

PhD THESIS WORK SUMMARY

Decision-making and Strategic Management as Sources of Sustained Competitive Advantage in a High Cost Private Multi-campus University in México

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1 The selection of the research topic, the justification and the relevance of the objectives and research question

This dissertation is written in an era where big and fast changes and challenges are not rare for almost any industry, neither for a classic one like education where it seems that things could keep being constant and unchanged ever. Marginson (2006) referred in Khefacha and Belkacem (2009) claims that higher education is confronted with a major situation of change due to the globalization of the economy and the appearance of new forms of management. Higher education institutions (from now on HEI) are facing a tremendous complex environment nowadays, due to the changes that this sector has experimented in the last years (Yielder and Codling, 2004; Tavernier, 2005; Timberlake, 2004). As Barret (2010) points out, in universities, seeking sources of revenue has become a constant interest, and identifying opportunities for growth and strategic positioning is now essential for survival.

Defining appropriate strategic planning and management models in HEI have become very important in the last years. There are several variables to consider when developing a strategy that pursue the achievement of sustained competitive advantage ((from now on SCA) in HEI such as: academic quality, better professors, good relationship with industry, enrollment of students, research and development, satisfaction of students, position among competitors, new technologies in education, good facilities, good services, the best educative technology, finances, among others. Top-level managers and executives in HEI are also required for good and effective leadership competences. In addition, complexity in decision-making (from now on DM) process that leaders confront in the day to day operation should be considered. Leading academics (professors) and being assertive in decision-making is not an easy task, and department directors are mostly in charge of it. Those directors should be proficient in the academic world in order to have academic credibility (Spendlove, 2007) and at the same time they must have proficiency managing and encouraging people to get the results. For those reasons, there are scholars who even attempt to affirm that strategic management in universities is much more difficult than in industry (Boldt, 1991) referred in (Spendlove, 2007). Theory behind individual decision

making in complex and ambiguous sceneries and how it can affect the performance of the firm should be studied.

Research is going to be performed in Tecnológico de Monterrey University (from now on it will be named as Tec). Tec is a private multi-campus university in Mexico, which is composed of 26 campuses distributed throughout the country of Mexico. The vision is to educate leaders who have an entrepreneurial spirit, a humanistic outlook and are internationally competitive. The main differentiators of the institute are: innovative education model which fosters the development of an entrepreneurial spirit, education with a humanistic outlook, global prestige, and connections with alumni, companies and institutions as well. According to *QS Latin American University Rankings*¹ 2016, Tecnológico de Monterrey was named as the best ranked University in Mexico, and is placed number seven in Latin America. As a country, México will play an important role worldwide speaking, because it is considered as an important growing economy that is part of the *Emerging And Growth-Leading Economies* (EAGLE), which considers the ten emerging and growth leading economies and that “jointly, the group is expected to be responsible for half of all global growth in the next decade — compared with 30 percent for the Group of 7 industrialized nations” (Wassener, 2015). “Further, several banks and professional services, including Goldman Sachs and PricewaterhouseCoopers Economics, predict that Mexico will become the world’s fifth-largest economy by 2050” (González, Félix, Carrete, Centeno, & Castaño, 2015, p. 288).

Thus, the problem that arises for this research is how those high and medium directors in the selected campuses define their strategy, how they deal with uncertainty and risk in DM, what is the role that gut plays in their decision-making process and what is the role that plays the type of ambidexterity and the degree of ambidexterity that they deploy. *It is needed to understand deeply how those variables and factors are or are not interrelated. In the process of understanding how those variables affect performance, it will be also important to elucidate the characteristics that are inherent to those directors that present certain positive specific behaviors regarding to the topics of the research that favors the*

¹ The QS University Rankings for Latin America, evaluate the 300 best institutions of the continent in some defined criteria: <http://www.topuniversities.com/latin-american-rankings>

strategy and the deployment of dynamic capabilities from those who do not. Also in this process it can be understood why some directors seem to excel in the deployment of dynamic capabilities in their “enterprises” (considering their universities as an enterprise). That is the problem’s definition. Thus, in order to understand how medium and top-level directors in HEI behave regarding risk in decision-making, the way they balance exploration and exploitation (ambidexterity) and the way both, ambidexterity and DM, affect the performance in their organizations, it was decided to address the general question and the objectives of this dissertation with a qualitative phenomenological exploratory approach.

After analyzing literature review and the experience in this context, I found relevance in risk and uncertainty in decision-making, ambidexterity and the definition of strategic management. Taking into account the above, the main question of the dissertation is: *How high level directors behave regarding ambidexterity and risk in strategic decision-making and how are they related to performance in 4 campuses of a high cost multi-campus private university in Mexico?*

- a) To understand **how** high level directors behave regarding to **risk** and **uncertainty** in the execution of strategic **DM**.
- b) To **understand how** directors, achieve **Ambidexterity** and **what** are the most relevant **factors** that promote of inhibit it.
- c) To **understand** whether **Ambidexterity**, risk, uncertainty and gut in **DM** is related with the performance and how it is affected.
- d) To **understand how** directors perceived their own strategy and how it is related to University strategy
- e) To **understand** whether **ambidexterity** and/or **risk** and **uncertainty** in strategic DM can influence **dynamic capabilities** (and how it affects the organization).

When exploring literature review about topics related with strategic management in HEI, you can find several theories and cases of decision-making, leadership, strategic planning, strategic execution, the required profile of academic directors, etc. Nevertheless, there is a gap in literature review when trying to find a relationship among risk and uncertainty in

DM, ambidexterity and the deployment of dynamic capabilities in HEI, moreover, in private multi-campus HEI. And it is precisely in this gap that the research of this thesis is proposed. The main particular characteristics of this dissertation, which provide a good frame for the justification, are:

- The research will address the above mentioned gap providing information about how directors and managers in HEI could provide the basis for understanding the deployment of dynamic capabilities; it means how they renew the resources of their universities, in order to provide sustainable competitive advantage.
- Exploratory qualitative research will be used as the research strategy, opening the possibilities for emerging themes and setting the base for future research.
- The research will be executed in a high cost multi-campus university in Mexico. As a private university, more than 96% of the incomes are gotten through the tuition fee of students, and then excellent strategy for student's recruitment and retention will surely come up.

With all the context mentioned above, it is clear that decision-making and the ambidexterity in HEI directors is important to address the complexity of the environment and assure a sustained competitive advantage. This dissertation could provide relevant information for strategic management literature, precisely in topics related with, dynamic capabilities, decision making and ambidexterity, and specifically for HEI.

