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BUSINESS MODEL, CUSTOMER NEEDS AND INNOVATION MANAGEMENT: PROPOSAL OF A CONCEPTUAL PROCESS FOR COMPETITIVE IMPROVEMENT

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ABSTRACT

The study aims to conceptually determine the process by which the business model, customer needs, and innovation management relate with entrepreneurial competitiveness. The method is based on documented research and it covers five areas; *Area I: Business Model*, which involves a proposal of added value, vision, mission and values; *Area II: Marketing*, which covers customer needs, wishes and purchase stimuli, defining the product/market and product attributes; *Area III: Competitive Matrices*, which covers the environment, market appeal, competitive position and risk, vulnerability; *Area IV: Strategy Creation*, which defines business-related Strengths, Weaknesses, Opportunities and Threats, cost-benefit analysis of strategies and added value. *Area V: Innovation Management*, featuring: technology, product, service, sales and organization, application of Innovation Management Tools, decision-making solutions are proposed for company's management and/or directors, and the Prototype product

Key words: Business Model, Customer Needs and Innovation Management.

INTRODUCTION

The purpose of this document is to describe, through a documented study, the current situation related to the elements that drive a relationship between a business model and customer needs, taking into account innovation, as well as the way they are managed with an objective to provide organizations with a differentiation tool for improving their competitive position. Therefore, this document is divided into three sections: 1) approach to the issue, objectives, hypothesis, research questions and a justification, which allow to evaluate the scope of the research. 2) Theoretical framework, which summarizes business model concepts, needs and stimuli for customer's purchase with innovation management, as well as a proposal of a conceptual process model, followed by section 3) which contains a discussion and a summary of obtained results.

CONTEXTUAL REFERENCE

The Oslo Manual (OCDE, 2005) in paragraph 12, refers to *the importance of marketing (selling) methods, which have an significant role in a company... they are an important factor in the success of new products... market studies and customer contact may play a critical role in the development of products and processes through the innovation introduced by the demand.* Global Innovation Index report (INSEAD, 2012; pg.xix) places Mexico on the 79th place out of 141. Although the country has great growth aspirations for becoming the *7th Worldwide Economy in 2020* (Milenio website, 2012), it hasn't managed to hold a sustainable position in the index (vs. rank 81/125, INSEAD, 2011, pg.xix; rank 69/132 INSEAD, 2010, pg.14; rank 62/130, INSEAD, 2009, pg.13; place 37/107, INSEAD 2007, pg.27.) This circumstance is reflected in its competitiveness level, which is ranked in place 58/142, according to the report: *The Global Competitiveness Report 2011-2012* (World Economic Forum website, 2012.) Based on the above, the problem is expressed through a general question (GQ): **What is the process proposal that relates the business model, customer needs and innovation management for the improvement of business competitiveness?**

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OBJECTIVES

General Objective (GO): To determine a process proposal that relates the business model, customer needs and innovation management for the improvement of business competitiveness;
Specific Objective 1, (SO1): To describe the main elements that are involved in the proposal that relates the business model, customer needs and innovation management for the improvement of business competitiveness;
Specific Objective 2, (SO2): To determine a general conceptual model *ex ante* of the process that entails the relationship about the business model, customer needs and innovation management for the improvement of business competitiveness.

HYPOTHESIS

General Hypothesis, (GH): Based on a documental study, it is possible to determine a general conceptual model *ex ante* of a process that relates the business model, customer needs and innovation management for the improvement of business competitiveness.

RESEARCH QUESTIONS

Question 1, (Q1): What is the description of the main elements that are involved in the process that relates the business model, customer needs and innovation management for the improvement of business competitiveness?

Question 2, (Q2): What is the general conceptual model *ex ante* of the main elements that are involved in the process that relates the business model, customer needs and innovation management for the improvement of business competitiveness?

RATIONALE

OCDE (2009, pg.25), indicates that inventions or development of products and/or processes, which are protected by patents *increase the dynamic efficiency of the economy by fostering innovation and, at the same time, growth and value creation*. The WIPO report (2012, p.17) shows that Mexico, up to 2010, has contributed with 0.7% of all worldwide patents (US: 24.8%; China: 19.8%; Japan: 17.4%; European Union: 7.6%; Germany: 3.0%; Brazil: 1.1%, among others). Requests for patents, trademarks and utility models (OMPI website, 2012) generated in 2010 in US: 420,815; 710,601; 80,454 in comparison with Mexico, respectively: 1,591; 78,999; 2,154. Therefore, this study is deemed convenient to be sought-after, since our country shows very low levels of systematic use of innovation. Refer to **Table 1**.

Table 1. Large-scale establishments, by sector, which develop and/or implement actions related to new product creation, by establishment size, 2003.

Sector	The establishment has a department, which is, totally or partially, dedicated to the design or creation of new products or processes.		It invests in the creation of new products, materials, devices or components		It registers products and other works of intellectual creation with the intellectual property institutions		It has full-time qualified staff dedicated to innovation of products, materials, devices, components or processes		Total
	Yes	No	Yes	No	Yes	No	Yes	No	
Manufacturing	6 155	13 111	6 600	12 666	1 738	17 528	6 686	12 580	19 266
Business	14 093	64 491	11 052	67 532	3 660	74 924	0	0	75 584
Services	7 826	32 816	7 334	33 308	1 946	38 696	0	0	40 642

Source: INEGI website, 2003

The social relevance of this study is based on the fact that the industry lacks a systematic process that allows aligning a value proposal of the business model with customer needs and product features, based on the IMT². The theoretical value of the study is based on the documented review of state of the art knowledge in relation to a business model, value proposal, customer needs, and purchase stimuli with the product's features, in order to apply IMT. Additionally, it proposes actions related to product-market matrices, as well as its competitive

² IMT, Innovation Management Tools

positioning based on environmental considerations, yielding a comprehensive proposal for a wide enhancement of the general model, becoming a platform for generating additional lines of study. The employed methodology approach aims to identify, organize and combine data for obtaining a practical tool that can be used by the management and/or directors.

THEORETICAL FRAMEWORK

The study analyzes concepts like competitiveness, marketing, and customer behavior, as well as innovation for the purposes of finding common points, which would allow determining and describing the main variables, thus proposing a general conceptual model *ex ante* of their involvement in innovation management.

