to take risks than their rivals smaller, not to mention that a flexible system and technologies often cost several million dollars and requires specialized engineering staff to operate it "(Lu & Wang, 1997).

On the level of people, research on the acceptance and adoption of digital technologies has, on their part, brought out many competing models that proposed different factors. We quote, as part of this work, Unified Theory of Acceptance and Use of Technology (UTAUT) who studied the constructs of performance and effort expectancy (Performance expectancy is defined as the degree to which an individual believes that using the technology will help him to attain gains in job performance and effort expectancy is defined as the degree of ease associated with the use of the system), social influence and facilitating conditions and their impacts on the introduction, acceptance or rejection of technologies. In addition, the theory of reasoned action examined attitude, behavior variables, and subjective norm and the link that could exist between them and the adoption of technologies. The technology acceptance model also treated the constructs of the perceived usefulness of the technology (the degree to which a person believes that using a particular system would enhance his or her job performance ) and its ease of use as an explanation of its adoption. (Venkatesh et al, 2003).

The theory of planned behavior raised the same issue, but adding the variable of perceived behavioral control as an explanatory element of the behavior and intentions of individuals towards technologies and gave as result a model combining it with the technology acceptance model (Combined TAM and TPB (C-TAM-TPB)). These models, as well as several others, have played a major role in explaining the variables that influence the acceptance of technologies on the individual and behavioral level of each person. They would deserve to be deeply studied, however, we have been content in this work to quote them briefly in order to focus on organizational type factors and their relation to the question of the establishment and adoption of digital solutions.

3. METHODOLOGY:

In this research work, we seek to explain the existing reality in an objective manner, independently of the object studied. The nature of our research problem, the targeted contributions and the approaches adopted suggest that our epistemological posture is mainly part of the positivist scheme.

The subject of the introduction of digital technologies within companies in which we are interested is far from being at the exploratory stage, due to the existence of various researches and studies which have served us as a theoretical basis. What results from this is our choice of the deductive approach.

After having brought out from this theoretical study the main factors that push business leaders to opt for and adopt digital technologies. We opted for a qualitative research method through an interview guide that we developed and whose main themes are:

Theme 1: Company activity in relation to digital technologies;
Theme 2: Explanatory factors for the introduction of digital technologies in companies;
Theme 3: Factors that block the adoption and introduction of digital technologies in business.

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1 Enterprise Resource Planning is a software package comprising various modules which use a single repository and which ensures organizational coherence between the functions of the organization and the management levels.

3 Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system.

4 Drawn from social psychology, TRA is one of the most fundamental and influential theories of human behavior. It has been used to predict a wide range of behaviors.

5 TAM is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job.

6 The model of PC utilization, the innovation diffusion theory, the social cognitive theory, the motivational model of technology use…
Our interview guides were administered to 10 SMEs managers in Agadir city. According to the digital marketing research expert Bertrand Lavalou, "It is generally accepted that, for a given problem and with a sufficiently diversified sample, a minimum of 10 to 12 interviews is necessary to draw sufficiently robust conclusions". However, the results analyzed concern only 9 responses because one of the managers was at the same time in charge of two companies.

The questions that have been asked through our guide do not concern a specific digital technology, but have the main objective of detecting the perception of managers and revealing the factors which explain, according to them, why certain SMEs continuously introduce new technologies and digital solutions while for other companies, handicaps exist and deprive them of benefiting greatly from these technologies.

After collecting all the responses, we have developed a corpus that groups them all, we have purified it so that it can be analyzed on our software.

4. RESULTS ANALYSIS:

In order to analyze the responses of the nine SME managers from the city of Agadir to our interview guide. We first, and as we have already mentioned in methodology, developed a corpus that brings together all of their words, then we proceeded by the Analysis of Similarities (AOS) of the textual matrix "corpus" which was carried out by IramuTeQ software. This analysis essentially served us to bring out important conclusions related to the first and second theme of our guide, namely all the factors concerning the introduction of digital technology in business and this in relation, in particular, with the sector of activity of the company and the use of technologies within it.

The analysis of the results related to theme 3 was also done by IramuteQ through a cloud graph.

4.1 Analysis Of Similarities (AOS)

This analysis is a technique based on graph theory, conventionally used to describe social representations, based on survey questionnaires. It makes it possible to show, in a single graph, both the common elements, but also the elements differentiated according to variables related to the corpus. The figure below presents the main results obtained in the AOS, they will be discussed later.
We notice first of all that apart from the strong and obvious link between the technology and digital blocks, three other blocks are correlated with technology, namely: Business, Time and Information. The first theme in our guide deals with the relationship between business activity and the use of technology. The “Company” block presents the main information concerning the companies studied as their sectors of activity, their specialty, the projects they work on and this in relation to technology, this explains the existence of terms like (establishment / introduction), adoption… It also reveals the main technologies essential for the daily work of these companies such as internet, fax, software, to which are added the basics like landline and mobile phone and social networks. Turning to the corpus, it turns out that technology is at the heart of the activity of the companies studied, and that a simple technological blocking means stopping work.

For companies in the transport and logistics sector, they use integrated management software, highly developed and specialized software, and connected objects and solutions for the digitalization of all functional areas for better information monitoring/sharing. In addition to logistic software, IT platforms and software for the management of logistics platforms. GPS location is also essential for these businesses.

From Figure 1 and more specifically the “Information” block, it also appears that technology is strongly linked to information. The most repeated terms are: (platform, telephone, success, essential, management, transmission).

Going back to the corpus, managers affirm that information is crucial for their activities and that their actions and decisions are based on the quality and quantity of the information collected. For a company working in the field of civil engineering and various electrical works, the manager said that the amount of information to be...
processed remains average, but requires great vigilance on a daily basis and precision during its transmission. It also requires a lot of time and caution.