2 LITERATURE REVIEW

2.1 THE IMPORTANCE OF STRATEGIC MANAGEMENT: BASIC CONCEPTS ABOUT STRATEGY AND THE PATH TO RBV AND DC

The term *strategic management* is a concept that appeared in the mid-'60s, it incorporates two terms (action and methodology) that merge to constitute one action through a methodology, using various tools. *Strategy* complements the term *management*, in the way that in an organization strategy consists of those actions planned by the governing board of an organization that defines the way in which the latter operates and conducts its operations to achieve its objectives (Porter & Lawrence, 2011) and (Thompson, Peteraf, & Gamble, 2010).

It is important to point out that *strategy* itself denotes evolution, we can see that *positioning*, one of the most important features of strategy, is considered today as too static in a dynamic business environment (Porter, 1996). According to Mintzberg, *strategy* is a plan that defines a rational path that should be taking to an action, a guide to face a situation, but a plan that needs action and execution (Mintzberg, 1994) and (Mintzberg, 1988). For Drucker (1954), strategy is a "decisive action". Mintzberg does not agree about strategic planning and management being the same thing or being always connected, since he considers a plan is something static, while a strategy results in dynamism that contains the word action; "strategic planning isn't strategic thinking; one is analysis, and the other is synthesis" (Mintzberg, 1994, p. 107).

Drucker (1954) also introduced the concept of *management-by-objectives* (MBO) nearly 50 years ago. But Drucker's excellent concept was implemented poorly, leading MBO in most organizations to focus on a myriad of local measures and initiatives not linked to high-level organizational objectives or even coordinated with each other. The planning and execution duet was not well understood and was not well set in operation. The

Balanced Scorecard represents a good tool that enables personal objective setting to be integrated across the organization and linked to high-level strategic objectives.

Mintzberg (1987) defines strategy as a plan, strategy deals with how leaders try to establish direction for organizations, to set predetermined courses of action. Strategy as a plan also raises the fundamental issue of recognition – how intentions are conceived in the human brain in the first place, indeed, what intentions really mean.

With a different approach, Porter (2008) indicates that the strategic management process is linked to the 5 competitive forces model; understanding the forces that shape industry competition is the starting point for developing strategy. Every company should already know what the average profitability of its industry is and how that has been changing over time. These forces reveal the most significant aspects of the competitive environment. They also provide a baseline for sizing up a company's strengths and weaknesses.

As already seen, the challenge of strategic management lies not only in the strategy formulation but also in the correct implementation, since both of them determine the success or failure of Strategic Management as such. Kaplan and Norton (2001) maintain that success in the implementation is concentrated on two words: alignment and focus (strategy-focused organization).

As we shall see, a resource-based view of the firm and dynamic capabilities are treated as critical fields of strategic management in creation of competitive advantages and as motors to new important fields knowledge-based view or ambidexterity.

2.2 RESOURCE-BASED VIEW, DYNAMIC CAPABILITIES AND AMBIDEXTERITY: ACHIEVING COMPETITIVE ADVANTAGE THROUGH INTERNAL RESOURCES AND COMPETENCES

2.2.1 Resourced-Based View and Dynamic Capabilities

RBV and DC as we shall see, correspond to the strategic creation of sustainable competitive advantage focusing in internal resources and complement the focus on industry structure that Porter has claimed for years (Brahma & Chakraborty, 2011). Those approaches are especially useful when environment started to change in shorter periods of time, entering in turbulent times, making that past approaches were not sufficient for reacting to a rapidly changing industry (Eisenhardt & Martin, 2000). RBV strategy focuses on the optimization of the role of resources and capabilities as the principal basis for a sustainable competitive advantage (SCA). The RBV is a theory centered on the nature of firms based on its resources, as opposed to theories such as transaction cost economics, which seeks to explain the reason why firms exist (Lockett, Thompson, & Morgenstern, 2009). Another way to define the RBV is as a determined collection of assets or resources that are tied “semi-permanently” to the firm (Wernerfelt, 1984) and (Lockett, Thompson, & Morgenstern, 2009). According to Brahma and Chakraborty (2011) for a firm to have a sustained competitive advantage the resources should be not just rare and valuable, but inimitable and non-substitutable (VRIN resources).

RBV strategy seems to be not enough to support significant and sustained competitive advantage, especially in rapidly changing environments. The problem with RBV is that the view of the firms as a bunch of resources is very static and limited and does not provide explanations on how successful firms endure over time with an increasing competitive environment. According to Barney (1991), dynamic capabilities follow the theory of RBV of the firm. As a matter of fact, DC can be seen as a complement to RBV approach. According to Teece, Pisano and Shuen (1990) when refereeing to RBV in Ambrosini and Bowman (2009, p. 30), “is not only the bundle of resources that matter, but the mechanism by which firms learn and accumulate new skills and capabilities, and the forces that limit the rate and direction of this process”. In this way, they propose an interesting definition of dynamic capabilities as follows: “the firm ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Ambrosini & Bowman, 2009, p. 30). Going deeply in literature, it seems that DC is a complement to the static approach of the RBV to get real and sustained competitive advantage.

A manager is responsible for the profitable usage of the available resources. Thus, a manager's perception is an important dimension in the RBV. Managers' challenge in the use of RBV and dynamic capabilities strategy is not only detecting and anticipating future competitors (Burgelman, 1991) but also being thoroughly acquainted with the functionality of resources that are under their control, recombining them in a range of different ways and determining the most profitable usage for these resources depending on the market.

2.2.2 Ambidexterity: Context and Concepts

In the context of strategy, the term Ambidexterity refers to the "firm's ability to continue to exploit its current capabilities as well as to explore into future opportunities" (March, 1991; Levinthal and March, 1993) referred in (Tushman, Smith, Wood, Westermann, & O'Reilly III, 2004). Regarding to the second definition, March argues that one of the main ways for enterprises addressing the fast changing world is developing efficient and effective ways of combining exploitative and explorative activities.

Exploitation refers to those activities that enhance the short term operation of the enterprises and it is related to the activities that can bring immediate results needed for the short term survival of the enterprise. Exploitative activities refer to the process of learning through the local search and experience, through the "experiential refinement", and the improvement of the best selected and existing routines within the firm (Raisch & Birkinshaw, 2008).

On the other hand, exploration refers to those activities that are aimed to address the future, the long term goals of a firm. Innovation is part of exploration. "Compared to returns from exploitation, returns from exploration are systematically less certain, more remote in time, and organizationally more distant from the locus of action and adaptation" (March, 1991, p. 73). Exploration refers to those activities or routines that are learned from playing and risking new approaches and ways to do things, refers to learning from the process of experimentation and creation (Raisch & Birkinshaw, 2008).

