

METHODOLOGY FOR BUSINESS MODEL DEFINITION OF COLLABORATIVE NETWORKED ORGANIZATIONS

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It is important for stakeholders to understand business potential and feasibility before investing in designing and implementing Information Technology services that support the enterprise operation. Ontologies for Business Models capture the essential elements and their relationships that contribute to provide value to all parties to validate the underlying rationale of the business opportunity. This paper presents a template and methodology to capture the elements and their relationships in a Business Model for Collaborative Networked Organizations. The template is a skeleton based on an ontological approach, and the methodology describes how the skeleton could be used to explain and illustrate the business models. Results and experiences of a real study case using this methodology are described.

1. INTRODUCTION

In the present world business have discovered that their competitiveness strongly depends on the relationships they establish and maintain with their customers and suppliers, and clearly identifying the value added to the products they sell. Collaboration is thus a necessary strategy that all business should pursue and manage. Information and communication technologies (ICT) provide the means to have organizations networked in collaborative environments to support their business interactions (ECOLEAD 2004). Consequently, a new breed of business organizations has emerged, arranged from once disperse elements, and now associated through ICT

The participants and their roles in a networked organization need a business model to describe how value is created and shared among participants. Different approaches could be used to describe the participants and their roles, such as textual, graphical, or combinations of both (Osterwalder 2004, Godjin 2002). A framework useful as reference to describe business models of networked organizations could be defined by an ontology. An ontology for business model provides a generic formal description of actors, their roles and their interactions to provide objects of value.

Ontologies by themselves are not enough to define business models. The representation needs a methodology to describe how actors and their roles are found, how value is assigned to objects, how relationships among actors are defined, how financial aspects should be considered, and how access to objects is provided by actors. This paper discusses the importance of ontologies for business models, proposes a methodology for business model definition supported by ontologies, and presents results and experiences using the methodology in a real study case of an enterprise who sells ICT based services for small and medium enterprises.

2. BACKGROUND: ONTOLOGIES FOR BUSINESS MODELS AND COLLABORATIVE NETWORKED ORGANIZATIONS

An ontology includes a set of concepts and their relationships that could be used to model a real world or business aspect using stated principles. Concepts are the things that are recognized in the domain of discourse, relationships define how concepts could be combined, and some guiding principles help to identify valid concepts and relationships. Several ontologies have been suggested in the business modelling domain (Godjin 2002, Osterwalder 2004, and OBELIX 2005). Rather than defining a new ontology for business model definition, we base our analysis on the ontology proposed by Osterwalder (2004). As we want to define a general methodology for business model definition, we consider that the ontology proposed by Osterwalder is the most general. In Osterwalder's ontology, generic concepts are: customers, products, value proposition, and financial aspects. These concepts are detailed in the elements that define each high-level concept.

Collaborative networked organizations are described as a planned arrangement of independent organizations around a core objective, associated via ICT technologies to perform harmoniously as one single establishment. Substantial research on CNO and Virtual Enterprise concepts have been done in the recent years (Camarinha-Matos et al. 2004, Molina et al 2005).

CNOs are formed from (and within) clusters of enterprises in similar industries, their existence might be temporary and devised to take advantage of a particular market opportunity. CNOs should be justified in such terms that the economic benefit for each participant enterprise should be superior to the benefit obtained working on its own.

CNOs demand a different approach of the business rationale (model) which considers entities separated by distance, with independent and distinctive management environments, and diverse needs, but working in cooperation to achieve one goal.

3. METHODOLOGY FOR BUSINESS MODEL DEFINITION

The methodology is a five steps process, where we propose the basics to construct a business model (figure 1).

