ENTREPRENEUR'S KNOWLEDGE PERCEPTION MODEL AND THEIR PRODUCT OR SERVICES PROBABILITY TO HAVE PRESENCE IN THE MARKET

TECNOLÓGICO DE MONTERREY

DISSERTATION
PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN MANAGEMENT

INSTITUTO TECNOLOGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY
CAMPUS MONTERREY

BY:
IVONNE ADRIANA DAMM GONZALEZ

MONTERREY, N. L. DECEMBER, 2008

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Dissertation

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APROVED BY

THE MEMBERS OF

THE DISSERTATION COMMITTEE

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Dedication

To God,
For guiding. Allowing me to exist. For providing me opportunities in life. The success and the hard times that have taught me to value you each day more, and become aware that you are with me at every moment. Thank you Lord for this accomplishment and for those that will come; for giving me the family that I have and the three stars that my children are.

To my children,
Roberto, Angielina and Gretchen, you are the strength that push me to reach my goals. This accomplishment is yours and mine, because you are my light and my love; together we can manage anything in the world, no matter how impossible it seems. I love you with all my heart and soul!

To my husband,
For not opposing to my personal development and my intellectual growth. Thank you for your words, for they gave me the strength I needed for this day and to know that this is what I want.

To my mother,
For raising me and putting up with my mistakes. Thank you for your advice and love that you've always given me; for inculcating me that wise gift of responsibility. Thank you for giving me life! Thank you for always being with me!
You, Danilo and Stephanie have been with me and my children when we have needed you constantly and unconditionally. Thank you for your support!

To my grandmother
For your prayers and support. Thank you!

To my teachers and advisors,
For your wisdom and patience during the process of my intellectual maturity; for your advice and support.

To my friends,
For those who listened and supported me. Thank you for giving me a shoulder to lean on during the hard and the joyful moments. Because a true friend is there at every moment. Even though my friends are few, I know they are true. I trust you and most are like my brothers. Thank you for your loyalty and solidarity.

To the Tecnológico de Monterrey,
My second home, for providing me the great opportunity to study and evolve intellectually. Words are not enough to describe the appreciation I feel for the support the ITESM/EGADE institution has given me. Thank you!

To CONACYT,
Without your support, this couldn't have been possible. Thanks!

To this moment, this is one of the biggest accomplishments of my life!

ABSTRACT OF DISSERTATION

GRADUATE SCHOOL OF BUSINESS AND LEADRESHIP,
INSTITUTO TECNOLOGICO Y DE ESTUDIOS SUPERIORES DE
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Degree: **Doctor of Philosophy** Program: **Doctoral Program in Administration**

Name of Candidate: **Ivonne Adriana Damm González**

Committee Chair: **Dr. Jorge Ramón Pedroza**

Title: **ENTREPRENEUR'S KNOWLEDGE PERCEPTION MODEL AND THEIR PRODUCT OR SERVICES PROBABILITY TO HAVE PRESENCE IN THE MARKET.**

The contribution of the current dissertation is to determine the entrepreneurs' knowledge perception based on issues related to innovations.

The theoretical model presented studies the entrepreneur knowledge perception. The entrepreneur uses the personal contact network and customer communication, a customized form of marketing, which is uncomplicated and follows a common-sense approach to business development. This is how market information is gathered. It derives from the ability to identify and respond to market signals (McGowan and Rocks, 1994). The signals can be in the form of customer requests, supplier suggestions, ideas from work colleagues or threats from competition. Hill

and McGowan (2002) develop a three-level framework of networking competencies in the smaller firm. Level 1 competencies are experience, knowledge, communication, judgment and intuition. Level 2 competencies are vision, opportunity-focused, relational communication and commitment. Level 3 competencies include personality, relationship-building, listening skills, adaptability, commitment, motivation, ambition, achievement, enthusiasm, confidence and aggression. Many of these factors have also been identified as central creative entrepreneurial marketing factors in the arts (Fillis, 2002a).

One research important question for the justification for this study is How knowledgeable entrepreneurs are? There are no previous studies that have addressed the issues of knowledge and it might be possible that the lack of market knowledge-information is one of the principal aspects than can make the difference between success and failure in the entrepreneur's approach.

Some individuals have superior knowledge and skill at estimation of consumer wants, superior ability to control and direct the actions of others, greater confidence that their business estimates-business judgments will prove correct.

During the process of reviewing literature the empirical result was the following conceptual model, entitled "Exploring the entrepreneur's knowledge perception." The introduction of the model at this early stage is advantageous because it illustrates this dissertation framework, structure, and focus. The model

consists of the following elements: technological knowledge perception, market knowledge perception, competition knowledge perception. Each dimension is composed by three independent variables. A total of nine independent variables are integrating the three dimensions.

A dependent variable in this case "Market Presence" is defined as the entrepreneur real participation in the market If his/her product or service is available to the costumer in the present market. If is not still in the market then this product or service is still part of an incubation process.