Business Model

In order to create, deliver and capture value, Osterwalder and Pigneur (2010), propose a model called *Business Model Generation*, which consists of 9 units: (1) customer follow-up with: target, niche, segmented, diversified and multi-platform; (2) added value proposal with: innovation, performance, personalization, design, brand status, price, cost and risk reduction, accessibility, convenience, usability; (3) channels, such as: own, partner, direct, indirect; (4) customer relationships, with: personal assistance or customized support, staff support, self-service, automated services, communities, value co-creation, (5) income stream, with: asset sales, subscription fees, loans, rent, advertising; (6) key resources based on the physical, intellectual, human, financial aspects; (7) key activities, such as production, problem resolution, platform/network; (8) key partners, with: optimization/economies of scale, reduction of risk and uncertainty, acquisition of key resources and activities; (9) cost structure, with: cost and value drivers, fixed costs, variable costs. On the other hand, special emphasis is made *on focusing the business on the customer and not on the market*, thus defining the *Mission* (what does the company do) around the business: *what does it do? Who does it serve? And how does it serve?* (Hill and Jones, 2011, pg.14), the *Vision* (*future state of desired business*) and the *Values* (*behavior of Management and employees*), which suggests that they are subject to continuous review due to being considered a source of competitive advantage (Hill and Jones, 2011, pg.16)

Proposal of Added Value

Bonel et al. (2003), define value as: *a set of goods of economic or any other nature (power or prestige) sought after by the owners and managers of the organization, as well as the products, services and solutions offered by the organization to its customers at any given moment, as well as all elements that allow an organization to continue evolving and adjusting to the needs of its environment and its customers*, identifying different agents that are benefiting from it. Refer to **Table 2.**

Table 2. Beneficiaries of Value Creation

Value Creation for:	Description
The Customers	This is a process of value creation process through Marketing strategies, supported by the Quality Assurance policies, aimed to capture and to maintain customers, creating high expectations of value and providing a high satisfaction level. This type of customer-oriented value creation should be focused at increasing the short to medium term shareholder value.
The Shareholders	A final and a crucial approach to company evaluation. It is carried out through the distribution of dividends among the shareholders or by increasing the value of shares or invested capital. <u>Any other approach to value creation must be aimed at creation of value for the shareholders.</u>
The organization and/or the Company	A planned adjustment of internal processes of the organization (technical and human resources), the capacity to adjust is obtained for the sake of ongoing implementation of continuous improvement of processes, systems and policies. From the market perspective, the objective is to anticipate a change in the conditions before the competition, for the purposes of increasing the presence and intending to consolidate the leadership on the market. From the organization's perspective, the objective is to ensure that it is prepared to face the processes of change required by the market before the competition, and to transform such capacity into a competitive advantage, into strength.

The Sector	Organizations and companies are not isolated entities - they are grouped into economic activity sectors, the analysis of which may show the maturity level of corresponding markets and the underlying solutions.
The Society	The society is considered a new player in the value creation process. It is complementary to customer value creation and it should be considered as a positive or negative feedback, depending on whether customer value creation is not detrimental or beneficial for the rest of the society.

Source: Bonel et al. (2003) with our own adaptation

White and Bruton (2011) refer to value as a process in changing stages. **Refer to Table 3.**

Table 3. Value processes

Value process	Driving Force	Operational Measurement	Financial Measurement
Creation	Innovation, New Venture, Risk-taking	Research and Development; Investment; New Markets	Sales and Profit Growth, Moderate Return
Adoption	Imitation; Reassignment - Acquisition of Resources	Products and Geographical Coverage	Growth; Increase and High Return
Protection	Barriers, Market Power	Market Participation, Efficiency	High and stable Return
Destruction	Competition; Abandonment; Game	Investment Cuts, Loss of Participation, Extreme Action	Decline; Various Discharge Results

Source: White and Bruton (2011, pg.327)

The *proposal of added value* is one of the basic components in the creation of a *business model* and it is a task attributable to the managers since it is *the conception of how to incorporate company's strategies in a coherent way in order to achieve competitive advantages, with profitability and generation of higher returns* (Hill and Jones, 2011, pg.6).

Customer Needs

In order to determine customer needs, different criteria have been created in order to identify them, as well as the generated desires and purchase stimuli, which affect customer behavior. A summary of principal models is provided in **Table 4.**

Table 4. Customer Behavior Models

Model	Description
Economical	Customers follow the maximum utility principle based on the marginal decrease of utility. The customer wants to spend as little as possible in order to obtain maximum benefits. This is based on the <i>Price Effect</i> : The lesser is the price, the bigger will be the purchased amount. <i>Substitution Effect</i> : the lesser is the price of a substitution product, the smaller will be the utility of the original purchased product. <i>Income Effect</i> : The greater generated income or amount of available money, the greater will be the purchased amount. According to behavior scientists, this model is not complete, since it assumes that the market is homogeneous, that buyers have similar behaviors and they are only focused on the product or the price. It doesn't take into account all other aspects, such as perception, motivation, learning, attitudes, personality and socio-cultural factors.
Psychological	It is based on A.H. Maslow needs hierarchy model. At any specific moment, an individual's behavior is determined by the most urgent need at that moment. This also shows that there is a priority for needs. First, the basic needs are met and then the secondary ones. Motivational forces that stimulate the individuals to act govern the purchase and behavior process, and it commences with a need. It is a driving force and also a mental phenomenon. A need emerges when the individual is deprived of something and thus mental tension is created, driving the individual towards a goal-oriented behavior in order to cover the need. Once the need is satisfied, a new need appears and the process repeats. There are 5 types of needs: (1) Physiological: water, air, thirst, hunger, sex, protection, etc. (2) Safety: protection, order, stability, etc. (3) Social: friendship, sense of belonging, affection (4) Ego: prestige, status, success, respect (5) Self-realization
Pavlov's Learning	It is based on the conditioned response experiments conducted on a dog by the Russian physiologist Ivan Pavlov. Learning is defined as behavioral changes that occur in practice based on prior experience. The learning process is defined by 3 factors: (1) <i>Conditional stimuli</i> drive an action in order to fulfill a wish. (2) <i>Unconditional stimuli</i> are inherent and