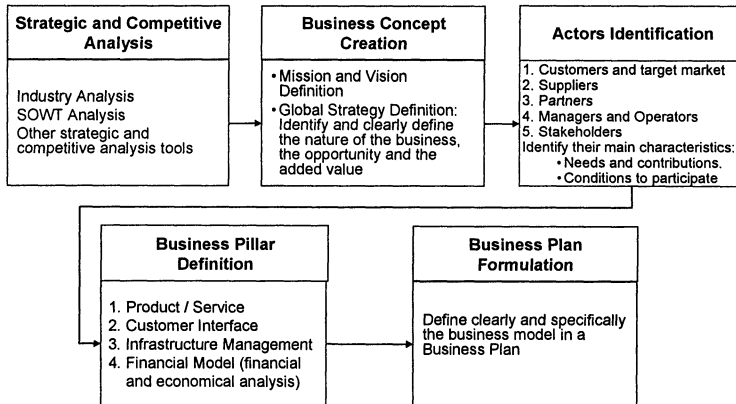


Figure 1 – Methodology for business model definition

3.1 Strategic and Competitive Analysis

Competitive analysis helps to identify and understand the current competitive condition of the collaborative network. This analysis should help to visualize the industry attractiveness, profit and collaboration potential of the CNO. The methodology suggest to use Porter (1985) five competitive forces to determine the state of CNO competition: threat of new entrants, bargaining power of costumers, threat of substitute products or services, bargaining power of suppliers and the number and position of competitors. These forces, some times called external drivers (Molina 2003), should be analyzed considering that new CNOs could arise as potential customer, suppliers or competitors. The overall attractiveness is considered by summarizing the five forces and identifying opportunities for the CNO in the market sector. Comparing the results found with the CNO potential and weaknesses determined through a SWOT analysis will provide a diagnostic picture that serves as foundation to support the CNO concept creation step.

3.2 Business (CNO) Concept Creation

In this task the market needs are identified thus validating the existence of a business/collaboration opportunity for the CNO. The definition of the mission, vision and strategy of the CNO is performed. Also, the CNO nature, the existing opportunities, and the value added of products/services are identified. Any CNO model will work with a real and sound collaboration opportunity (profit or non profit), and a real and sound market need that requires being satisfied. Four fundamental steps support the validation process of CNO concept creation: 1) the description of the need to be satisfied, 2) the identification of the main benefits provided, 3) the identification of the competitive advantage offered, and 4) a descriptive overlook of the product or service that the customer will be paying for. Once these steps are performed, conclusions should be drawn and the opportunity should be easily perceived. The results of these steps should be expressed in terms of market need, value chain impact and competitive advantages.

3.3 CNO Actors Identification

The quantification of the value offered through the product or service depends completely on the subjective perception of the customer; so, it is critical to understand the nature of this perception. Likewise, the customer often is not an individual, but a process of organizational decision making, and every player in the decision chain should be identified. Partners, suppliers, shareholders, managers and operators of the CNO should also be identified in terms of: main characteristics (profile), needs, conditions to participate on the business/collaboration, and the competencies that each actor is going to contribute to the CNO business model.

3.4 Business Pillar Definition

This phase consists in defining the four business model pillars and elements in accordance with a given CNO business model vision and objectives (Figure 2).

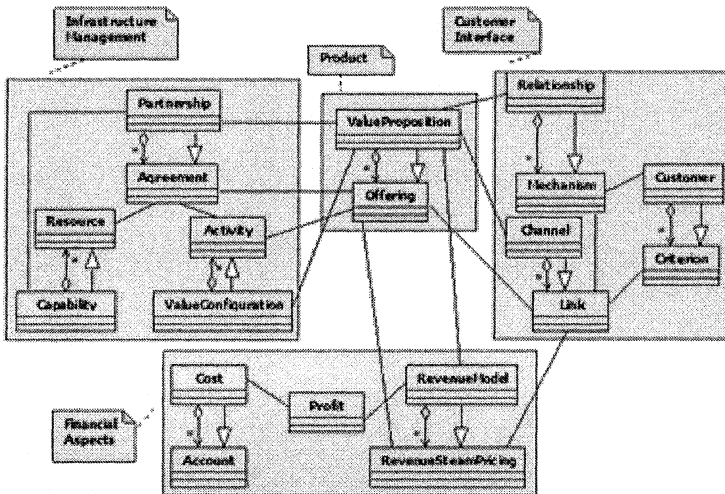


Figure 2 – Business Pillars and Elements (adapted form Osterwalder, 2004)

Product Pillar: this pillar includes one building block, which focuses on the “value” proposition of the product or service. The value proposition should be unveiled by the same primary questions used to define the nature and the opportunity of the CNO business (Customer Interface Pillar). The activities in this pillar includes: description of the needs to be satisfied, identification of the main benefits provided and description of the offering and the advantages of the CNO.

Customer Interface Pillar: this pillar defines all the characteristics and circumstances related to the customers of the CNO. The activities in this stage include: 1) identify target customers, its profiles and market characteristics, 2) definition of the means to get in touch with the customers (Distribution channels), and 3) identify the links between the CNO and customers (Relationships).