Innovative products are introduced in turbulent and chaotic environments where the odds of success are often low. As a result, the marketing strategies for innovative products must be optimized to enhance the odds of success. Yet, marketing is often not a well-developed competency in many innovative firms (Mohr, 2002).

Because of the wide variety of innovative products, brands and prices, the market goes through a stage of uncertainty. This feeling of uncertainty can only be reduced by means of information, specially the one coming from a reliable source. This is the time when the entrepreneur or inventor of a Innovation should get in touch with the real market knowledge through different channels, which will be addressed throughout his/her project.

This dissertation seeks to add to our understanding of how entrepreneurs can build their knowledge perception to achieve competitive advantage and to develop more successful projects. The study focus upon the following dimensions that compose the entrepreneur's knowledge perception, these dimensions are: Technological knowledge, Knowledge of market, Knowledge of competition. This entrepreneur's knowledge will be under the context of their product category specialty.

The author employs a sample of 169 entrepreneurs in new technology-based firms; each was interviewed during the period from 2006 to 2007. Evidence suggests that entrepreneurs should build market knowledge to be more competitive and successful in their Innovation projects. The conceptual model has both empirical and theoretical backing, but the empirical backing is limited to 169 cases. Practitioners can focus on how to build market knowledge, while the model helps to increase awareness of the holistic view of entrepreneurial knowledge and which dimensions can contribute to it. Policy makers should encourage entrepreneurs to build market knowledge, and support systems could require a plan for this activity before entrepreneurs get access to public funds.

Based on this analysis, four main contributions are revealed: model generation, development of terminology, and further development of the field of entrepreneurial research.

RESUMEN DE DISERTACIÓN

ESCUELA DE GRADUADOS EN ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS.
INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY CAMPUS MONTERREY

Grado: **Doctor en Filosofía** Programa: **Programa Doctoral en Administración**

Nombre del Candidato: **Ivonne Adriana Damm González.**

Presidente del Comité: **Dr. Jorge Ramón Pedroza**

Título: MODELO DE PERCEPCIÓN DE CONOCIMIENTO DEL EMPRENDEDOR Y LA PROBABILIDAD QUE TIENEN SUS PRODUCTOS DE TENER PRESENCIA DE MERCADO.

La contribución de la presente disertación es determinar la percepción de conocimiento del emprendedor y esta basada en los argumentos en lo que ellos basan sus inventos.

El modelo teórico presentado estudia la percepción de conocimiento del emprendedor. El emprendedor usa una red de contactos personal y una fuerte comunicación con sus clientes, una forma de adaptarse a su propia mercadotecnia, la cual no es complicada y sigue un sentido común relacionado con el desarrollo de negocio. Esto es como se integra la información de mercado. Se deriva de la habilidad de identificar y responder a las señales que tiene el mercado (McGowan and Rocks, 1994). Las señales pueden ser requisitos de los clientes, sugerencias de inventarios,

ideas de los colegas de trabajo o bien riesgos de la competencia. Hill y McGowan (2002) desarrollaron una red de un marco de trabajo de tres niveles de competencias en la empresa pequeña. El nivel 1 las competencias son experiencias, conocimiento, comunicación, juicio e intuición. En el nivel 2 las competencias son una visión, una oportunidad enfocada, una comunicación relacional y compromiso. En el nivel 3 las competencias incluyen personalidad, construcción de relaciones, habilidades de escucha, adaptabilidad, compromiso, motivación, ambición, logro de metas, entusasmo, confianza y agresión. Muchos de estos factores tambien se han identificado como los factores de mercadotecnia centrales del emprendedor en el estado del arte (Fillis, 2002[a]).

Una pregunta de investigación importante para la justificación del presente estudio es ¿Qué tanto conocimiento poseen los emprendedores? No existen estudios previos que hayan abordado directamente el tema de conocimiento y puede ser posible que exista una escasez de conocimiento en materia de información de mercado el cual es uno de los principales aspectos que pueden marcar la diferencia entre el éxito y el fracaso en materias de acercamiento con el emprendedor. Algunos individuos poseen un conocimiento superior y una habilidad que estima lo que el consumidor quiere, una habilidad superior para controlar y direccionar las acciones de otros, mayor confianza de la que sus negocios estiman, juzgan lo cual provoca estar en lo correcto.

Durante el proceso de repaso de la literatura el resultado empírico encontrado fue el desarrollo del modelo conceptual titulado: "Modelo de Exploración de la

percepción de conocimiento del emprendedor". La introducción del modelo en este temprano escenario es ventajoso ya que ilustra el marco de trabajo de la presente disertación, su estructura y enfoque. Cada dimensión esta compuesta por tres variables independientes. Un total de nueve variables independientes son integradas en las tres dimensiones planteadas.

Una variable dependiente en este caso "Presencia de Mercado" es definida como la participación real que tiene el emprendedor en el mercado. Si el producto o servicio de el/ella esta disponible al cliente en el mercado. Si no se encuentra aún en el mercado el producto o servicio es parte todavía de un proceso de incubación. Productos innovadores son introducidos en ambientes turbulentos y caóticos en donde las probabilidades de éxito muchas veces son bajas. Como resultado, las estrategias de mercadotecnia para productos innovadores deben ser optimizadas para engrandecer las probabilidades de éxito. Aún la mercadotecnia tiene bien desarrollada una competencia para empresas innovadoras (Mohr, 2002).