	<p>it arises from physiological needs, such as hunger, thirst, pain, sex, cold, etc. It is a learned response, such as an effort to obtain status or social approval. There are small stimuli that provoke the purchase, such as: (a) discharge signals and (b) non-discharge signals for a purchase; the latter influence but do not activate the purchase. In turn, they are divided into (b1) product-related signals: color, packaging, size, price, etc. (b2) information-related signals: advertising, promotion, third-party recommendations, recommendation by sales people, etc. The response is: to buy or not to buy. (3) Reinforced strengthening of the association between the unconditional stimuli and the conditional one; when a person observes a satisfying factor, just as it proves convenient to make a purchase.</p>
Entrance-Process-Exit	<p>This is a simple customer behavior model, where the entrance for the customer is the product, due to company's marketing efforts and social environment (family, reference groups, culture, social class, etc), which influence the decision-making process. Marketing and the social aspect are the factors that establish the entrance into the customer's mind. There are 5 stages: (1) <i>Need of Recognition</i>. When a desire emerges, tension is created and a product is chosen to satisfy the need. There is also a possibility that a person may be aware about the product prior to the recognition of the need. (2) <i>Product Awareness</i> is obtained through an advertisement or the exposure in different media or through the social circle. The awareness and the need drive to the creation of interest. In some cases, the interest can also be affected, and the decision-making process is stopped or could be postponed to another moment. (3) <i>Evaluation</i> consists of obtaining more information about the product, comparing it and contrasting it with other products. This can be carried out theoretically or by performing a test. Once the evaluation is completed, customer interest increases towards making purchase or decreases, leading to cancel or to postpone it. (4) <i>Intention</i>, at this phase, the customer carries on with actions aimed for product purchase. Once the product has been acquired, it is used to fulfill the need. While it is being used, the customer becomes aware about the positive and negative features of the product. (5) Post-purchase behavior in which, after having purchased and used the product, a satisfied customer returns and repeats the purchase process. The unsatisfied customer suspends the purchase; therefore, a marketing specialist must pay attention to the recommendations and/or complaints in order to improve the product.</p>
Sociological	<p>This part makes a reference to society. A customer is a part of society and he or she can belong to many groups in a society. These groups influence customer's purchase behavior. In the first place, friends and family can have a big influence on the decision to buy. A customer may belong to a political group with a different dress code. As a member of an elite organization, he or she may face different dress code requirements, thus having to buy items to match the life style of different groups.</p>
Howarth Sheth	<p>Recognizes that customer behavior is a complex process that depends on various concepts, such as learning, perception and aptitudes and consists of 4 sets of variables, such as: (1) Entrance: based on 3 types of stimuli: (1a) significant stimuli, which are tangible physical product characteristics, such as the price, quality, distinctive appearance, services provided and product availability. (1b) Symbolic stimuli, which include the perception of significant stimuli by the individual, for example, whether the price is high or low; that is, it is different from other products, the additional services that it may have, the post-sales services and quick availability. (1c) Social stimuli, which come from the family, friends, acquaintances, social groups, etc. They are considered to be of great importance, since a customer is a social entity that adjusts to the requirements of its environment, which creates habits and customs. (2) Perception and learning constructs, which are psychological variables, for example, motivating factors, attitudes, perceptions, which have an influence on the decision-making process of the customer, who receives the stimuli and interprets them. There are two factors that influence this interpretation: ambiguous stimuli and perceptual prejudice. The first one occurs when a customer cannot fully interpret or understand the significance of received stimuli and does not know how to respond. The second one occurs when an individual distorts the information in accordance with his or her needs and experiences. (3) Exits, where we refer to the decision to buy, after the purchase there can be satisfaction or dissatisfaction. Satisfaction brings a positive attitude and entails brand expansion. Dissatisfaction brings about a negative attitude. (4) Exogenous or external variables. They are not shown in the model and do not have a direct influence on the decision-making process; they influence the customer indirectly and vary from one customer to another; they depend on the traits of each individual, such as their personality, social class, the importance of acquisition and the financial situation.</p>
Engel-Blackwell-Kollat	<p>It consists of 4 components: (1) Information processing, which consists of exposition, attention, understanding and retention of marketing and non-selling stimuli. In order to obtain successful sales, the customer must be adequately selected and be repeatedly exposed to the message. Customer's attention must be captured, so that he or she understands and retains what is being transmitted. (2) Central Control Unit, where the stimuli are processed and interpreted by the individual. There are 4 psychological factors. (2a) Stored information and past experience with the product, which serves as a standard</p>

	for comparison with other products or brands. (2b) Evaluation criteria, which are personal. (2c) Attitudes or moods that change every once in a while and help with product selection. (2d) Customer's personality, which serves as a guideline for making a choice. (3) Decision-making, based on the approach to the issue, internal-external search, evaluation and purchase. Satisfactory and non-satisfactory experience is taken into account for future decisions. (4) Environmental factors consist of: income level, social class, family influence, physical influence and other considerations.
Family Decision	It is important to understand how family members interact among themselves when making a purchase decision. There are different roles, such as: (1) The <i>Influencer</i> participates in the decision to buy by means of providing information. (2) The <i>Observer</i> is a family member who controls the information flow about a product or a brand that they like, and withholds the information that is not of interest to them. (3) The <i>Decider</i> is the one with the power or money and the authority to purchase. (4) The <i>Purchaser</i> is the one who really makes a purchase. (5) The <i>Preparer</i> prepares the product for the final consumption. (6) The <i>Users</i> are those who use or consume the product, individually or jointly. The roles played by family members may differ depending on the product, and the same family member can play various roles at the same time.
Nicosia	It is maintained through 4 fields and sub-fields: field 1 consists of sub-fields 1 and 2. Sub-field 2 is the <i>Customer Predisposition</i> , whose characteristics and attributes are affected by the messages and information from the environment, yielding an adoption of attitudes by the customer. Field 2 is the <i>Pre-action</i> , where the customer investigates, evaluates and gets motivated to buy the product. Field 3 is the <i>Decision to Buy</i> . Field 4 is <i>Post-purchase</i> , when the product is consumed, used or stored. Feedback from Field 4 goes towards Field 1 or <i>Company Attributes</i> where the experience can change the decision to buy and the attitude towards the consumption. This model is considered a comprehensive one, since it covers the build-up of attitudes, product purchase and use, as well as the post-sales behavior.
Industrial Purchase Behavior	It corresponds to a complex world of inter-relations at industrial level. There are 3 significant characteristics: (1) Different involved areas with various interests. (2) Conditions that lead to decision-making. (3) Differences in opinion and conflicts due to purchasing decisions. Therefore, various expectations related to product purchase arise, such as product quality, delivery time, quality of the offer, service, post-sales and price. These are known as the explicit objectives. There are other objectives, such as provider's reputation, credit conditions, provider location, relationship with the provider, technical competence and even the seller's personality, abilities and lifestyle. These are known as the implicit objectives. Thus, it shows the ability to resolve conflicts of different origin and intensity.

Source: Khan (2006, pg.174-187)

Market analysis

The website of the Spanish Royal Academy Dictionary (DRAE, 2012), contains the following information about the word *market*: from the Latin, *mercātus*: **.1. m. Public procurement in a location specified for these purposes on the agreed-upon days.** Thus, main practices of market identification are provided in **Table 5**.

Table 5. Methods for Market Segment Identification

Method Type	Description
Research-based	Studies with multivariate statistical analysis are conducted in order to define customer behavior, attitudes, motivating factors and preferences.
Services of Database Systems with Existing Segmentation	Marketing experts use business and government information, and it includes <i>Consumer Markets</i> (identified through Geo-demographic systems, such as Claritas PRIZM, VALS of SRI Consulting Business Intelligence of the US) and the <i>Business Markets</i> (such as NAICS or North American Industry Classification System of the US).
Expert Evaluation	Marketing knowledge and experience is applied to discover new characteristics of the existing or new markets (which have not been taken into account before due to their nature). Study criteria are established as follows: Geography, Demography, Psychographics, Purchase Behavior, Style, Culture, Customer Profile, etc. Matrices are often created to compare different data, such as Customer Profile vs. Geography, etc.