Both type of activities, exploratives and exploitatives, demand such different kind of skills in persons and type of processes and sometimes leadership from top management. That represents a challenge to the different firms, which are realizing that in order “to be ambidextrous, organizations have to reconcile internal tensions and conflicting demands in their task environments” (Raisch & Birkinshaw, 2008, p. 375). That is why “ambidexterity is associated with numerous difficulties, since the two innovation strategies, exploitation and exploration, do not only have different characteristics in terms of timeline, risk and potential return, but also call for distinct organizational structures, processes, cultures, and capabilities” (Ghemawat & Costa, 1993; Tushman et al., 2004) referred by Schulze, et al., (2008).

There are two main ways to address ambidexterity, structural and contextual. Structural ambidexterity is based in creating different structures and focusing each, either in explorative or exploitative activities, it “argues that organizations can become ambidextrous by organizationally separating exploitative and explorative activities while at the same time establishing a planned level of integration. The partitioning of exploitative and explorative tasks allows for a perfect adaptation to the specific needs of the distinctive environments. The integration ensures that all subunits act in accordance with the overall organizational goals” (Schulze, Heinemann, & Abedin, 2008, p. 2).

On the other hand, contextual ambidexterity is the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit. According to Gibson and Birkinshaw (2004, p. 211) “when contextual ambidexterity has been achieved, every individual in a unit can deliver value to existing customers in his or her own functional area, but at the same time every individual is on the lookout for changes in the task environment, and acts accordingly”.

2.3 INDIVIDUAL DECISION MAKING BY TOP EXECUTIVES AS A VALUABLE RESOURCE FOR STRATEGIC MANAGEMENT

Making good decisions is a complex task, even more in today's business world where a large quantity of information and a dynamic environment forces people to decide without having complete information. Making correct decisions is neither an easy nor a quantitative issue, moreover, depending on the extent, the importance, and the magnitude of the consequences; decisions should be made with different approaches. As Shafir, Simonson, and Tversky (1993) point out, "the making of decisions, both big and small, is often difficult because of uncertainty and conflict".

Decision-making in controlled sceneries is quite rare in today firm's environment. In general, decision-makers are more to use a combination of rational and irrational decision-making because all of the options and information about those complex day-to-day decisions are not available. According to March (1978, p. 588), "at first blush, pure models of rational choice seem obviously appropriate as guides to intelligent action, but more problematic for predicting behavior". Most executives will not have the chance to have controlled sceneries when making a decision. Then several considerations should be taken into account, some of them due to lack of information or complex and ambiguous sceneries and other due to the complexity of human behavior and the "non-rational obscure side of humans".

According to Jones (1999, p. 318), "the behavior of a fully rational decision maker would be completely determined by the task environment. If we know the environment and the goals of the decision maker, then we may deduce the decision maker's actions. If however, the decision maker intends to be rational but may fail, then we will need to know something about the cognitive and emotional architecture of the decision maker". In ambiguous and complex sceneries, some authors disagree with 100% rational and well-structured processes in decision-making. They claim that decisions are made not only with the left rational side of the brain, but also with the right side (Mintzberg, 1976) and sometimes even trusting in gut (Hayashi, 2001). "In uncertain, ambiguous, or contradictory task environments, behavior is a function of goals, processing limits, and the connection between the decision maker's problem space and the task environment (objectively characterized). In this far more complex situation, problem-space

representations may interact nonlinearly with goals and processing limits” (Jones, 1999, p. 319).

According to Hayashi (2001), business executives support their important decisions using intuition and trusting their gut, both could be considered non 100% rational approaches. Gut and intuition are directly correlated with experience. It is quite difficult to define what gut and intuition mean, but hearing what important CEOs say could help us figure it out. Non-rational decision-making is not a bad procedure or something that belongs to a small set of firm environments. At the end, decisions are going to be taken to satisfy certain necessities or variables, and doing it in an optimal way does not mean that they are necessary satisfying the decision maker. According to Eisenhardt and Zbaracki (1992, p. 35)” strategic decision making is bounded rational in that strategic decision makers are cognitively limited and engage in a cycling among rational decision making steps”.

According to Jones (1999, p. 297) “bounded rationality asserts that decision makers are intended rational; that is, they are goal oriented and adaptive, but because of human cognitive and emotional architecture, they sometimes fail, occasionally in important decisions. Limits on rational adaptation are of two types: procedural limits, which limit how we go about making decisions, and substantive limits, which affect particular choices directly”. Cecil and Jungren (1974, p. 600) who cites Simon (1947) point out “individuals and organizations cannot maximize decision making in an objectively rational way. In most complex decision-making situations, an individual does not possess the knowledge of alternatives or the consequences or alternatives to select the one alternative that maximizes utility. Instead, the individual seeks an alternative that is satisfactory – one that is better than his level of aspiration (Jones, 1999).

2.4 STRATEGIC MANAGEMENT IN HIGHER EDUCATION INSTITUTIONS

Strategic decision-makers and leaders in the context of decision-making, very accurately point out “the academic institutions are characterized by multitude levels of decision

mingling consensus, negotiation, bureaucratization and hazard. As a consequence, the decision-makers are forced to take the appropriate decisions in order to respond to the expectations of a plurality of stakeholders constituting the university life” (Khefacha & Belkacem, 2009, p. 55). Since HEI are confronting-very complex sceneries because of the complexity of the organizations, in strategic management of those institutions, it is crucial the right choice of those leaders that are going to be in charge of strategic decisions. Mostly those decision makers are related with positions that affect directly academics and students, for example department deans, career directors, presidents of campus, rectors, among others. Looking for a balance between the academic training and the management skills could be a good idea. Cowburn (2005) states that in strategic management it is often argued that public sector organizations, particularly universities, are good to formulate plans, but that when it comes to putting ideas into practice, they frequently fail to achieve objectives. Adding in the same theme, Choban, et al., (2008) state that, “when strategic planning is applied in educational institutions, the process is often truncated by the absence of clearly defined and reliably documented outcomes”.