Por la extensa variedad de productos innovadores, las marcas y los precios, el mercado emplea escenarios de incertidumbre. Este sentimiento de incertidumbre solo puede ser reducido por medios de información, especialmente aquellos que provienen de una fuente confiable. En esta etapa es cuando el emprendedor o inventor de la innovación debe tener un contacto real con el conocimiento del mercado a través de diferentes canales, los cuales serán direccionados a sus proyectos.

La presente disertación busca agregar a nuestro entendimiento de cómo los emprendedores pueden construir su percepción de conocimiento para mejorar sus

capacidades competitivas y así desarrollar proyectos más exitosos. El estudio se enfoca en las siguientes dimensiones que componen la percepción de conocimiento del emprendedor, estas dimensiones son: conocimiento de tecnología, conocimiento de mercado y conocimiento de competencia. Este conocimiento del emprendedor fue examinado bajo en contexto de la especialidad de sus productos.

El autor empleo una muestra de 169 emprendedores en empresas nuevas basadas en tecnología; cada una fue entrevistada durante el periodo 2006 a 2007. La evidencia sugiere que los emprendedores deben de construir y remarcar su conocimiento de mercado para ser más competitivos y exitosos en sus proyectos de innovaciones. El modelo conceptual tiene respaldo teórico y empírico, pero el respaldo empírico esta limitado a 169 casos. Los investigadores se pueden enfocar en ¿cómo construir el conocimiento de mercado?, mientras el modelo ayuda a incrementar la prevención de la visión holística del conocimiento del emprendedor cuyas dimensiones pueden contribuir al mismo. Los creadores de las políticas deben de alentar a los emprendedores a construir su conocimiento de mercado y apoyar sistemas que requieran un plan para esta actividad, antes de que los emprendedores tengan acceso a fondos o financiamientos públicos.

Basado en este análisis, cuatro principales contribuciones son reveladas, la generación y planteamiento de un modelo de la percepción de conocimiento del emprendedor, el desarrollo de nueva terminología, el profundo desarrollo sobre el constructo de la investigación de emprendedores.

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Figures and Tables

CHAPTER 1

1. INTRODUCTION

This study seeks to explore how entrepreneurs perceive knowledge, determine the factors upon which their innovations and inventions are based, and to add to the current understanding of the competitive advantages gained through the construction of 'market knowledge perception,' or MKP. The study was undertaken in response of a lack of previous research on entrepreneurs' behavior concerning market knowledge as an interpersonal influence.

The theoretical model presented in this dissertation examines entrepreneur knowledge perception. The model consists of the following elements: technological knowledge perception; market knowledge perception; and competition knowledge perception.

Traditionally, entrepreneurs use networks of personal contacts, as well as information received through communications with customers and clients, to customize their approaches to marketing. It is an uncomplicated and common-sense approach to business development based on gathering market information. It allows firms to identify and respond to market signals (McGowan and Rocks, 1994), but it is

an approach that has its weaknesses and clearly does not work for all entrepreneurs all of the time.

The justification for this study is that most of the market knowledge elements and variables have not been examined in entrepreneurial behavior settings. They therefore require the development of new measures to operate the entrepreneur construct. The entrepreneur is seen as an innovator breaking an existing state of equilibrium to create progress.

Innovation means creating new products or services, or improving the quality of existing products or services, to create new methods of production, to open up new markets, to create a new source of supply, or to develop a new organization or structure in business. Successful innovation demands an act of will on the part of a leader and for innovation to be successful; it must be carried through (Schumpeter, 1934). Influential entrepreneurs must be knowledgeable to be successful.

In order to present this study of market knowledge-information one needs to measure the three aforementioned elements, followed by their corresponding competencies.

Element 1

1) Technological knowledge perception
   1.1) New products and innovations
   1.2) Technological changes
   1.3) Technological uncertainty

Element 2

2) Market knowledge perception.
   2.1) Market Needs
   2.2) Market uncertainty
   2.3) Market segments

Element 3

3) Competition knowledge perception.
   3.1) Number of Competitors in the market
   3.2) Competitive volatility
   3.3) Competitor's differences

1.1. Statement of problem

The theoretical model presented in this dissertation examines entrepreneur knowledge perception. Traditionally, entrepreneurs use networks of personal contacts, as well as information received through communications with customers and clients, to customize their approaches to marketing. It's an uncomplicated and common-sense approach to business development based on gathering market information. It allows companies/corporations/entrepreneurs to identify and respond to market signals (McGowan and Rocks, 1994). These signals may take the form of

customer requests, supplier suggestions, ideas from colleagues within the company, or outside threats posed by potential or current competitors. Hill and McGowan (2002) develop a three-level framework of networking competencies in small firms. According to their framework, level 1 competencies are experience, knowledge, communication, judgment and intuition. Level 2 competencies are vision, opportunity-focused, relational communication and commitment. Level 3 competencies include personality, relationship-building, listening skills, adaptability, commitment, motivation, ambition, achievement, enthusiasm, confidence and aggression. Many of these factors have also been identified as central creative entrepreneurial marketing factors in the arts (Fillis, 2002a).