Infrastructure Management Pillar: refers to the organization and management aspects of the CNO venture. The principal activities include: 1) definition of the

activities and resources arrangement necessary to create value for the customer (Value Configuration), 2) definition of how the product/service will be deployed in terms of business capabilities (design, installation, operation, maintenance, management processes) and 3) determine the required partnerships.

Financial Aspects Pillar: refers to the definition of the revenue model, cost structure and CNO business model sustainability (financial performance and growth potential). Three activities are performed: 1) identification of the investment required; 2) identification, allocation and evaluation of cost elements, the capital budgeting needs, the procedure to assure the cost-effectiveness; 3) definition of: pricing policy, tariff structure, expenses policy, and analysis of the revenue stream; 4) conceptualization of the accounting / financial system, and determination of the financial and growth indicators.

3.5 Business Plan Formulation

The final phase is to formulate the CNO business plan. This document describes the CNO business concept and explains the opportunity in which is based the whole model, it also summarizes the objectives of the CNO, depicts why the CNO will succeed, identifies the CNO resources (money, people and technologies) that will be needed and the collaboration schemes that should be devised, as well as how those resources will be obtained, and defines the processes involved to succeed. Key sections to include in a business plan are: executive summary, CNO summary, products and services, market analysis, strategy and implementation, management summary and financial plan (Molina, 2003).

The business plan acts as the catalyst for the business development formal process; the business model explains how the model will be implemented, and describes the markets and project management information, including the cash flow. The business plan also validates and predicts the feasibility of the business model; intrinsically the business plan offers feedback to the business model, and input to revisit and change the model according to outcomes detected when planning the execution phase. Interaction between business plan and business model is virtuous circle.

4. CASE ANALYSIS: A CNO EXAMPLE UNDER THE BUSINESS MODEL FRAMEWORK ASSESSMENT

The following case analysis is included as an example of how the business model approach has been applied to a CNO. The CNO described in the following section is a real virtual enterprise devised to foster small and medium enterprises (SMEs) competitiveness throughout sharing competitive managerial and operational resources. The sustainability of this CNO, named PYME-CREATIVA (PYME as the Spanish acronym for SME), unconditionally depends on a feasible business model. Intuitive design of a CNO is replaced with our methodology. In the process, several potential flaws were detected and redesigned.

4.1 PYME-CREATIVA Project

The PYME-CREATIVA goal is the development of information technologies necessary for the creation of a HUB, which, through the integration of e-services, promotes the creation of virtual organizations based on value added networks of SMEs (small and medium enterprises). PYME-CREATIVA business concept is based on the Virtual Industry Broker business model and in its operation, focused on the creation of Virtual Organizations based on SMEs. This project is developing five integrated e-services: e-Marketing, e-Brokerage, e-Engineering, e-Supply and e-Productivity.

The operational characteristic of the HUB of integrated e-services was found during the strategic and competitive analysis of the project (focused on Mexican SMEs needs). In this analysis several analytical and strategic tool were utilized: five forces industry analysis, strategic benchmarking, strategic wheel, etc. This analysis identified that current individual e-services offered in the marked does not solve, in a systematically and integrated way, the problems and limitations of Mexican SMEs and the cost of access was out of reach for them. The four business model pillars of PYME-CREATIVA are described in the next paragraphs (Figure 3).

