

MICEP - A Methodology for Digital Business in SME

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Abstract

The World Wide Web technology, which is supported on the Internet, is transforming all business activities into information-based activities, where one can see a radical change of the traditional theoretical models and organizations. The small and medium enterprises are the type of enterprise that can benefit more using the Internet for digital business. We have found out that current methodologies present gaps that make them not good enough to help small and medium sized enterprises define such a strategy and follow an implementation path. Thus, we propose a methodology to support the complete implementation lifecycle of digital businesses in small and medium sized enterprises.

Keywords: digital business, small and medium enterprises, methodology

1 Introduction

The Internet had and still has a great impact on society. The way it shapes and handles the business is no exception. The systematic usage of the Internet, World Wide Web (Web) and Systems and Information Technology (SIT) have revolutionized traditional markets and businesses and are now in the midst of intense global competition, even where Small and Medium Enterprises (SMEs) need to participate. Never before companies, especially SMEs, had to face such a global and open competition. It is they who are required to meet the new demands by customers and business partners, putting enormous pressure on organizations.

The environment for e-business has also offered many opportunities to improve and expand the internal processes and interactions and business-to-business (B2B), business-to-consumer (B2C) and business-to-administration (B2A) transactions, among others.

The business processes that are e-enabled, supported by digital media, accelerate and facilitate the flow of information, allow the sharing of information and knowledge and thus create new opportunities for expansion and development of new connections between the various business partners around the globe (Ballou et al. 2000; Cross 2000). Those are the processes that allow the existence of participants in a distributed business process: end users, suppliers, producers, people responsible for marketing and others from different geographical locations.

At the heart of the transformation process is the level of integration of digital business (DB) and trade between external and internal processes and systems, to enable enterprises to do development of successful and sustainable digital business models. Such companies are in a

privileged position to digitize their processes, products and distribution agents (Choi et al. 1997). Apart from the perspective of the product or area of activity, the depth of the impact of electronic commerce and business, or conversion, the size of the impact of the transformation depends on several internal organizational factors, such as products, management, structure and employees, and the external environment, political, economic, social and technological and, in addition to micro forces such as competition, suppliers, customers and technology suppliers (Al-Qirim and Corbitt 2002a; Al-Qirim and Corbitt 2002b).

For the purpose of this work, SMEs mean all companies classified within the European Commission Recommendation 2003/361/CE, of 6th of May of 2003.

SMEs are very susceptible to environmental forces (Blili and Raymond 1993). Consequently, it is crucial the identification of contexts and significant factors for the success of digital initiatives and an explanation of their impact. However the two extremes, purely physical versus purely virtual organization does not imply that the SMEs should elevate to the level of exclusive digital markets, becoming virtual. Rather, depending on certain contextual impacts, organizations can be represented along the continuous line that separates the two extremes. For example, Adam and Deans (Adam and Deans 2000) suggest that there is a tendency in organizations to migrate from both ends to a mixture of physical and virtual organization, or bricks and clicks (Gulati and Garino 2000). Moreover, some organizations have started only in digital markets, never having existed before in the physical markets, whereas other companies may have decided to start immediately with a presence in both types of market.

2 The Need of Methodological Support

The digital business has its own characteristics and it is accepted that their operations allow for a greater level of efficiency than the traditional business. The introduction of electronic commerce and digital business requires that the company rethinks and redefines both the business strategy and the processes that exist with the e-transformation in mind.

Once we have made a literature review of the models and standards and other efforts made to date to help organizations in this process following the decision of e-adoption, we have concluded the absence of a methodology that covers the entire cycle of development that leads to the necessary support of the company that has decided to follow the path of e-business (Mamede et al. 2007).

It is thus important to propose a methodology that supports an existing business to adopt such characteristics, particularly in the case of SMEs. Different companies have implemented various business processes which are in some cases closer to the digital businesses than others. Further, different companies have different levels of sophistication in terms of systems and technologies of information and also different internal knowledge in this field. The question is what steps must be taken in addition to examining the current organization and the subsequent development of a guiding plan, to move the company in the direction of a digital business.