One more specific objective of this study is to determine how knowledgeable entrepreneurs currently are, a question that justifies the research contained in this dissertation. No previous studies have addressed the issue of current entrepreneurial knowledge and the impact of the lack of, or abundance of market knowledge-information, factors which often determine success or failure.

Some individuals possess instinctive knowledge and skill to gauge consumer wants, the ability to control and direct the actions of others, and greater confidence that their business assessments, and the decisions they make based on those assessments, to allow them to be successful in business.

In the real world, and not only in the business, however, individuals differ in important ways including intelligence, strength, endurance, and also training, leadership ability and integrity. In the business world, producing goods and services involves a multiplicity of interrelated tasks that differ markedly in the requisite skills and knowledge required for their accomplishment. One of the specializations within this multiplicity of tasks is entrepreneurship. The classic entrepreneur is someone who has foresight, superior managerial ability and is able to lead others. Through reviewing previous investigations, literature and empirical findings, the following conceptual model, entitled "Exploring the entrepreneur's knowledge perception (model)," has been developed. Introducing the model at this early stage is advantageous because it illustrates the framework, structure and focus of this dissertation.

As mentioned previously, the model consists of the following elements: technological knowledge perception; market knowledge perception; and competition knowledge perception.

Innovative products are introduced in turbulent environments in which the odds of success are often low. As a result, marketing strategies for innovative products must be optimized to increase the odds of success. Yet, marketing is often not a well-developed competency in many innovative firms (Mohr, 2002). Because of

the wide variety of innovative products, brands and prices, the market goes through a stage of uncertainty. This feeling of uncertainty can only be reduced by means of gathering information, especially that which comes from reliable sources. This is the time when entrepreneurs and innovators get in touch with the real market knowledge through different channels, which will be addressed throughout their projects.

In order to present this study of market knowledge-information one needs to measure the three aforementioned elements, followed by their corresponding competencies.

1.2 Study summary and organization

This project has been organized in five chapters. Chapter 1 is an introduction, statement of problem, and this section on its summary and organization collectively present the background, purpose, and rationale for the study as well as its research objectives. Chapter 2 introduces a review of the literature related to the essential components of innovation theory, the original entrepreneur theory, definition--knowledge and information sharing. Chapter 3 includes the hypothesized relationships and research measure instrument construction and used to test the variables grounded for this study. It was also relevant to feature the scale validation and the discussion of the appropriate methodology. Chapter 4 is to report the analysis

and study findings, which are also related to the hypothesized relationships and research questions. The chapter presents the conclusions drawn from the results of the general study, including the implications for strategy and business theory and practice. Also discusses the limitations of the current research and presents suggestions for future study. Finally, Chapter 5 proposes the management opportunities and application to the entrepreneurs training and coaching.

Current entrepreneurial knowledge will be examined by categorical specialty based on the products or services provided. The research draws upon interviews with (186) entrepreneurs in new technology-based firms. Each entrepreneur was asked by an Internet survey during 2007 and 2008.

The evidence suggests that entrepreneurs should build market knowledge to be more competitive and successful in their innovation projects. The conceptual model has both empirical and theoretical backing, but the empirical backing is limited to (169) cases. Practitioners can focus on how to build market knowledge, while the model helps to increase awareness of the holistic view of entrepreneurial knowledge and which dimensions can contribute to it. Policy makers should encourage entrepreneurs to build market knowledge, and support systems that could require a plan for this activity before entrepreneurs are allowed access to public funds. This

dissertation contributes to model generation, the development of terminology, and further development in the field of entrepreneurial research.

CHAPTER 2

LITERATURE REVIEW AND CONCEPUAL FRAMEWORK

This chapter reviews relevant literature on entrepreneur knowledge. The entrepreneur concept is complex, extensive, and weaves interpersonal, group, and mass information theories. The present study adds more information to the existing research by examining the interpersonal influence in entrepreneur's behavior.

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This chapter has three sections. The first is devoted to the review and evaluation of the original innovation theory, the entrepreneur's theory, and information theory. The second section explores the concept of entrepreneurship by tracing its development from its genealogical roots in interpersonal influence. It also includes the explanation and understanding of entrepreneurial characteristics, personality, behaviors, and psychological and motivational implications.

The third section zeroes in on the explanation of information seeking and communication theory, considering information as a value. Finally the theoretical model explanation is delineated for this dissertation.

2.1.1 Innovation Theory

Any organization must have alternative ways of achieving its goals in case a route becomes blocked. Innovation is an alternative for organizations to improve their competitive capacity as a form of survival in the global market and be on top of productivity. The concept of innovation is an often random and unpredictable process, whereas innovation is defined as a process that turns an invention or an idea into something useful with commercial value. (Miller and Morris, 1999). Innovation is also about creating new ways of doing things, and may include the development of new processes or distribution of strategies, which should have success as a primary goal in their objectives.