Source: Loudon et al., 2005 (pg.27-54)

Once the market segment is identified, demand size is measured by (Loudon at al., 2005 pg. 50-54): (1) *market factors*, which explain the reasons for the product-consumption relationship and

its future; their impact depends on the analysis of correlation or arbitrary judgment; (2) *potential segment market*, which appears after the following factors have been determined: segments, customer characteristics and market factors, market *size* has to be calculated, that is, expected sales in this segment, both in absolute terms (units, dollars, etc), as well as in relative terms (percentage). Absolute terms are calculated by using techniques, such as: *measurement of relative potential sales index, market factor method, regression analysis method*, focused mainly on the existing products and services. For new products and services, the following techniques are used: *expert estimations, customer surveys through a substitution method*. With regards to the market research, the Spanish word for Marketing (*Mercadotecnia*) is not registered in the DRAE (2012); the definition that is provided below has a similar structure: derivative of "market (*Mercado*) and – technique (*técnica*), which means: 1. f. *A set of principles and practices aimed to the increase of sales, especially of the demand.* 2. f. *Study of procedures and resources available for these purposes.* Nonetheless, Kotler and Keller (2012, pg. 5) define it simply as: *satisfaction of customer needs in a profitable manner*. Based on *appeal and profitability*, Loudon et al. (2005,pg.168), describe market segmentation in terms of: *mass, personalized mass, a single segment, multiple segments and niche*; also including those based on *different market conditions*, describing: *emerging, growing, mature and declining markets*. It is suggested to exploit the latter by means of: *market change, product change, strategy and marketing mix change*. Given that growth is the main objective of companies, two strategies are named for achieving it: (1) *product/market expansion* (Loudon, et al., 2005, pg.132), creating the matrix shown in **Table 6**.

Table 6. Product/Market Growth Matrix

MARKETS	EXISTING	PRODUCTS	
		EXISTING	NEW
		Market penetration is carried out through the <i>Adjustment of Current Purchasing Behavior, Attraction of Non-Customers, Attraction of Competitor's Customers</i>	Product Development: <i>-New characteristics - Different levels of Quality - Different Product Sizes</i>
NEW	Market Development: <i>-New Foreign Markets - New Segments which do not use the product</i>	Diversification: <i>New Products to New Markets or acquisition of other companies that already operate in this area. It is done through: Product-Technology Relation, Market Relations, No Product No Market Relation</i>	

Source: Loudon et al., 2005 (pg.133), adaptation of our own

and, (2) the *integration* strategies, which are put into practice as: (a) *forward integration* (b) *backward integration* (c) *horizontal integration*. Thus, a *Product/Market* study should contain: *expected demand, end user characteristics, awareness about industry practices and trends, identification of key competitors, market size, identification of growth factors, market stability or decline* (Loudon et al., 2005, pg 154). Once the segment's detail is expanded, *customer study* can be undertaken to discover the general profile, socio-economic, behavioral and psychological traits (Loudon et al., 2005, pg.156.)

Product/Service Attributes

The result of detecting customer needs and the purchase stimuli is reflected in the design of attributes delivered to a customer by the product, such as: *form, characteristics, performance, duration, trustworthiness, style*; and by the service, such as: *ease for placing an order, delivery, installation, customer's training and consulting, repair and maintenance*, along with the desired personnel qualities, such as: *competence, courtesy, credibility, trustworthiness, response capacity, communication*, amongst others (Hill and Jones, 2011, pg.129).

Competitiveness

According to the DRAE (2012), the word "competitiveness" has the following meaning: **1. f.** *A capacity to compete* **2. f.** *Rivalry for the purposes of reaching a goal*, therefore, it is important

that a company generates a *sustained competitive advantage* (Hill and Jones, 2011, p.74), when it manages to obtain an above-average profitability during several years. Company's success or failure is determined by the competition (Porter, 2005, pg.1). Therefore, target market and objective are the main factors in the competitive analysis aimed to determine whether an innovation proposal has commercially viable tendencies.

Strategic Competitive Market Analysis

In order to create a tool that is capable to identify a company's competitive position as well as its competitors on the market, it is suggested to use the techniques named by David (2009), Hill and Jones (2011), Rowe, et al. (1982), Lancaster and Massingham (2011), Gallardo (2012), Hernández and Sánchez (2005), summarized in **Table 7**.

Table 7.-Strategic Competitiveness Matrices of the Organization and the Market

Strategic Matrix	Description
External Factor Evaluation (EFE)	It is carried out in 5 steps: (1) select a maximum of 10 Opportunities and 10 Threats; (2) assign a value between 0,0 (not important) up to 1 (very important); (3) grade each factor from 1 to 4; (4) multiply the assigned value by the given grade; (5) multiply the assigned value by the given grade. Write down the results obtained from the external analysis of the company. Select a maximum of 10 Opportunities and 10 Threats. The value assigned to each opportunity and threat shows the importance of the factor for industry success. The sum of all values must always be equal to 1. Grading tells us how attractive the opportunities are to the company and how much damage can be done by the threats. Opportunities and Threats are graded from 1 to 4. The weighted averages that are obtained prioritize the use of external factor in the SWOT matrix. Total weighted value cannot be greater than 4. The average weighted value equals to 2.5. A weighted value greater than 2.5 indicated that a company responds well to the Opportunities and Threats, less than 2.5 indicates that it doesn't take advantage of all its Opportunities and the Threats can be potentially damaging.
Internal Factor Evaluation (IFE)	Covers Strengths and Weaknesses. From the numerical perspective, it is carried out just as the EFE , only taking into account the internal organizational factors, such as Strengths and Weaknesses.
Competitive Profile Matrix (CPM)	It is carried out in 6 steps: (1) define key success factors; (2) assign a value to each factor; (3) define the companies to be analyzed, (4) rate the performance of each company; (5) obtain total performance points; (6) define your competitive position. Key success factors will take into account the internal factors that must be applicable to all companies subject to comparison. Five to ten different factors will have to be defined for the comparison. Values assigned to each factor indicate their importance for the companies that are being compared. Values are assigned from 0 (not important) to 1 (very important). The sum of values may not be greater than 1. Grades correspond to company's performance: 1=main weakness. 2=minor weakness. 3=minor strength, 4=main strength. Each analyzed company is assigned a grade. A weighted total is then obtained for each company, allowing comparing them and defining a competitive position that can be strong or weak.
RISK/VULNERABILITY ANALYSIS	It is carried out by means of 2 axes: Impact (X axis: Insignificant, Minor, Moderate, Major, Catastrophic) vs. Probability (Y axis: Almost Certain, Probable, Possible, Barely Possible, Unlikely), which yields Risk Areas at the cross of Impact and Probability, to be evaluated by the expert. Vulnerability will be the result of comparing the ability to react before a probability that a threat will occur, placing in 4 sectors: (1) No defense; (2) Danger; (3) Prepared; (4) Vulnerable
Strengths, weaknesses, Opportunities and	There are 4 strategy types: (1) SO = Strengths vs. Opportunities; (2) ST = Strengths vs. Threats; (3) WO = Weaknesses vs. Opportunities; (4) WT = Weaknesses vs. Threats. This yields an 8-square matrix. Information used in the squares comes from the factors obtained as the weighted average of the highest values of IFE