3 The MICEP Methodology

Due to the lack of methodologies to support the digital business implementation in SMEs, we have developed the “Metodologia para a Implementação de Comércio e Negócio Electrónico nas Pequenas e Médias Empresas” (MICEP).

The methodology we are proposing can be seen as a set of guidelines for organizational transformation. It provides a visual representation of the major steps to be taken towards the transformation to a digital business. Each step represents a level of sophistication in particular. This allows a company to see its current position and plan the future path.

The methodology, shown in Fig. 1, consists of several stages and sets up its implementation in continuous cycles, in spiral. The proposed methodology is made up of a set of activities which can be divided into two parts: first, a group of main activities (MA), which constitute the core of the methodology, which are prominently represented in figure 1; second, a set of complementary activities (CA), which support the realization of the main activities.

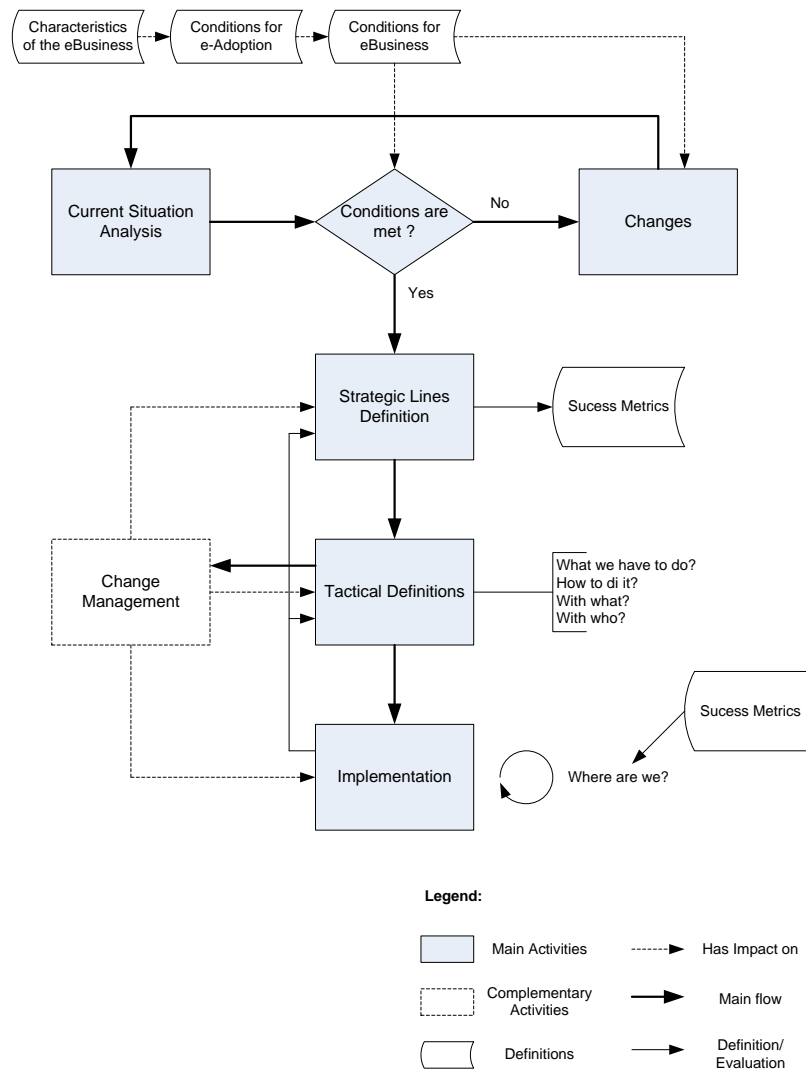


Fig. 1: The MICEP methodology

One can look to MICEP as being made of two different parts, as shown in fig. 2. Once the implementation stage, which is the last activity of first part, is finished, the second part of the methodology starts, with a full analysis of the work done and the results achieved in order to define future paths for improvement.