Spencer (2003) explores firms' efforts to participate in knowledge-diffusion networks, present in both national and global innovation systems. Her paper builds theoretical arguments suggesting that, under some conditions, firms sharing technological knowledge may achieve higher innovative performance than firms that are not knowledgeable entities, because knowledge-sharing strategies can help a firm shape the institutional environment in favor of its own technological design. Several theories have been developed that try to communicate to managers how innovation occurs in a firm and which factors affect the outcome of this process. These theories

come from different perspectives that focus either on management, economics or social sciences or create a complex net. This complexity often makes managers take decisions, the outcomes of which contradict their original aims.

Anthropologist H.G. Barnett (1953) described innovation as the basis of cultural change that could be any thought, behavior or object that is new because it is qualitatively different from previous ones. Many innovation theories have sprung from economist Joseph A. Schumpeter's ideas (1939), who drew a distinction between innovation and invention emphasizing that the former was a non-continuous event characterized by the creation of new plants and equipment, the introduction of new firms and the rise of new men to leadership.

Growing interest in the study of technological change over the last decade has led to a resurgence of interest in Schumpeter's concept of the entrepreneur. In Schumpeter's theory, the entrepreneur is responsible for introducing change into a commercially organized economic system. An innovation in this environment is not an automatic adjustment, but a break with the past. It is making this break that identifies an individual as an entrepreneur. As he claimed,

> Past economic periods govern the activity of the individual-in a case like ours-not only because they have taught him sternly what he has to do, but also for another reason. During every period the farmer must live, either directly upon the physical product of the preceding period or upon what he can obtain with the proceeds of this

product. All the preceding periods have, furthermore, entangled him in a net of social and economic connections which he cannot easily shake off. They have bequeathed him definite means and methods of production. All these hold him in iron fetters fast in his tracks [Schumpeter 1934, 6].

Schumpeter's treatment only identifies actual entrepreneurs. Empirical study of entrepreneurship calls for an appropriate reference group for purposes of comparison. It is inappropriate to use the members of the population as a whole, as this includes: the entrepreneurs, who evidently had both the opportunity and inclination to innovate; those who had the inclination but not the opportunity; those who had the opportunity but not the inclination; and those who had neither opportunity nor inclination. The former aims to classify individuals on the basis of unobservable characteristics, while the latter aims to classify individuals on the basis of observable, social circumstance. It is therefore preferable on empirical grounds to specify those with the opportunity to innovate as a reference group for the study of entrepreneurs. Entrepreneurs' classified for the present dissertation are considerate in Schumpeter's categorization as individuals who has the inclination and opportunity to develop their products or services they are in a business incubator chair.

2.1.2 The process of Innovation

Research into innovation processes generally takes one of two approaches. It either relies on a voluntaristic view to stress the capacity of risk-taking actors

(entrepreneurs) who constantly exercise creative and destructive action in an age of revolution and disruption (e.g. Christensen, 1997; Schumpeter, 1942); or favors a deterministic position, collectively including innovation processes within the institutional context of structures, in which actions are socially shaped (Garud & Rappa, 1994; Pinch & Bijker, 1987). The action-structure dichotomy has provided important insights into the nature of innovation, but it does not tell the whole story. Because innovation exists in both voluntaristic (action) and deterministic (structure) realities, any adequate theoretical understanding of it must embrace both aspects (Slappendel, 1996; Tushman & Rosenkopf, 1992; Van den Ende & Kemp, 1999). Because innovation implies both technological revolution and technological evolution, a satisfactory innovation model must also move beyond a stage conception of the innovation process, to a dynamic, continuous conception of change over time (Van de Ven & Rogers, 1988: 638).

Drucker (1985) explained how managers expect to plan for, or count on a process that is itself utterly dependent on creativity, inspiration, and old-fashioned luck. He described innovation as unexpected occurrences with process needs, industry and market changes, demographic changes, changes in perception, new knowledge (innovation based on knowledge) and a theoretical approach to principles of innovation. New Product Development Management, viewed as a knowledge-creation

activity, should emphasize cognitive team processes rather than purely social processes.

Drucker's thought is very close to reality. Knowledge creation is therefore perceived as one of the major assets of innovative organizations, and innovative organizations are composed by knowledge creation. It seems that innovation and knowledge creation are defined by themselves. Nonaka and Takeuchi (1995), in their study of knowledge creation, as well as the earlier studies of Bell (1976) and Drucker (1969), focused very strongly on production of new knowledge in the perspective of a knowledge economy. To Lindley (2003), the knowledge society is a long-run structural change in the economy; the production, dissemination, and use of knowledge play prominent roles as sources of wealth creation and exploitation. Learning is critical to such a society in terms of accommodation, assimilation and transformation, which is in turn dependent on issues, context and conditions; and to individuals, organizations and nations in terms of new skill formations (Illeris, 2002; Lindley, 2003; Nijhof, 2000) in order to be able to produce new knowledge. Madhavan and Rajiv Grover (1998) proposed a model that linked the cognitive attributes of team members and leaders and the process attributes of the team to the efficiency and effectiveness of their potential knowledge. The objective of their article is to develop some propositions, using the distributed cognition framework, on

how teams should be created and managed in order to efficiently and effectively create knowledge by combining disparate bodies of knowledge. The article was organized as follows: In first place, they discussed the presentation of the knowledge-creation aspect of new product development. In second place, they discussed of the difference between tacit and explicit knowledge as a basis for developing the construct of embedded knowledge, and finally, they established the importance of embedded knowledge in new product development team contexts.