<p>threats (SWOT)</p>	<p>matrix and EFE matrix. It consists of an 8-step procedure, listing strengths, weaknesses, threats, and opportunities, comparing: SO, ST, WO and WT. It takes the factors with the largest weighted score at IFE and EFE into consideration. A list of the squares corresponding to the matrix is made. Listed strengths should be checked against the listed threats and we must try to identify those with a synergy. Determining competitive strategies at the following levels: <i>Functional, Business Model, Corporate, Global</i> (Hill and Jones, 2011, pg.19-20); In general terms, companies start implementing other strategies until they reach a position where SO can be used. WO are focused on improving the weaknesses in order to take advantage of the opportunities offered by the environment. At times, despite the fact that opportunities exist, weaknesses of the company preclude it from taking advantage of them. ST use company's strengths for avoiding or reducing the impact of the weaknesses from the environment. Companies that copy ideas, innovations and patented products are a big threat in any industry. WT use defensive tactics aimed at reducing weaknesses and avoiding external threats.</p>
<p>Internal External Matrix (IEM)</p>	<p>Based on prior matrices: IFE (X axis) and EFE (Y axis). It is carried out in 4 steps: (1) take the weighted totals from IFE; (2) take the weighted totals from EFE; (3) identify the square where the company belongs; (4) identify the square where the company belongs Within the IE matrix, the weighted total, from IFE or EFE, must be analyzed in the following way: between 1.0 and 1.99 it represents a <i>weak internal position</i>. A rating between 2.0 and 2.99 can be considered an <i>intermediate position</i>, and the rating between 3.0 and 4.0 is a <i>strong position</i>. Create 9 squares with different <i>types of strategic action, such as:</i> cell I, II and IV <i>Growing and Building with intensive strategies</i> (market penetration, market development or product development); <i>integrative strategies</i> (backward integration, forward integration and horizontal integration); cells III, V and VII <i>Preserving and Maintaining with penetration strategies</i> in the market, product development; cells VI, VIII and IX <i>Reaping and Withdrawing</i> with entrenchment, disposal or investment withdrawal strategies.</p>
<p>Grand Strategy Matrix (GSM)</p>	<p>It serves as an alternative strategy formulation, it has 4 squares: <i>X axis</i> has the company's competitive position; <i>Y axis</i> has the market growth speed. Strategies proposed for the companies in <i>Square I</i> (strong competitive position vs. rapid market growth) are as follows: market development, market penetration, product development, forward / backward / horizontal integration and concentric diversification. Strategies proposed for the companies in <i>Square II</i> (weak competitive position vs. rapid market growth) are as follows: market development, market penetration, product development, horizontal integration, investment withdrawal and liquidation. Strategies proposed for the companies in <i>Square III</i> (weak competitive position vs. slow market growth) are as follows: entrenchment; concentric diversification/ horizontal/ in conglomerate; investment withdrawal and liquidation. Strategies proposed for the companies in <i>Square IV</i> (strong competitive position vs. slow market growth) are as follows: concentric /horizontal/conglomerate diversification, shared-risk companies.</p>
<p>Strategic Position and Action Evaluation (SPACE).</p>	<p>It indicates if a strategy is to be adopted, such as <i>Aggressive, Conservative, Defensive</i> or <i>Competitive</i>; the axes represent internal and external factors. Internal factors that have to be taken into consideration are as follows: Company's financial strength or fortitude, which is labeled FS in the matrix; company's competitive advantage, (CA.) External factors that have to be taken into consideration are as follows: the stability of the environment surrounding the company, (ES.) Strength or fortitude of the Industry, represented in the matrix by SI. It is carried out in 5 steps: selecting variables; rating variables; obtaining totals; defining axes points; charting a vector. A set of variables should be selected, including: Financial Strength (FS), Competitive Advantage (CA), Environment Stability (ES) and Strength of the Industry (SI). Rowe, et al. (1982, pg.155-156), suggest to consider for FS: investment performance, leverage, liquidity, working capital, cash flow, easy market exit, implicit business risks; for ES: technological changes, inflation rate, variability of demand, competitors price scale, market entrance barriers, competitive pressure, demand elasticity. For CA: market participation, product quality, product life cycle, customer loyalty, use of competitors' capacity, technological knowledge, control over providers and distributors. Lastly, for FI:</p>

	<p>growth potential, utility potential, financial stability, technical knowledge, taking advantage of resources, capital intensity, ease for market entry, productivity, and capacity utilization. Subsequently a numeric value should be assigned to each variable in the FS and SI dimensions, ranging from +1(the worst) to +6 (the best.) Afterwards, a numeric value should be assigned to each variable in the CA and ES dimensions, ranging from -1(the best) to -6 (the worst). A weighted average value of FS, CA, ES and SI is then calculated. Values assigned to the variables at each dimension are added, and they are divided by the number of variables included in the dimension. Average value is obtained for each dimension. The point on the X axis equals to the results obtained by adding FS and EA. The point on the Y axis equals to the results obtained by adding SI and CA. ES and CA results are usually negative. Draw a directional vector from the origin of SPACE vector through a new point of the intersection. This vector reveals the type of recommended strategy for the organization: aggressive, competitive, defensive or conservative. <i>Aggressive</i> strategy square: market penetration or development, product development, backwards, forward, horizontal integration, diversifications in conglomerates, horizontal or combined strategies are recommendable. <i>Defensive</i> strategy square: it suggests that a company must focus on getting over its weaknesses and avoiding the threats: entrenchment, withdrawal of investments, liquidation and concentric diversification. <i>Competitive</i> strategy square: backward, forward and horizontal integration, penetration, market development, product development and shared-risk companies. It has 4 squares: <i>Square I</i> Industrial Strength vs. Financial Strength (FS), suggests the action type: <i>Aggressive</i>; <i>Square II</i> Competitive Advantage vs. Financial Strength (FS), suggests the action type: <i>Conservative</i>. If <i>Square III</i> is used, Competitive Advantage vs. Environmental Stability, the strategic profile is <i>defensive strategy</i>. If <i>Square IV</i> is used, Industrial Strength vs. Environmental stability, the action is: <i>Competitive</i>.</p>
<p>Quantitative Strategic Planning Matrix (QSPM)</p>	<p>It allows the objective evaluation of alternative strategies. It is carried out in 6 steps: listing factors, defining weights, indicating the strategies to review, grading appeals, calculating totals, prioritizing strategies. This is done in the following manner: Consider the strengths, weaknesses, opportunities and threats defined in SWOT. Assign to each factor the weights defined in IFE and EFE. Review the strategies defined in SWOT and evaluate them in comparison with the results of verified matrices. Select an number between 4 and 5 strategies that have a synergy with SPACE, IE and GSM. These should be listed in the upper part of the matrix. Next, the relative appeal of each strategy must be checked against each strength, weakness, threat and opportunity. Assign a rating from 1 to 4: 1= not attractive, 2= somewhat attractive, 3= quite attractive and 4 = very attractive. Grading should respond to the question: "Does this factor affect strategy selection?" If the answer is "yes", then pertinent values should be assigned. If the answer is "no", then it should be left blank. Add weighted grades obtained for each alternative strategy. The bigger the grade obtained by a strategy, the more attractive it will be for the company. This approach allows prioritizing the strategies selected for the implementation.</p>