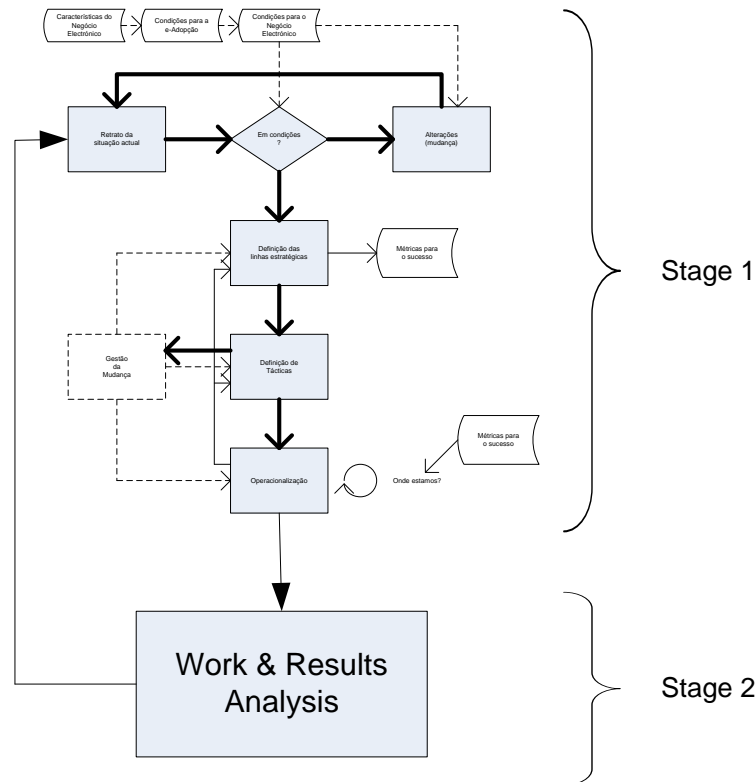


Fig. 2: The macro view of MICEP methodology

As main activities, we have the following:

- MA1. Current Situation Analysis
- MA 2. Verification of the existence of conditions for the DB
- MA 3. Amendments to the creation of conditions for the DB
- MA 4. Strategic Lines Definition
- MA 5. Tactical Definitions
- MA 6. Implementation
- MA 7. Analysis of Results and Impacts

As complementary activities, we define the following:

- CA1. Initial Settings (Characteristics of Digital business, Conditions for e-Adoption, Conditions for Digital business)
- CA2. Change Management
- CA3. Definition of Success Metrics

The main activities begin with the assessment of the initial situation, with the intent of determining whether the basic premises for the implementation of the mechanisms for e-business and the application of the methodology exist in the organization.

The next step is to validate whether the conditions exist or if such changes are required and possible to realize. This initial step is crucial to the success of the whole project, because if the organization has not met the basic premises then it will never, or only with great difficulty, be possible to realize the implementation of e-business. If the conditions are not guaranteed, then a series of activities, aimed at the creation of such conditions, will have to be developed. In this situation, we may be facing a critical factor for the usage of the methodology. On the other hand, if the conditions exist, then we can move to the next level, starting up the stage of strategic lines definition.

In the strategic definition, it will be implemented internal and external reviews and reflections in order to create the strategic statement to the company's digital business. Also as a result of this step, we have the definition of metrics which will allow the measurement of the extent of success and the identification of the critical success factors.

After the previous phase, it will take place the formulation of tactics. In this phase, it will be obtain answers to what needs to be done to achieve the strategic objectives, what actions to be undertaken, using what resources or assets and who, inside or outside the organization. The answers to those questions will assume the form of deliverables like the integration architecture, the governance model and the implementation plan. In the next phase, implementation, it will be applied the knowledge built around the theme, in the preliminary stages, in order to effectively implement the solutions that serve the strategic purposes of the company. As a result, we will have the set of business processes to be involved, the technological infrastructure to support those processes and the training that will be required of all users that will have to deal with the new tools.

When the implementation phase is finished, we consider the first stage of the methodology achieved. The next stage means the analysis of the outcomes and impacts of all projects in order to influence the improvements and help define future paths.

The complementary activities complement the nuclear activities. The first CA1, begins by establishing the initial settings where the characteristics of the DB in the specific market are analyzed, as well as the conditions for e-adoption and implementation of DB in the company.