Hurley and Hult (1998) presented a conceptual framework for incorporating constructs that pertain to innovation in market orientation research and theory. Research on market orientation and organizational learning address how organizations adapt to their environments and develop competitive advantages. The results indicated higher levels of innovativeness in the firms' culture. These levels were associated with a greater capacity for adaptation and innovation. Higher levels of innovativeness were associated with cultures that emphasized learning, development, and participative decision-making. From the idea-generation phase to the launch phase, the creation of new knowledge can be viewed as the central theme of the new product development process. One role, which is increasingly being considered in many of the treatments of knowledge, is the idea that tacit knowledge cannot be explicated fully, even by an expert, and can be transferred from one person

to another only through a long process of apprenticeship (Polanyi, 1967). Most of the successful products in the market tend to (1) fit one of the template groups, and (2) involve a solution to a customer problem. Products developed in isolation by inventors, or products that attempt to mimic a popular trend from other products, were generally unsuccessful (Goldenberg, Lehmann and Mazursky, 2001). For this reason innovation is really the art and science of how we evolve for the future. To do so well, we need to design systematic approaches and create a culture in which innovation is explicit and imperative.

Departing from Drucker is the attribution of innovation to a process that depends on creativity, inspiration and luck. Allen (2003) defines innovation as a random and unpredictable process, whereas innovation is a manageable process that turns an invention into something useful having commercial value. Innovation is also about creating new ways of doing things, and may include the development of new processes or distribution strategies (Allen, 2003). Christensen identified innovations that are paradigm shifters- those that radically change the way we do things (Christensen, 1999). Investments in new businesses are uncertain. There is very little cushion to absorb any bad-news outcomes. Innovation that creates the sort of growth that delights investors is innovation that is genuinely disruptive. Disruptive innovations typically under-perform established products along the dimensions of

performance that define competition in existing markets. At the same time, they gain a foothold by over performing along other dimensions that are valued by market segments but could be unprofitable to incumbent firms because they are small, generate thin margins, or (as is usually the case) both. Over time, performance improvements that are valuable to large, profitable markets enable disruptive innovations to capture market share from incumbent firms. The disruptive products eventually provide competitive levels of performance along traditional dimensions, but maintain the benefits that gave them a foothold in the first place (Christenser and Raynor, 2003).

The process of innovation includes much more than the generation of innovative ideas. Frequently the innovation process itself is often not very well understood within organizations or by the individuals who practice innovation. Ideas are not generated in any conscious or systematic way. The ideas which are tossed up ad hoc, are rarely well-managed through the phases of implementation (Henry et al., 1991). Successful organizations require a process for 'ensuring the usefulness of the innovations that are implemented, without stifling all change' (Farr and Ford, 1990).

The formal and informal structure of organizations and their external linkages have an important bearing on the rate and direction of innovation, and how competencies and capabilities co-evolve (Argyres, 1995; Teece, 1996)

Innovative performance in firms refers to their ability to develop and hold intellectual property protection over technology demanded by large commercial markets (Spencer, 2003). Organizations create value as employees transform the input of resources into products of greater worth. The patterns of interaction, coordination, communication and decision-making through which they accomplish these transformations are processes. Processes include the ways products are developed and made, and the methods by which procurement, market research, budgeting, employee development, compensation, and resource allocation are accomplished.

When creating a new unit to exploit a particular innovation, the processes most crucial to examine are not usually the obvious value-adding processes involved in logistics, development, manufacturing or customer service. Rather, they are the enabling or background processes that support investment decisions. Many managers unwittingly sabotage their own success by not tuning these processes to the needs of new business growth. Some relative observations to fight with the obstacles to expand innovation strategies in large corporations and small and medium enterprises are

mentioned in the literature. The most relevant are the following: A frequent mistake in large, mature firms is that they frequently do not have well-defined strategies or strong vertical integration (Argures, 1996). They also have very limited communication channels between departments. These phenomena can kill innovation production before it is born. Mature firms sometimes suffer myopia even if they are close to the innovation change or exposed to new ideas. Contrary to large and vertical firms, the role entrepreneurship plays in determining the level of success realized by individual small firms cannot be overstated. Although external support is essential in enabling a healthy environment that encourages business growth, it cannot function efficiently without effective entrepreneurial input. According to this view, potential entrepreneurs have the ability to control, direct or adjust the outcome of each major influence. Entrepreneurship has been characterized as the interaction of the following skills: inner control, planning and goal setting, risk taking, innovation, reality perceptions, use of feedback, decision making, human relations and independence (Kuratko and Hodgetts, 1998). To a layman, the word "entrepreneur" means somebody who sets up and finances new commercial enterprises to make a profit. But a widely accepted definition, and one backed by many studies, is that successful entrepreneurs are individuals who are not afraid to fail by taking risks. Risk-taking is the one essential characteristic of entrepreneurs, who distinguish themselves as risk takers. They are risk takers in presenting promises to their clients of fiscal as well as

outcomes associated with their innovative products and services. For entrepreneurs, there are financial risks associated with offsetting the costs of establishing and operating a business with income from clients.