Source: David (2009), Hill and Jones (2011), Rowe, et al. (1982), Gallardo (2012), Hernández and Sánchez (2005) with our own adaptation

Creativity and Innovation

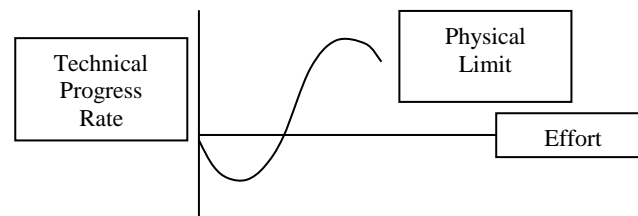
The former arises from the Latin word *creare* that means "produce," "procure." Crea Business Idea (2011; pg.8,) defines it as: *the ability for easy generation of ideas, alternatives and solutions for a certain problem*. Thus, creativity represents an idea generation process, and it ceases to do so when such ideas are implemented into practice through *innovation*; according to the DRAE (2012), it stems from the Latin word *innovatō, -ōnis* and it means: *1. f. Action and effect of innovating, and 2. f. Product creation or modification*. Hill and Jones (2011,pg.130,) suggest that: *innovation is the most important source of competitive advantage*, since it allows the company to: a) differentiate its products, establishing higher prices and b) reduce its cost structure more than competitors, and its market introduction. Thus, successful launches of new products and services are the principal driving factors of a greater profitability (Hill and Jones, 2011, pg.130.) Cooper's case (1999) studied over 200 launches of new products and found out

that out of those that were considered successful, 50% has achieved over 33% return on investment, half of them has an investment recovery period of two years or less and half of them has attained a 35% market share. On the other hand, it should be taken into consideration that the majority of works on innovation are mainly based on the products, while services remain a completely different point of reference due to their particular characteristics, such as intangibility, simultaneity, expiration and homogeneity (Lovelock et al., 2004.) Services have managed to dominate the economy of the XXI century, since they create three-fourths of total wealth and over 85% of employment positions in the US and UK. Nonetheless, little is known about innovation management in this sector (Tidd and Hull, 2003.) Elche (2004, pg.34) argues that innovation of services is more of a social achievement attributable to teamwork than a technological one. Moreover, they contribute the most to the worldwide Gross Domestic Product (GDP), and in Mexico it corresponds to 67%, according to the report issued by the World Bank: *Global Economic Prospects and Developing Countries*, (cited by Lovelock et al., 2004, pg. 6.)

Innovation types

In the Oslo Manual, (OCDE, 2005, pg. 56) innovation is defined as: *introduction of a new or a significantly improved product (good/service), a process involving a new marketing approach or a new organizational approach, in the internal practices of the company, workplace organization or in external relations*, therefore, it doesn't only include the area of technology, products or services. Likewise, the Oslo Manual (OCDE, 2005, pg. 377), recognizes the process of a *creative destruction*, announced by Schumpeter, which mentions two types of innovations: *radical* - contributing to the significant changes in the world and *progressive*, which provide a constant feedback to the change process. Our attention has been brought to the model called *Foster's S-curve with regard to the innovation life cycle*, it explains how the results of a technology-related effort decrease as they are getting close to its limits. The limits of a given technology can be predicted if its physical limits are known, by following an S-curve. **Refer to Graph 1**

Graph 1. Foster's S-curve



Source: Afuah (1997)

Technical progress commences slowly, then it accelerates quickly, and lastly, it slows down depending on the physical limits of the technology. The model's added value lies in how to predict the end of an existing technology and the arrival of technological discontinuity.

Innovation Management and Tools

This concept has been defined in various ways, being interpreted as a way of making administration more brave and heterodox. According to the DRAE (2012): a).-*Administrator* in English or "administration" in Spanish (from the Latin word: *administrare*) with an *ad*-prefix, which includes the direction, trends, proximity, contact and *ministrare* means "to govern", "to order". b).-*Management* in English or "*gestión*" in Spanish (from the Latin: *gestio, onis*), which means "action" and an effect of managing, in a courageous way. Thus, management applied to innovation can be defined by one of three activity types (Morales, 2002, cited by Ortiz and Pedroza, 2006) such as: 1) Sporadic, with few actions or procedures which resolve a problem, usually with involvement of a single person. 2) Intermittent or those that resolve problems by using the same method or procedure, mechanic but it could be very specialized. 3) Systemic, such as activities which stimulate pro-activeness, creativity and teamwork on a regular basis, in order to obtain a new culture that encompasses a new approach of continuous improvement. The first two types are usually reactive, so this circumstance, in the light

of a constantly changing environment, some action opportunities may be lost in the process. Nonetheless, systemic management does not necessarily require a problematic condition, but it can be detonated from a condition that is potentially subject to analysis and improvement, giving rise to its proactive character (foreseeing a better future.) This concept will be used hereinafter in the study, due to its connection to innovation, for observation purposes. **Refer to Table 8.**