By analyzing the content of the “technology” block in relation to “time”, a new variable linked to the latter emerges, which is “communication”. Managers say digital technology allows their companies to react responsively to customer requests and to present their offers to the public in a more attractive way. For transport and logistics, managers say they are trying to reduce transit time, reduce the time it takes for goods to arrive at their destination, and that through these technologies, they communicate better, and more effectively to avoid delays. Communicating with these fast technologies avoids many problems related to the quality of services, ensures better traceability and protects companies (for insurance in the event of theft or damage to determine the responsibilities of each party for example).

As mentioned above, companies working in this field (goods transport, logistics) were also those who spoke more about the use of highly developed digital solutions. For these managers, the telephone and basic technologies are outdated in the field of transport (which explains the terms that appeared in the “digital” block). New digital solutions help them to better organize loading appointments, manage truck fleets, traffic, as well as for the management of logistics platforms, of all that is reception of goods, preparation of orders, preparation of expeditions…

4.2 Cloud graph of the factors blocking the introduction of digital technologies:

The second and third themes of this study focus on the explanatory organizational factors and those that block the adoption of new digital technologies and solutions. By analyzing the answers related just to these two themes, the main terms appearing on the technology block emerge and which are also presented in the following cloud graph:

![Cloud graph](image)

**Fig. 2: Explaining and blocking factors of the introduction of new digital technologies**

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8 We can have real-time monitoring using on-board "GPS" technology, or use the TMS platform, for example, to avoid telephone communication that does not work when the number of operators or carriers is too high. This platform allows each stakeholder to deposit the information available to them and each party consults the information that concerns them.
The terms which refer to the answers to this topic relate first to the words "factors, develop, adopt, block" basically used to answer the questions.

Indeed, the concept investment takes an important place in this diagram with the relative terms (capacity, investment, lack, resources, financial ...).

Of the nine respondents, five consider that investment prices in certain digital solutions remain expensive, with the lack of budget from which their companies suffer and which influences the financial shares reserved for digital and D&R. Financial capacity may, according to other respondents, intervene as a variable to guide the choice between the types of investment in technology.

Managers also consider that they must take into account the opinions of their employees and their acceptance of any technology before implementing it. It’s true that technology investment decisions are centralized at the top, but recommendations can be initiated by employees and will then be addressed by central management who will make the final decision. In addition, this investment is a strategic choice, but despite the decisions being made by top management, they are then delegated to departments with the appropriate knowledge and who can make the establishment project a success. According to them, it is humans who make technology work. Indeed, the existence of the terms: human, employee, staff, resistance, technical problem, delay, performance in this block, explain the factors that push people to refuse new digital solutions because they resist for fear of delays in work in the event of breakdowns, maintenance problems, lack of training, and also the questioning of the performance relationship between technology performance and business performance.

Without forgetting that for a manager, the transparency provided by information systems can also be disturbing.

Another manager’s response in this regard mentioned that for his company, the oldest people are those who are more resistant to new digital solutions. According to him, these seniors are the most qualified in the company, and the technologies which they are already used to using, do not pose problems, neither resistance, nor conflicts of people and the information is shared there. For their case, even if the financial resources of the company is encouraging element of adoption of new technologies, the fact that the company does not suffer from financial problems, but also can’t afford to invest in what refuse some of its employees, especially since their refusal is justified by the desire to keep the work safety.

According to two other respondents, their companies have staff who are satisfactory in terms of work but who are not necessarily open to the introduction of new technologies.

The opinion of a manager says that human nature is always resistant to change⁹. However, their company watches over informing employees of the importance of any new technology and its contributions, and adopts training plans to facilitate the use of the tool without forgetting the fact of involving them in the project as a stakeholder.

The term "innovation" is also present on the cloud above, it relates to the fact that technology is perceived as innovation and this according to the field of activity of the company and its level of technological development. Indeed, some managers (three) think that new digital solutions are perceived as an innovation and as being a very probable source of errors and problems by employees. For others, the perception of these technologies as innovation results from the delay of Moroccan companies in this area.

The other managers consider that the technologies are not perceived as an innovation because the solutions they use are largely already adopted by several organizations and have demonstrated their performance. The staff often has an idea of how it works before it is implemented.

Customers are also a factor which imposes the use of new technologies for some companies. These technologies are no longer a choice, but a working condition.

Various other explanatory factors for the introduction or rejection of digital technologies have emerged from the responses of the managers interviewed. We cite the level of training of the employees for whom the technologies will be intended and which essentially concerns the lack of adaptation of these tools to the technical capacities of the users, which represents a training challenge. We also cite the lack of effective technological solutions and the existence of few companies specialized in the field (for example no products adapted to transport, in particular that it is a sector which requires continuous support to develop the software in time).

⁹ In the words of this manager of a transport company, employees are more resistant to the technologies that constitute control for them "example of GPS for drivers."
5. CONCLUSION:

The introduction of new technological solutions and developed digital tools is continuously of great importance at present. However, and according to the results of our study, it appears that technologies are not perceived in the same way in all companies, even less in different activity sectors. Technologies considered commonplace and basic in some areas may be a luxury for others. The companies we studied in this article belong to different sectors. The organizational factors that result from this study mainly concern the support of top management and the role of management in the decision-making process, the participation of employees in technological projects, as well as surplus resources and the availability of means "mainly financial". This study deserves to be spread over a larger sample in order to be able to study several companies in each sector and compare the results in order to reveal the impact that the variable “sector of activity” can have on the organizational level of the company and then on the adoption of new technologies. Another variable deserves to be studied, it concerns "resistance to change” which could negatively impact the efforts of managers relating to digital projects but also the degree of motivation and involvement of employees in order to make these projects succeed.
6. References