Every developed economy wants an enterprise and innovative culture. As the rate of economic change increases, entrepreneurship is seen as vital for future prosperity and competitiveness. But it also has a broader significance, acting as a vital stimulant for an open pluralistic culture and a driver of social and civic renewal. But despite the emergence of a knowledge-based economy, and a distinct shift in the qualities needed for companies to succeed, myths about entrepreneurship still persist.

All entrepreneurs understand that their intellectual capital and the ability to use that capital to improve the products and services of others is an even exchange for financial gain. New core competencies of firms involve innovation and planned change. Also can take various forms, including technical/subject matter know how, a reliable process, and/or close relationships with customers and suppliers (Mascarenhas, et al. 1998). It may also include product development or culture, such as employee dedication

2.1.3 Core Competences as a Basis of Innovation

One important strategy to maintain innovativeness in established companies is a set of skills and related obstacles called Core Competences/Core Rigidities (Mohr, 2001). The core competencies refer to the skills at which a company excels. Such competencies can be identified based on their three characteristics:

1) Core skills and capabilities are extremely difficult for competitors to intimate with customers, because they are deeply imbedded in organizational routines, procedures, and staff members.

True core competencies are significantly related to benefits a customer receives through using a product or service.

2) Core competences allow firms to access widely disparate market opportunities (Prahalad and Hamel, 1990). Core competencies are enhanced as they are applied. In this way, they provide both the basis and the direction for the growth of firms themselves (Hamel et al., 1994; Prahalad et al., 1990). There may be a natural trajectory embedded in a firm's knowledge base. Thus, current capabilities may both impel and constrain future learning and investment activity (Peteraf, 1993).

3) Core competencies can become core rigidities, which strangle a firm's ability to act on novel information. Core rigidities are straitjackets that inhibit innovation and can include: cultural norms in the firm from preferences for existing technology and routines, or status hierarchies that give preference to, for example, technological engineers over marketers (Leonard-Barton, 1992). Other obstacles to

innovation production may arise and are taken into account and acted upon based on flawed information gathered from customers by market researchers. The best information can be gleaned by observing what customers do under normal, natural conditions. This is known as empathic design (Mohr, 2001), a research technique based on the idea that users may not be able to articulate their needs clearly. It focuses on understanding user needs through empathy with the user world, rather than by directly asking users to articulate their needs (Mohr, 2001). Based in anthropology and ethnography, empathic design allows marketers to develop a deep understanding of the current user environment, to extrapolate the evolution of that environment into the future, and to foresee future needs that technology can satisfy (Leonard-Barton and Rayport, 1997).

It is important that firms which choose to rely heavily on customer feedback ensure that the feedback they receive matches the technical innovation being investigated. (Christensen and Bower, 1995). In the context of incremental innovation, customer feedback is important and useful for fine-tuning a product. Customers are adept at providing useful information which can reinforce or refine existing technology or innovations, but in the context of radical innovations customers are less adept at providing useful information (Mohr, 2001) and have a natural "myopia" (Leonard-Barton, 1992). Intellectual capital, intangible assets, know-how capital and knowledge have all been used to describe the intangible factors

that the firm uses to create products or services to customers. There are studies in the field of capital market research, management accounting and financial accounting that have studied the importance of intangibles (intellectual capital) for organizational performance. Many companies are striving to be known as knowledge organizations and have started measuring and analyzing organizational intellectual capital indicators based on what has been reported in the literature. Very little effort has been made to standardize the measurement and reporting of these indicators with most organizations using very general components.

2.1.4 Innovation and Intellectual Capital

In modern societies entrepreneurship and innovation are widely seen as key sources of Intellectual capital to pursue economic growth and welfare increases. In recent years the concept of Intellectual capital has been widely used in both economics and sociology. Increasingly, the significance of intellectual capital for those interested in studying organizations in general and entrepreneurship in particular has also become apparent (Adler and Kwon, 2002; Anderson and Miller, 2002; Galunic and Moran, 2000).

The essence of intellectual capital is that education, network relationships, including family, friends, co workers, casual relationships and even contact with strangers, provide a rich resource in terms of knowledge, information and support.