Table 8. Selected Innovation Management Tools

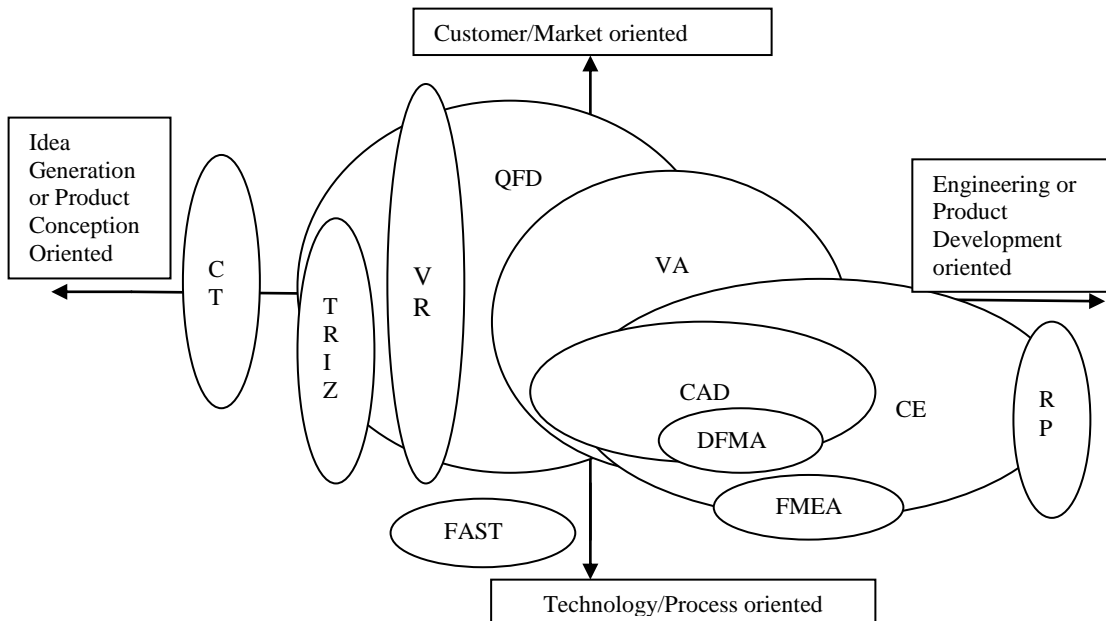
IMT	Description
Benchmarking (Creativity Technique.-CT)	A process of improvement by continuous identification, understanding and adjustment to the most appraised practices and processes within and outside of an organization.
Brainstorming (Creativity Technique.-CT)	Created by Alex F. Osborne, 1941. It is divided into: (1) <i>Brainstorming</i> with a key word, writing the topic at the top part of the page. All generated ideas are written down, setting the imagination flow in regard to a specific subject. Ideas have to be written down quickly as a list, not worrying about the orthography or the choice of words, etc. The goal is to record the biggest number of ideas-concepts during the least possible time. (2) <i>Mental maps</i> , which thoroughly examine the ideas with different graphs associated with the ideas, (3) <i>Box of Ideas</i> , where an idea is shown with a number of attributes for the implementation of a combination of such, (4) <i>galaxy</i> starts by writing a topic in the middle of the page/board. Ideas are written down in a circle around it and they are linked to the center with a line. The next idea is written in a circle. If it refers to the first, idea, it is linked through a line, otherwise, it is linked with the center. Each idea is a star, stars may have planets, and planets may have satellites. Thus, a Galaxy of ideas is obtained.
Re-Engineering Process (RP)	A radical re-design of processes through 7 steps: (1) Organization around the results, not around tasks. (2) The process must be carried out by those who will use its results. (3) Mixing information processing tasks with the actual production of information. (4) Treating geographically dispersed results as if they were centralized. (5) Relating parallel activities in the place where their results will be integrated. (6) Making decisions at the place where the work will be carried out and establishing controls over this process (7) Registering the information only once and at the source.
Change Management	This is a process used to align company's staff members and culture with system changes, business strategy and organizational structure. It consists of 3 phases: (1) Preparation for a need to change at the entire organization, with a wide evaluation of the situation in order to quickly identify main opportunities and chances for success. It divides the organization in smaller groups. (2) Planning and problem resolution based on the creation of a model; development of evaluation of ideas; selection of ideas, implementation and communication. (3) Implementation with continuous monitoring of improvements.
Concurrent Engineering (CE)	It consists of a simultaneous implementation of market research, design, development and production planning for new or improved products. It consists of 7 phases: (1) Project identification. (2) Project scope. (3) Needs and analysis. (4) System design. (5) Development planning. (6) Construction. (7) Installation and evaluation.
Continuous Improvement	It considers a production process as a situation of <i>continuous work improvement</i> . It consists of 7 phases: (1) Identification of the improvement area. (2) Process evaluation (3) Analysis. (4) Action. (5) Study of the results. (6) Standardization of the solution. (7) Future planning.
Design for Manufacturing and Assembly (DFMA)	This is a Design Tool for <i>function X</i> (DFX). This is a systematic procedure aimed at helping the companies to take greater advantage of the existing manufacturing processes and to keep a minimum number of assembly pieces. It consists of 7 phases: (1) Design concept. (2) Assembly design. (3) Selection of materials and low cost process. (4) Concept of the Best Design. (5) Design for manufacturing. (6) Prototype. (7) Production.
Design for "X" function (DFX)	This is one of the most effective approaches that can be put into practice for Concurrent Engineering. It consists of 7 steps: (1) Product analysis (2) Process analysis. (3) Performance measurement. (4) Comparative Benchmarking. (5) Diagnosis for improvement. (6) Advice for the introduction of change. (7) Prioritizing.
Failure Mode and Effects Analysis (FMEA)	A strong discipline of quality assurance used to identify and minimize the effects of potential problems in the design of products or processes. This technique was formalized at NASA in mid-1970s, and it was used for the first time by Ford North America in 1972. There can be various types of FMEA - related to design, processes, means or systems; its number of phases depends on the insertion type.
Rapid Prototyping (RP)	A set of sophisticated techniques, which quickly allow obtaining a prototype of physical products. Advantages: it provides techniques that substitute artisan labor. Direct connection with CAD/CAE systems. Dramatic reduction of the <i>time to market</i> . Main techniques: Stereo Lithography (SL). Selective Laser Syntering (SLS). Laminated Object Manufacturing (LOM). Fused Deposition Modeling (FDM)

Computer Aided Design (CAD)	Graphic design and computer simulation techniques, which allow studying the behavior of products or pieces and their automated handling. They allow object modeling by means of 2-dimensional images (2D) in the horizontal plane, or 3-dimensional images (3D) by means of surface modeling (threads) or solids. This technique allows performing simulations of mechanical, thermal, dynamic and structural behavior of modeled objects (by means of analysis by the finite elements method.) Various software packages are available (AutoCAD, Pro-Engineer, CATIA...) They allow subsequent connections with special machinery equipped with numeric control production tools.
Value Analysis (VA)	Organized and creative method that employs a process of functional and ergonomic design with the objective of increasing product of process value. Value concept: Need --> Function --> Product. The value is defined as: $V=F/C$. It is a quotient between product benefits or functions (F) with respect to its cost (C). It consists of 7 steps: (1) Preparation. (2) Information. (3) Analysis. (4) Innovation. (6) Evaluation. (7) Implementation.
Functional Analysis of Systemic Technique (FAST)	Identifying product functions and evaluating the benefits to be obtained. It distinguishes between user-related functions (URF) and product-related functions (PRF). Functional analysis is performed in 5 phases: (1) List of functions. (2) Organization. (3) Description. (4) Hierarchic order (5) Evaluation. (6) Representation of the functional diagram (FAST) of the product or the process.
Quality Function Deployment (QFD)	This technique allows a systemic and structured introduction of the <i>customer's voice</i> during the process of product design and development. Inter-relates the <i>What</i> (customer requirements) with the <i>How</i> (technical solutions for the satisfaction of such requirements.) Based on the use of different matrices starting off with <i>Quality House</i> .
TRIZ	Created by the Russian scientist Genrich Altshuller in 1946 in order to generate ideas and solutions for product creation by means of a so-called contradiction matrix, which consists of 39 physical phenomena which, when combined, can be resolved through 40 empirically valid technical proposals.

Source: Bakouros and Demetriadou (2004) and Mañá (2000) with our own adjustment.

Mañá (2000), allocated the main IMT for the strategy. **See Diagram 1.**

Diagram 1. Positioning of the main IMT in the Chain of value.