The CA2 is also very important, and it has its own development plan which is connected to the implementation plan set in MA5. Nevertheless, this sideline has an impact on virtually all main activities.

The CA3 is developed in the same period of time as MA4 and establishes the conditions that will gauge the success of the implementation of the remaining MA.

For each MA there are one or more tools that support the activities to be undertaken, like the ones shown in table 1.

Table 1. Support tools used in MICEP

Activity	Tool
Current Situation Analysis (MA1)	Levels of Organizational Transformation Matrix for transformation opportunity analysis DB Opportunity/Threat indicator Nolan model (adapted) Matrix for modeling opportunities/capacities
Strategic Lines Definition (MA4)	DB initiatives modeling Critical Success Factors listing
Tactical Definition (MA5)	Integration architecture for infrastructure Implementation plan Governance model
Implementation (MA6)	Business Process description (BPMN) Process reengineering (Muthu, Whitman e Cheraghi (Muthu et al. 1999) methodology)
Change Management (CA2)	Frame model

4 Methodology Validation

For the validation of the methodology we have decided to follow with the application to a real case. This application was directed to review the applicability and usefulness of the MICEP methodology as a tool to support the implementation of mechanisms for digital business. Thus, a Portuguese, a Spanish and an Italian SME, with interest in this project, have been selected and we were able to fully apply MICEP. As a common characteristic, all of them are SMEs in the pharmaceutical industry.

In reviewing the work done, two main comments can be made: first, we have seen the usefulness and support that the use of the methodology can provide to a company that has as a strategic objective to be electronically linked to the entities to which it relates; second, we have noted that the methodology covers the whole cycle concerning the implementation of mechanisms for digital business, from the strategic assessment to the evaluation of what is implemented and the impact that such projects may have on the strategic review of the organization. The use of MICEP was important to, successfully, implement the initiatives of DB in an SME. As the methodology goes from the strategic planning to the implementation itself, including change management, it makes the decision of e-adoption and its consequences directly linked to the business strategy, involving the management of the organization. Moreover, taking into account all the steps foreseen in MICEP, all ideas and aspects related to the DB initiatives are compiled and sorted, helping determining what may indeed be implemented. Thus, it is fair to say that MICEP is a contributor for change, ensuring that all DB related aspects are well covered, leading to the success in such projects.

Therefore, we can conclude from this case study that the proposed methodology allows organizations to successfully complete all activities related to the e-adoption decision. Any future refinement of the methodology, which could be achieved through the study of more application cases, will result in the improvement of efficiency.

5 Conclusion

The methodologies and standards that partially support the move towards the implementation of e-business and how should the organization change, was presented and discussed in the previous work by Mamede, Amaral and Coelho (Mamede et al. 2007). It was the absence of a methodology that could support the development of DB initiatives, leading to the definition and automation of business processes and their implementation, that motivated the development of a proposal translated in the form of the MICEP methodology.

The MICEP methodology is complete and complex. It is complete because it covers the entire cycle from the analysis of the situation of the company in terms of IT readiness, going through the definition of initiatives, selection of what must be implemented and the implementation itself. Further peripheral issues, as change management and reassessment of all the work done, as input for a new cycle is also in the scope. The methodology is complex because it incorporates a relatively wide range of tools. This is also a strong point of MICEP. As a tool it can be always replaced by another one, provided that at least it accepts the same inputs and produce the same kind of results, so as to continue coordinated with the others. Thus, as the methodology matures, we can come to the conclusion of the need to use other tools to the detriment of some of the existing ones, and perform this simple amendment.

The methodology fills the gap found concerning the existence of such tools for SMEs. With this tool, the company will be able to understand which path to follow towards electronic commerce and digital business adoption and implementation. Moreover, the SMEs can use it now as a tool to help it move on its own or, at least, to have an idea of what has to be done by external consultants, if internal capacities and skills are not in place.

The validation of the methodology, probably the weakest point in the present work, will be done in time, with more real world case studies and applications. Those applications will be of great importance for the future development of the methodology and help it achieve a maturity level where it can be then accepted in a universal perspective.

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