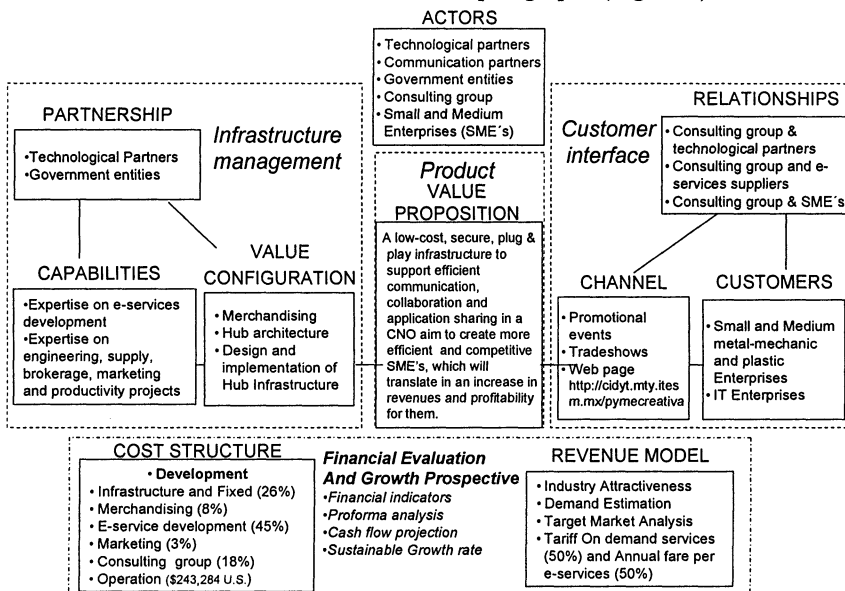


Figure 3 – PYME-CREATIVA Business Pillars and Elements

Value Proposition Pillar refers the characteristic of the five e-services that will be provided through a technological platform (HUB), which facilitates the creation of new business opportunities for SME manufacturing industries by sharing technology capacities and being able to access new global markets.

Customer Interface Pillar serves for the target customer definition, in our case, metal-mechanic and plastic automotive SME and, application services providers (ASP) that wish to utilize the HUB. Communication channels consist in means to make the project public; for this, promotional events, trade shows and also website

advertising are used. The relationship defines the process for establishing strategic alliances with businesses aimed to reach and create value to customers.

The *Infrastructure Management Pillar* consists in identifying and managing the IT infrastructure needed to provide a reliable and valuable service. Partnership element analyses strategic alliance with business that develop generic software applications to provide interoperability between the HUB and the applications. Capabilities element correspond to expertises in the group to develop a product that creates value to an entity. In the value configuration element all data and process are managed by a central HUB, the advantage provided for SMEs is that they do not need to invest in expensive IT equipment to obtain services of this magnitude.

The elements of the *financial pillars*, cost structure and revenue model serve to identify, classify and allocate the cost elements of the Project and the cash generation respectively. Finally a financial evaluation of the business performance and the growth opportunities of the SME's will be done during the execution of the business.

Not all the necessary elements for the business plan development are yet defined for this particular case. Obviously, the business model shall be clear and consistent, and although the business opportunity and potential market demand have been tentatively established, the technological feasibility is still being explored, and a number of assessment tests will be performed in different market schemes. However, the results obtained to the moment are a demonstration business opportunity is being conducted in the correct direction.

Some of the contributions by the methodology proposed to PYME-CREATIVA are the following: Identifying pillars of PYME-CREATIVA business model helped to define the characteristic of the hub and the value proposition tended to add value to the customer. Determining the cost structure presented a clear panorama on the amount of cash flow that need to be generated for the business feasibility. Main contribution of customer interface's Pillar was the visualization and establishment of the target market and the ability to determine SME specific technological needs. Once, the value configuration and capabilities were determined, the need to establish technological, governmental and communication partners through strategic alliance arose in order to have a robust and efficient business, aim to offer a complete solution for the SMEs. In short, the Methodology proposed serve as a valuable tool in the strategic panning and the definition of PYME-CREATIVA's business model.

4.2 Related work

The need to base the operation of a networked organization in a clearly defined business model was evident from so called DotCom debacle (Glass 2001). There exist several examples of organizations whose success is the result of a competitive strategy reflected in their business models, e.g., Dell (Kraemer 2000), Southwestern Airlines (Kim 2002), and Walmart (Stalk 1992). The common denominator in these examples is that their strategy is the creation of a unique valuable position, involving a different set of activities (Porter 2000). The set of activities could be identified from a reference framework defined by an ontology for business model (Osterwalder 2004). The next step to assist companies in defining competitive and sustainable operation is a methodology based on an ontology for business model definition.

5. CONCLUSIONS

This paper proposes a methodology to describe business models for networked e-business. The methodology is unique in that it provides the steps that could be applied to describe business models in a systematic way. The elements of a business model and their relationships are described and used to show their use to elaborate a particular business model. The methodology is a guide for enterprises to define mission and vision, the strategy to implement them, and business models based on an ontology, which results in a detailed business plan. Neither of the steps is more important but instead all of them are necessary to define business models of networked organizations.

6. ACKNOWLEDGMENTS

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