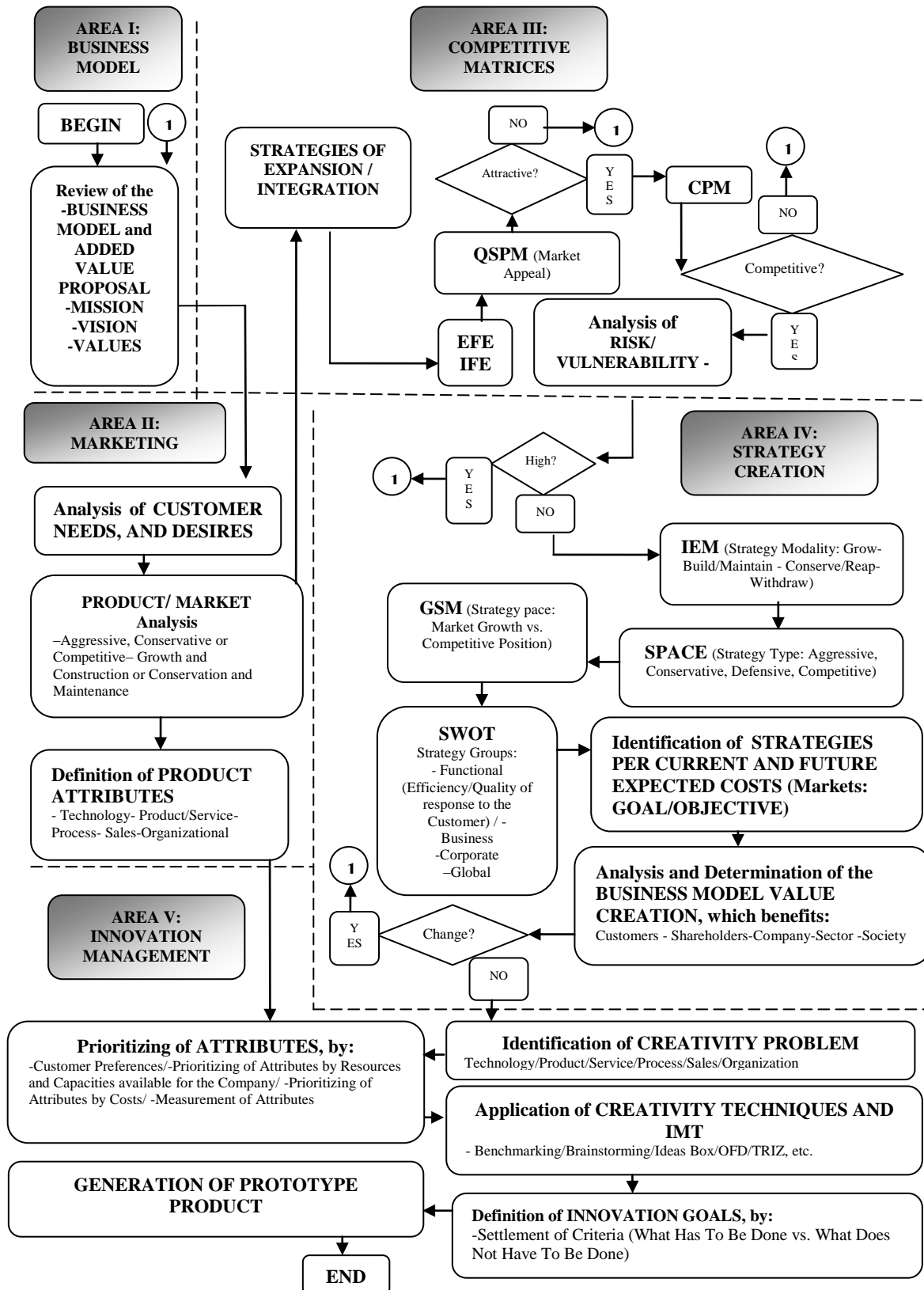


Source: Mañá (2000) with our own adaptation

Based on the above, a proposal of a General Conceptual Model is created. **Refer to Diagram 2.**

RESULTS

Diagram 2.- General Conceptual Model *ex ante* of the process that relates the business model, customer needs and innovation management for the improvement of business competitiveness.



Source: prepared by the authors

DISCUSSION

The conceptual model shows specific areas of analysis and application, initiated in **Area I: Business Model** (Osterwalder and Pigneur, 2010), which is subject to continuous review, based on the proposal for added value, mission, vision and values. Once confirmed, **Area II: Marketing** discovers customer's needs, wishes and purchase stimuli (Khan, 2006; **Table 4**) establishing a relationship between the markets, products and actions that satisfy them, both currently and in the nearest future (Loudon et al., 2005; **See Tables 5 and 6**). Criteria are established for attributes of products and services involving tangible and intangible aspects, considered a delivery of satisfying factors (Hill and Jones, 2011) yielding a double result: the definition of a target/objective market to be analyzed, as well as customer satisfaction attributes listed in greater detail. Based on the above, we obtain the input information we need for **Area III: Competitive Matrices**, which includes *Expansion/Integration* strategies (Loudon et al., 2005), and a strategic matrix is performed (David, 2009; Hill and Jones, 2011; Rowe, et al., 1982; Gallardo 2012, and Hernández and Sánchez (2005); **See Table 7**). Such matrix reports the external conditions of the market (EFE), its internal conditions (IFE), competitive position (MPC) and appeal (MCPE); a risk/vulnerability analysis, which provides the management with decisive elements for continuing into **Area IV: Strategy Creation**. Here, difference is made based on of the main internal and external factors, defining the modality (IE), type (SP&AE), as well as the strategy's pace (MGE); the aforementioned elements define the base for the performance of the SWOT analysis. At this level, cost analysis of current strategies and proposals must be carried out, both in terms of the target market as our goal, as well as a review of the added-value proposal, based on value beneficiaries (Bonel, et. al 2003; **see Table 2**) as well as the value process (White and Bruton, 2011; **See Table 3**). If there are any signs of deviations, actions should be adjusted to match the *business model* and/or the *added value proposal*. As a result, the following is obtained: *identification of innovation problem per type: technology, product/service, process, sales and organization* (OCDE, 2005) with the creation of objectives and goals resulting from the SWOT. Lastly, we can advance into **Area V: Innovation management**, which, by pointing out a creativity problem, is subject to the application of techniques and other innovation management tools (Bakouros and Demetriadou, 2004; Mañá, 2000; **See Table 8**) prioritizing them depending on the attributes.

CONCLUSIONS

GO, as well as **SO1** and **SO2** were reached 100%, in response to **GQ**, **Q1** and **Q2** as well as the **GH**. It has to be pointed out that the elements that were discovered along the process are immersed into a generalizing model, which covers solutions at a conceptual level that are to be detailed at a deeper level: technology, products, services, processes, sales and organization, which are not a part of this study's scope, but that do contribute to the improvement of the directors/managers decision-making process in order to improve competitiveness, based on the market and on the Innovation Management Tools that are available.

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