Either is a private or public institution education still remains a business, Washburn (2005) reinforced this aspect of the university as a constant seeker of revenue and therefore acted more business-like than academic. Universities, and maybe all educational levels, today have adopted the language of business with the help of experts in the management area not necessarily because of their academic expertise. Some scholars argued that certain positions in Universities (mainly management and strategic decision making positions) should be occupied by people that have both academic and managerial skills. According to Washburn (2005, p. 204), “even university presidents were chosen for their ability to raise money and their close ties to the corporate sector”. This combination is common to see nowadays in universities from Mexico that faculty is formed mostly of professors with business, engineering, etc. background in renowned companies rather than experienced in teaching (which could be a plus). Some campuses of Tecnológico de Monterrey for example, are composed in that way that 60% of the courses are thought by part time professors, those who have great practical experience because they worked or are working in industry.

Higher education institutions are businesses in the knowledge creation and management area and definitely there is a need to change the process of how they are being competitive. Name positioning is not a 100% guarantee of success. *Higher education institutions need to change their processes to collect, analyze and disseminate information more effectively as universities are encountering threats to their operations* (Hughes & White, 2005).

In HEI, decision-making processes are also related and affected by the kind of organizational structure. According to Timberlake (2004), highly differentiated organizations tend to have bigger and more hierarchical charts, making that innovation happens in a slower and more difficult way. On the other side, highly integrated organizations are thinner in their charts and thus, present less inertia to change and innovation (Dougherty (2001) referred by (Timberlake, 2004)). Obviously, the optimal organizational chart should be the one, that seeks both, integration and differentiation, and that allows innovation in an easy way and at the same time presents hierarchical organizations that allow different units to work properly.

Nevertheless, there is a huge difference among business world objectives and HEI objectives. According to Dooris, Kelley and Trainer (2002) for the business world improving means getting more revenues and improving market position, for HEI improving is attached with more variables, such as academic quality, better professors, good facilities, good services, the best educative technology (Dooris, Kelley, & Trainer, 2002). Spendlove (2007) also supports this idea, pointing that copying or adapting leadership models from industry to HEI could be not the most appropriate solution. For such mention conditions, it seems that Michael Porter's traditional definition of strategy cannot be applied in a step-by-step way. Porter (1980) suggests that strategy is a matter of positioning, finding a market sector where they can generate long-term profits, and then, when competition arrives, simply let it go and change the company activities. But, HEI cannot change their core activity – education –, instead they got to stick to the same activity. HEI then are going to be forced to be creative in order to maintain a position in the market. Barrett (2010) states that academic leaders face up big internal and external

challenges, and they must guide their institutions in an intelligent way to remain competitive and relevant to the marketplace in order to succeed and survive.

If copying or implementing industry strategies seems not to be a good option, what about trying to copy a HEI model. Concerning this, one problem arises: depending on several factors, there are plenty different kind of universities each with quite different needs. Several factors incise in it, for example: the university is public or private, it is part of a consortium, its model is centralized or decentralized, it is profit or nonprofit, the kind of leadership and decision making model, the KPI, etc. What is true is that, “in universities strategic management should be done with a permanent eye on their specific organizational environment rather than by an analysis of the applicability of yet another prescriptive model from yet another management school” (Tavernier, 2005, p. 1). Maybe HEI complexity points out to look for specific tailor-made models of strategic management. According to Tavernier (2005, p. 15), “to find out what is really important for strategic decision making in colleges instead of relying on yet another prescriptive model of yet another management guru, it is much more rewarding to start out from comparative benchmarking and to look at concrete cases of decision making in some major universities”.

Then the question arises... *What are HEI looking for as strategy?* The planning and strategic management for colleges and universities also will need to respond to the socio-political changes of the country and the region, such as the changes in the potential market of future students. Similarly, it will be essential to be aware of changes in competition, as pointed out by professor Michael Porter, who says that essentially, the strategist’s job is to understand and manage the competition. Applied in this field of higher education, we can say “those institutions that were quick to seek information relative to their competitive landscape are more likely to have positioned themselves securely for future growth” (Barrett, 2010, p. 30). Then the question that we have to make ourselves again is: *how can we apply planning and strategic management in order to achieve these goals? Or, how can we apply models as the one suggested by Porter (2008).*

Barrett's (2010) point of view which established that colleges and universities must know that adjusting to the changing landscape is a necessity, not an option.

Finally, it is worth mentioning the two main challenges that came up with Timberlake (2004) study: on the one hand forces supporting autonomy and forces supporting centralization should be well managed by executives in multi-campus HEI. Being too autonomous or being centralized has advantages and disadvantages, and it is a matter of the leader to elucidate how to set the balance among the two, in such way that particular requirements of the local campus are reached and, at the same time, common processes of the university are fulfilled. On the other hand, "campus and system level leaders must be adept at managing relationships and participation processes" (Timberlake, 2004, p. 96). In the words of Tavernier (2005, p. 15), "attracting and retaining best staff and students requires an allocation system that rewards excellence, allows for decentralized decision-making and makes bottom up growth of centers of excellence possible. It is a delicate balance that can be reached not by top down command but by inspiring leadership of the flag waving type. Such steering is driven by a broadly shared vision over years slowly imbedded in the corporate culture of the institution".

3 METHODOLOGY

3.1 APPROACH

I decided to use qualitative analysis as the best methodology to approach an exploratory study. Qualitative approaches are very often used for addressing “*how*” and “*why*” questions and, in the case of this research both, the research question and the general and specific objectives, are those type of questions. Despite both methods (quantitative and qualitative) are widely used, some scholars agree that qualitative methods are the most appropriate for studying topics related to decision-making and leadership. Ambrosini, Bowman and Collier (2009) claim that qualitative analysis could be better applied for identifying resource creation and regeneration process in dynamic capabilities. In this regard “the logic of phenomenological analysis is more likely to be assumed since qualitative researchers tend to regard social phenomena as more particular and ambiguous than replicable and clearly defined” (Van Maanen, 1979). Thus this is a qualitative, exploratory and phenomenological study.

There were a total of 15 interviews for this research, 12 in-depth interviews and 3 confirmatory ones. In the first phase of the research the 12 in-depth interviews were applied to the 12 selected directors across the four selected campuses. After analyzing those interviews, it was decided together with the supervisor and the academic peer² to interview three more directors who served as confirmatory interviewees. The aim of this second phase was to confirm and explore some specific topics and responses found in the first phase, this increases validity and reliability-

² In accordance with the supervisor, and to increase reliability, an academic peer with ample experience in qualitative research was consulted for decisions about methodology and also for reviewing the process of this dissertation. In Section 3.4 of the final dissertation the detailed profile of this academic peer is discussed, as well as her participation in the process of dissertation.

3.1.1 Sample and Campuses Selected

The sample was integrated by 8 Division Directors and 4 Campus Directors, up to 12 directors for the first phase, the in-depth interviews phase, as we shall see in the next sections. Those directors belong to 4 selected campuses, campus Chihuahua, campus León, campus San Luis Potosí and campus Querétaro. For the selection I decided to choose those campuses that faced the most challenging context (detailed information can be found in Section 3.3.1 of the Complete Dissertation).

3.1.2 Unit of Analysis

Considering the nature of the research question, the research strategy and the samples, and also responding to the question *Who I want to analyze?* (Baxter & Jack, 2008), I realize that the unit of analysis is the quotations (fragments of the interviews that are assigned a code) from the participants' discourse.

3.1.3 Data Collection

Semi-structured interviews are the main source of information, according to Creswell (2013, p. 79), in phenomenology "data collection involves typically interviewing individuals who have experienced the phenomenon". A pilot study was developed with one medium level director at a different campus from the selected four. After the pilot test and the feedback from the supervisor, final semi-structured interview is provided in Table 1. The interview for the confirmatory interviewees is a short version of this interview, just focused on those topics that want to be confirmed and it is showed in Table 7 of the final dissertation.

In the case of the twelve in-depth semi-structured interviews they were applied during 5 months, from April 2016 to August 2016. In the case of the three confirmatory interviews, they happened in the month of August. All interviews were recorded, Table 2 shows relevant data from the interviews such as: place of interview, length in time of the interview, date of the interview and length in words of the interviews. The interviews

happened in a fluid way, most of the questions were answered without any conflict. Just in the case of three directors, three questions were incomplete, so they were required to answer those questions in audio and sent them by email; all of them accepted, and that way the interviews were completed.

3.1.3.1 The Codification Process

All the interviews were transcribed verbatim to a *Microsoft Word* document. I decided to use software ATLAS.TI in the codification process, which also helped to maintain coherence across the process of codification, despite the large amount of information.

I took the first two interviews as the initial ones for doing the first coding process and started to categorize and assign short descriptive words to each code, according to part of the process of codification proposed by Creswell (2003, p. 198). After finishing those two interviews, I had about 40 different codes but I realize that most of those codes refer to broad general categories; for example the *Ambidexterity* code could refer to different topics, for example, exploration, exploitation, the way of developing ambidexterity, risks, threats, etc. If I decided to use this code to refer to all the categories, maybe during the analysis I could lose hidden information, or simply it would be more difficult to perform and find the results.

After discussing it with the supervisor and the academic peer, I decided to use what I call “extended codes” which were codes inside the first list of general codes (like sub-codes) but that had the characteristics of being defined by longer sentences that could help me remember what the segment was referring to, and thus could improve the reliability and the process of analysis. It is important to mention that when I refer to the extended codes, I will always use the “extended” word, meanwhile when I refer to the regular non extended codes I will use just the word code. After analyzing the in-depth interviews, a total of 29 codes arose, which were joined in three different themes: *Risk and Uncertainty in Decision Making*, *Ambidexterity* and *Strategy*; those codes are shown in Table 3. Each of these codes contain its extended codes, in total 326 extended codes; for this summary

those extended codes are not mentioned but they could be checked in Table 12, Table 16 and Table 20, of the final dissertation.

3.2 VALIDITY AND RELIABILITY

Regarding to validation, the selected strategies for validation came from Creswell (2013, pp. 245-260) and those are: triangulation, peer review and clarifying researcher bias and rich thick description. Reliability was cared by implementing a detailed process of codification, and also being exhaustive with the analysis of the data (Creswell J. W., 2013). The use of ATLAS.TI permitted the avoidance of repeated code or the avoidance of using similar codes.

4 FINDINGS, IMPLICATIONS AND FUTURE RESEARCH

This research represents the opportunity to bring together two themes that have been broadly treated and that could affect the strategy, not just the deployment but also the execution, and therefore the performance of organizations. In this late section, we will discuss the conclusions and implications of the analysis and results of the research question and the objectives, and ideas for future research work.

One aim of the research was to explore how directors behave regarding risk and uncertainty in DM. There is no doubt that big decisions are surrounded by risk and uncertainty (Shafir, Simonson, & Tversky, 1993) Regarding this, directors make important decisions in an agile way, knowing that decisions must be done in order to have results, and also they, in general, are persons that know how to cope with risk and uncertainty. This is important in a positive way for strategy and performance of organizations, moreover due to the fast changing environment in which we are now living, just like commented by Wind and Main (1998), referred in Balaton (2007), when affirming that the passivity (referring to non-agile decisions and the procrastinating behavior) is the riskiest

strategy nowadays. Directors are not afraid to take decisions that could jeopardize momentarily indicators or the status quo of the organization, they are willing to take the responsibility on their decisions and when they have to trust their gut, they do, in the search of those risky decisions that could benefit the performance in the long term – like the case of Laura with the *Vertical Shops*, or Frank with the creation of Technological Parks, or John with the creation of a drone lab for the future of their campus -. Nevertheless, they are willing to risk, they also claim that in those decisions, they always try to check with someone else, and they look for a minimum of information, trying to calculate risk, but as John said, “I try to calculate the risk, I am not a kamikaze, nor a hero”. But when it is time to take those few fundamental decisions, which shape the course of a firm, it means, that strategic decisions, are good taking (Drucker, 1967; Eisenhardt and Zbaracki, 1992). And according to interviewees, medium and high level directors must be good managing this uncertainty, they also have to know that those decisions are not 100% rational and that they demand the use of the left rational side of the brain, but also the right side (Mintzberg, 1976) and they must trust their gut (Hayashi, 2001); as mentioned by Jones (1999, p. 319) in Section 2.3.1.3 of the final dissertation, “in uncertain, ambiguous, or contradictory task environments, behavior is a function of goals, processing limits, and the connection between the decision maker’s problem space and the task environment (objectively characterized). In this far more complex situation, problem-space representations may interact nonlinearly with goals and processing limits”.

Interviewees also strengthen the importance of behavior regarding ambidexterity. They claim that exploitative activities, those that correspond to short term goals and day to day operation, are essential and they must be met in order to ensure a healthy operation. In fact, they claimed that, in general, they tend to dedicate more time to exploitation from their positions (about 65% to 80% of their time). But they also recognize the difficulty in achieving exploitation and exploration inside their teams, they agree with (Ghemawat and Costa, 1993; Tushman, et al., 2004) referred by Schulze, et al., (2008) who pointed out that “ambidexterity is associated with numerous difficulties, since the two innovation strategies, exploitation and exploration, do not only have different characteristics in terms of timeline, risk and potential return, but also call for distinct organizational structures, processes, cultures, and capabilities”. Most of them, agree about a contextual type of

ambidexterity, in which both exploitative and explorative activities are performed within the same team (Schulze, Heinemann, & Abedin, 2008); regarding this, directors are aligned to what Gibson (2004, p. 209) claims, who said that in the 1970's dual structures were recognized to be important for ambidexterity, while in the 1990's "other scholars have recognized the importance of balancing exploration and exploitation in same units trying to cope with contradictory tensions and different needs that are demanded from such different kind of activities".

Exploration is essential in their positions, and it is not an easy task neither finding explorative directors nor doing exploration in the situation where exploitation demands the most of the time. Concerning this, they said that the main way they use to develop exploration is by dedicating specific time to reading and being aware of external situations, in order to increase the possible creative long term projects that could provide SCA. In this same topic, they also strengthen the idea of sustaining long and deep talks and non-structured meetings with their teams focusing at the importance of being "strategic" and defining long term goals and initiatives that could separate positively from competence. Finally, in agreement to Schulze, Heinemann and Abedin (2008), directors said that they try to achieve ambidexterity alternating the two types of activities depending on the demand of the indicators or the moment of the year; there are some moments where exploitation is demanded and others where exploration; in this same line, Schulze, et al. (2008, p. 5) said that "senior management has to balance the interests of the exploitative and the explorative subunit in order to ensure alignment to the overall organizational goals". They also claimed that, in order to have time to explore, directors must trust and delegate to other teams and their own teams, those exploitative activities that do not add value to their point of view. Finally, most of the directors conclude that a strong attachment to regulations and complex centralized processes inhibit the exploration in the HEI.

Concerning the strategy and performance, we found very interesting conclusions that add value and sum important implications for managers and decision-makers in HEI, and that could be also useful for other industries. It can be concluded that the interviewed directors are aligned with the general strategy of the University. It can also be concluded that they

are constantly seeking for differentiations and sources of competitive advantage, as it is expected from those positions in industries where fast changes are happening (Schulze et al., 2008; March, 1991; Porter, 2008; Barrett, 2010). The main strategies of the campus and division directors are focused in improving academic quality through having the best faculty, recruiting the most capable students, developing the best innovative educative models and trying to find that best differentiation by seizing internal and external strengths and opportunities in their regions (could be areas such as aeronautic, automotive, entrepreneurship, manufacturing, sustainability, among others). It was very interesting to find and corroborate that most of the directors have in their strategies a composition among autonomous or emergent – such as the Vertical Shop, the Technology Park - and deliberate or induced strategies – such as *iWeek* or *iSemester* – (Mintzberg and Waters, 1985; Burgelman, 1991). From the perspective of RBV theory and dynamic capabilities, the role of the leader consists not just in the selection of appropriated resources for the firm, but also “in appropriately adapting, integrating and reconfiguring organizational skills and resources to match changing environments” O’Reilly and Tushman (2007) when refer to (Eisenhardt and Martin, 2000; Lavie, 2006; Teece, et al., 1997) and hence to generate sustained competitive advantage that could lead the firm to survive. In this line, we also conclude that several directors, through the constant deployment of innovative strategies, - such as innovative educative models, the improvement of faculty, the creation of technological parks, etc. – contribute to the deployment of dynamic capabilities, since they are creating constantly routines that could translate in the renewal or reconfiguration of the resources (in this case their faculty and the support areas).

Finally, how does ambidexterity and risk in decision-making affect the strategy and performance? In Section 5.2 of the final dissertation, that answer was deeply addressed using several examples that arose during the interviews with most of the directors. It is a fact that, uncertain times and complexity in competition will demand creative and innovative solutions, where decisions could not be 100% rational and where uncertainty and gut will play an important role (Gibson and Birkinshaw, 2004; Shafir, et al., 1993; Tavernier, 2005) and where bounded rationality will demand from directors to take decisions and assume consequences even when they do not have certainty in the results (Jones, 1999). In those strategic decisions, directors seem to pursue explorative actions

that could provide in the future the possibility of bringing new competitive advantages to their campus or their divisions – such is the case of new *Vertical Shops*, the opening of new careers, the search for strategic partners, the creation of new laboratories and Technological parks, among others -; some projects succeeded and some did not, but directors seem to be congruent with themselves on those initiatives and they assume consequences, being aware that just the possibility of success of those big initiatives are necessary and worth the time and resources invested; like Peter said when facing a risky decision that could fail but in the case of succeeding it could bring positive results: “I had to make the decision, despite the risk external opinions, if I had not, then competence could surpass us”. This is the way those kinds of behaviors could affect performance in the organization; if Peter had not taken the risk, or if Peter had not been aware of the complex situation of HEI nowadays, then he had not made that decision, and certainly the performance of the division had been affected. More similar examples were posted in Chapter 4 and in Section 5.2 of the final dissertation.

To conclude, I will provide an illustrative example from Laura, that shows how the faculty changes its attitude towards innovative educative experiences, after two years of being working in such projects:

Laura: The moment I knew that all the work was worth it, was when two professors visited me and told me, “hey Laura, we are so sorry not to be involved in *iWeek* this year” it seems that is a great activity and most of the faculty is involved, despite they do not received any payment; but now we can sense the importance of those activities and we will be ready for next year”. I was very happy about hearing that, it took me two years but now we are moving faster...

In this example, they show how through “different routines” the based resource (in this case the faculty) is renewing and transforming for addressing a new and different reality. Those explorative and risky decisions could influence in the performance of an organization. Then, it is clear the way those directors decide and lead, the way they combine resources and the way they change faster than industry pace will keep them alive. In words of Balaton (2007) “capability for change becomes a synonym of efficiency and competitiveness.”

4.1 Managerial implications

This study has important managerial implications not just for the performance and execution of those who handle managerial positions or those who are decision-makers, but also for the right selection and training of employees inside the firm. Next, the main managerial implications will be listed:

- Medium and high level directors, or those who are decision-makers, should be aware of the current conditions of their business, for example in the case of HEI, they should be aware about the fast changing environment and all the fast changing threats that could happen and also the opportunities that these conditions could bring (Washburn, 2005; Barrett, 2010).
- Those decision-makers or directors also must have experience and the capacity to make decisions in uncertain sceneries, and hence to take responsibilities about the consequences of their acts.
- An adequate balance among explorative and exploitative activities is important for the performance of the firm (Ambrosini & Bowman, 2009). Nevertheless, that balance does not imply a 50/50 balance; it seems, that operational activities (exploitation) demands more time than exploration. As one interviewee commented, “exploitation will pay exploration”, meaning that day to day operation is necessary for having good finances in the HEI.
- Even when exploration demands less time than exploitation, interviewees agree that time devoted to exploration is much more important than the devoted in exploitation, because exploration will provide the possibilities to differentiate the organization in the future (Raisch & Birkinshaw, 2008).
- Interviewees claim that leaders must be concerned about being competitive and working hard and constantly in trying to find sources of competitive advantages. That is the way to be ahead from competition (Peters & Waterman Jr., 1982).
- In HEI, being ambidextrous and having a positive attitude toward risk and uncertainty in DM is important for the performance of the institution.

- In this case, contextual ambidexterity is the most common, compared to the structural type.
- It is important to own valuable resources (VRIN resources according to the RBV theory (Wernerfelt, 1984) – but it seems to be more important the way that directors combine and use those resources for the development of competitive advantages, and at the same time, for the creation of routines that could constitute dynamic capabilities (Ambrosini & Bowman, 2009).

The above represent managerial implications, that arose from this work, and that could be useful for managers.

4.2 Future Research

Regarding to research on RBV and DC, it is expected to have a better understanding about those approaches in the near future. I hope more scholars and researchers spend time doing research not just in DC and RBV, but also into related topics such as knowledge management or transient advantages. And I hope they remain open not just to conventional quantitative methods, but also to qualitative and ethnographic methods that sometimes are more appropriate for doing RBV and DC research. As suggested by Lockett and Thompson (2001, p. 743) and quoted in Ambrosini and Bowman (2009, p. 37) “it may be necessary to sacrifice some of generality of quantitative investigation for a more qualitative attention to detail”.

In the context of Ambidexterity, also several lines of research arose. For example, it would be advisable, to research about the specific type of ambidexterity developed in different universities, and how that type is related to the performance of different institutions. Also it is important to continue with the research about the variables that promote and affect the exploration in HEI, and how that exploration is related to the development of SCA (Gibson & Birkinshaw, 2004). In the same topic, it will be very interesting to research about possible negative effects of an excess of exploration or exploitation; for example to inquire if “too much exploration may enhance a firm’s ability to renew its knowledge base but can trap organizations in an endless cycle of search and unrewarding change”

(Volberda & Lewin, 2003) referred by (Raisch & Birkinshaw, 2008) or if an excess of exploitation could lead to a lack of sustained competitive advantages, and hence jeopardize the future of the organization.

Research about decision-making and leadership skills constitute a big requirement for HEI to survive and to provide better performance to society. I encourage scholars to deeply study, using quantitative and qualitative approaches, the non-quantitative side of individual DM: intuition, gut and the unconscious side of individual decision making process. I also encourage scholars to address research related to the process of decision-making in HEI, and also how bounded rationality affects the decision making process.

Finally, in the context of multi-campus HEI, the challenge is even bigger. The need to coordinate multiple campuses sharing a common vision and processes, but at the same time coping with such different local environments and trying to differentiate and take advantage of them, is an enormous challenge. The study about central versus decentralized way of management is also an important topic for future research. As Timberlake (2004) summarize in his multi-campus HEI study, “the hypothesis that multi-campus institutions commonly deal with tensions arising from the polarized desire for autonomy at the local level and greater control at the center of the organization. Leadership must manage the dilemma effectively in order to succeed. Leaders should establish participatory processes within the institution that provide employees with opportunities to make operational decisions locally as well as participate meaningfully in institutional strategic decision-making processes” (Timberlake, 2004, p. 98). The profile of Universities top management positions is also very interesting for research; trying to explore what characteristics are the needed ones for those managers to lead the future of HEI.

5 TABLES

Area	Questions
Strategy	<p>Tell me briefly about the process of strategic planning that you execute? What members of your team are involved in this process? Tell me about the content of your strategy in the last year? On what is your strategy focused? What are the differentiators of your division/campus and how do you achieve them? How do you perceive the strategy of the University? How long time will take the strategy to be implemented? Tell me about your KPI, Are they more short term or long term? Please tell me examples. Is your strategy aligned to the University? How is it?</p>
Ambidexterity	<p>Do you consider yourself more short term or long term strategist? Why? Give me examples. What percentage of your KPI belongs to explorative and what percentage to exploitative? Can you mention in the last seasons, the most important innovations or advantages that you have developed? Considering your skills, are you more exploitative or explorative? Please give me examples of actions that will create a difference in your campus/division? How often do you propose those kinds of explorative or long term activities? Please give examples. What KPI belongs to those long term or explorative activities? What percentage of your time is for exploration and what for exploitation? Why? In what extent do you consider yourself good for balancing the two kinds of activities? What do you do in order to have the time to develop both, especially exploration? How do you make your time and yourself to focus in short term, but at the same time focused in the long term? How your boss and the institutions support you for doing exploration and exploitation? How do your team behave regarding to exploitation and exploration? How good are they for each type of activities? Do you consider that high level positions versus low level positions should have a different composition regarding to the percentage of time devoted to exploration versus exploitation? Why? In your point of view, is it more difficult to find explorative or exploitative profiles in decision-makers? Why? Explain me please deeply, How do you do with your team to deal with those day to day activities that must be accomplished and at the same time dealing with those really important activities that are more innovative and that will differentiate your programs?</p>
Decision-making	<p>But there are those kind of decisions that will transform your division or that the result will impact strongly good or strongly bad. Related to that kind of decisions How often do you take those kinds of decisions? Can you remember and mention some examples. Regarding to this kind of strategic decisions (for example when opening a new minor or when hiring a new director or when opening or closing a career) how do you behave related to the decision-making process, I mean, are you a fast decision taker, do you evaluate rapidly the situation and trust in your gut or are you the kind of person that think very well the situation and evaluate all the different sceneries and consequences until you confident sure about the decision? Can you give us examples? Regarding to these kinds of complex decisions, how do you consider that works the best, taking rapidly and trusting in your gut and experience regardless you do not have all the information or the other way having the maximum quantity of information? What happens when you do not have enough information? Are you prone to take decisions or do you prefer to wait? Can you please exemplify with one or two examples? Are you a person who used to take risks or fast decisions on those important decisions that can create a big difference in your division? Tell me an example of this kind of decision. How often do you take those decisions? According to your response: do you consider yourself as a risky person or as a cautious one? What do you think that is better for an enterprise? Finally, regarding to this level of decisions and the performance of your divisions, please tell me how strong are these kinds of decisions with the performance and the growth of your division? How autonomous are you when taking decisions? Do you have the support of your boss or do you always need to have his approval? When you take risky decisions or those where you do not have certainty of success, is failure an important variable to avoid those decisions? What happens if you fail? What is your attitude when</p>

failing? Can you give me examples?
 Please, tell me one big project where you have failed? How important was the support from your boss? In general, how do you consider the posture and culture of the institutions regarding to supporting when making mistakes?
 Are you supportive with your team when making mistakes? How important is that in positions like yours?
 Regarding to flexibility, do you consider it important on the performance of your team? Can you mention some examples? What about rigidity, in which conditions is it good? Are your directors flexible about regulations?
 How important is risk and uncertainty in decision-making on high level positions when compared to low level?

General questions involving various themes Next question is very important: When you address very difficult decisions, for example when you are asked to open a new career, in general, can you describe the process that you follow in order to decide whether open or not open that career? Can you deeply explain?
 Talking about your leaders, I want you to tell me how prone are they to appropriately adapting, integrating and reconfiguring organizational skills and resources to match changing environments? Please enunciate some specific examples?
 In the last years tell me please, How have you done to overcome complex problems for example to rescue those careers that are about to close? Or to reach that goal that no one had reached? Do you think that all that you told me is kind of a capability or kind of a habit? Tell me please why.

Source: Elaborated by author, considering that this is a semi-structured interview and that questions are a guideline.

Table 1. Guide of Questions for the in-depth semi-structured interview.

	Type of Interview	Date	Place of Interview	Recorded	Length of Interview (HH:MM:SS)	Size in Words
John	In-depth	May, 25th	Meeting Room	Yes	1:38:36	13,485
Mike	In-depth	June, 15th	His office	Yes	0:46:46	6,928
Carl	In-depth	April, 22th	His office	Yes	1:10:57	9,326
James	In-depth	May, 19th	His office	Yes	0:52:52	7,198
Frank	In-depth	May, 26th	His office	Yes	1:15:50	8,946
George	In-depth	May, 26th	His office	Yes	1:12:24	6,504
Albert	In-depth	June, 15th	Meeting Room	Yes	1:05:59	9,571
Laura	In-depth	June, 16th	His office	Yes	0:56:23	8,999
Joe	In-depth	April, 22th	His office	Yes	1:10:44	8,215
Peter	In-depth	April, 21th	His office	Yes	0:57:59	8,687
Saul	In-depth	May, 19th	Meeting Room	Yes	1:19:43	10,718
Mary	In-depth	May, 19th	Meeting Room	Yes	1:27:14	10,272
Clark	Confirmatory	September, 3rd	His house	No	1:54:13	NA
Steve	Confirmatory	August, 29th	His office	Yes	0:34:01	5,195
Ross	Confirmatory	June, 27th	His office	Yes	0:26:54	4,567

Table 2. General data from the interviews.

#	Code	Extended Codes	Mentions	Percentage of Mentions
A	Risk and Uncertainty in Decision-Making	76	267	28%
1	DM Fast Theme	10	29	3%
2	DM Risk Boss and High Directors	13	47	5%
3	DM Risk Gut	11	48	5%
4	DM Risk High	8	32	3%
5	DM Risk Low	3	6	1%
6	DM Risk Medium	8	34	4%
7	DM Risk Mistake	5	19	2%
8	DM Risk need to chek	6	30	3%
9	DM Risk Team	7	14	1%
10	DM Style	5	8	1%
B	Ambidexterity	95	281	30%
11	Ambidexterity Interviewed	13	34	4%
12	Ambidexterity Successor	9	12	1%
13	Ambidexterity High Directors	9	34	4%
14	Ambidexterity Team	13	22	2%
15	Ambidexterity How Happens	17	66	7%
16	Ambidexterity Structural	4	6	1%
17	Ambidexterity Contextual	13	34	4%
18	Ambidexterity Threats	7	22	2%
19	Ambidexterity General	5	42	4%
20	Ambidexterity Boss	5	9	1%
C	Strategy	155	399	42%
21	Strategy Alignment	3	29	3%
22	Strategy Boss	3	16	2%
23	Strategy Interviewed	62	172	18%
24	Strategy Interviewed Differentiation	21	53	6%
25	Strategy Planning	3	9	1%
26	Strategy TEC Negative Issues	13	25	3%
27	Strategy Possible Threats	18	26	3%
28	Strategy TEC Time Term	4	7	1%
29	Strategy TEC	28	62	7%
	TOTALS:	326	947	100%

Table 3. General Codes and Themes.

6 LIST OF PUBLICATIONS

Scientific journal articles

- Enríquez-de-la-O, J. F. (2015. November). Individual decision-making by top executives as a valuable resource for strategic management – A resource-based view and dynamic capability approach. *VEZETÉSTUDOMÁNY*, 2-14.
- Enríquez-de-la-O, J. F. (2015. November). Resource-based view and dynamic capabilities – Achieving competitive advantage through internal resources and competences. *VEZETÉSTUDOMÁNY*, 50-61.

Conference proceedings and presentations with paper and ISBN plus ISSN number

- Enríquez-de-la-O, J. F., & Rodríguez-Sifuentes, M. M. (2016). Transformación educativa: del modelo tradicional al modelo experiencial. In E. AcademiaJournals.com (Szerk.), *Congreso Internacional de Investigación Academia Journals Juárez 2016*. 8 (2), 257-262. Cd. Juárez: Academia Journals, ISBN: 978-1-939982-19-3 and ISSN: 1946-5351.
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- Enríquez-de-la-O, J. F. (2016). The Relevance of Managing Threats and Risks in Strategy Execution in Higher Education Institutions: A case of Study at Tecnológico de Monterrey University, *Congreso Internacional de Investigación Academia Journals Celaya 2016* (The paper is accepted, but the conference will be in November, 11th. Until that day an ISBN and ISSN numbers will be provided.)

Other publications in Research Centers in México

- J. F. Enríquez-de-la-O and J. E. Rayas-Sánchez, “Diseño óptimo de un amplificador diferencial”, Internal Report *CAECAS-06-04-R*, July 2006.
- J. F. Enríquez-de-la-O and J. E. Rayas-Sánchez, “Diseño óptimo de un filtro con retroalimentación múltiple de octavo orden”, Internal Report *CAECAS-06-05-R*, July 2006.
- J. F. Enríquez-de-la-O and J. E. Rayas-Sánchez, “Diseño óptimo de un convertidor reductor de C.D.-C.D.”, Internal Report *CAECAS-06-07-R*, July 2006.
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