A commitment to innovation has long been considered to be important to the success of entrepreneurial ventures and small firms (Fiol, 1996). Research has shown that innovation stimulates ventures' growth (e.g., Wolff and Pett 2006; Motwani et al. 1999; Max and Majluf; 1991) and also provides a key source of competitive advantage in the absence of scale economies (Lewis, et al. 2002). Considered from the resource-based view of the firm (Barney, 1991), successful innovation may be dependent on the presence of other organization-specific skills and capabilities. Entrepreneurial innovation has also meant losses and hardships for some members of society: it is destructive of some stakeholders wellbeing even as it creates new wellbeing among other stakeholders. Therefore much uncertainty pervades the introduction of innovations by entrepreneurs. In fact, the very concepts of innovation and entrepreneurship are difficult to deal with when the epistemological implication of innovations – true novelty – is taken seriously (Dew and Sarasvathy, 2007). Innovations vary in complexity and can range from minor changes to existing products, processes, or services to breakthrough products, and processes or services that introduce first-time features or exceptional performance. Process definition of innovation proponents concern themselves mainly with how the interplay between events and people at each stage of the process influences events in subsequent stages, determining whether the adoption process will continue (Cooper, 1998). Issues of interest for these scholars include the role of communication in facilitating successful

innovation, best practices in terms of sequencing the stages of innovation, the characteristics of individuals and teams in successful and unsuccessful processes, and the nature of the relationships between parties involved in the innovation process (Frishammar and Hörte, 2005). In contrast, those who see innovation as a discrete event suggest that implementation of innovation occurs when there is actual acceptance of risk and the commitment of resources occurs. A growing number of practitioners and researchers define innovation as any idea, practice, or object that the adopting individual or organization regards as new (e.g., Bhaskaran 2006; Damanpour, 1991). From this perspective, the newness attached to an innovation remains a matter of perception. Innovation has further been defined as "the willingness to place strong emphasis on research and development, new products, new services, improved product lines, and general technological improvement in the industry" (Slevin and Covin, 1990, p. 43). Regardless of definitional debates, success in innovation typically requires strong managerial support and resource commitment (Fujita, 1997). Even then, only 4 percent of all new product innovations beat the expected return on investment (Nussbaum, Berner, and Brady 2005). To make a product innovation success a real goal, organizations should develop economic investment and Intellectual Capital (IC). Intellectual capital is a primordial factor to success in the new economy and a strong mechanism to stimulate innovation creation in organizations that want to develop outstanding performance in the new economy.

Competence in the new economy is principally driven by information and knowledge. This latter is identified by the Organization for Economic Cooperation and Development as an explanation for the increased prominence of the IC as a business and research topic. Specifically, the importance of the IC is emphasized in:

- The revolution in information technology and the information society;
- The rising importance of knowledge and the knowledge-based economy;
- The changing patterns of interpersonal activities and network society; and
- The emergence of innovations as the principal determinant of competitiveness (Petty and Guthrie, 2000).

The term "intellectual capital" has sometimes created confusion, but in 1999 the OECD described the concept as "the economic value of two categories of intangible assets of a company: 1. Organizational ("structural") capital; and 2. Human capital (Petty and Guthrie, 2000). Structural capital refers to the ability of a company to capture its knowledge and culture. Structural and human capital are the knowledge, skills, and competencies of the people deployed throughout the structure of the company. There are structural elements in a company that allow people to put their capabilities to better use than they could on their own. Such elements exist independent of individual people but provide a framework in which individuals can perform better. (Leiaret, Candries, and Tilmans, 2003).

Intellectual capital, as we can see, is supported by the human capital, and the latter could be considered as the incubator of innovation potential. Inside organizations we find human capital: people with skills to create. This is the latent talent necessary for the birth of innovations. Talent is mental or physical aptitude. Specific natural or acquired ability is also the natural endowment or ability of a superior quality. Innovation is the result of the combination of talent and creativity and is founded only in the human capital of organizations. All kinds of leadership and ideas represent components of human capital. Because innovation comes from the intellect or knowledge sets pertaining to human beings it is apparent that all intellectual capital originates first as human capital (Johnson, 2002).

Innovation process then represents components of structural capital, elements that constitute the legal and process value of a firm (Johnson, 2002).

The formal and informal structure of organizations and their external linkages have important bearings on the rate and direction of innovation, and how competences and capabilities co-evolve (Argyres, 1995; Teece, 1996).

A diffusion theory based on the linear model of innovation presents technologies as applied science. An innovation itself does not significantly change or influence its innovation-diffusion process. There are four main elements of an innovation-diffusion process (Rogers, 1995). They are innovation, social system, communications channels and time. An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption; a social system is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems; communication is a process in which participants create and share information with one another in order to reach a mutual understanding (Rogers, 1995, P.17). A third element in the creation and diffusion process is time.

2.1.5 An innovation-diffusion model

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There are many different innovation processes adaptable to different types of business but one described by Mitsufuji proposes a model of innovation–creation and diffusion processes in terms of a self-organizing system. It assumes that considerable interactions between an innovation and the social system exist when it diffuses, and re-examines the innovation-diffusion theory.

Examinations of innovation have been divided into two major research streams (Brown and Eisenhardt, 1998). The first stream examines issues related to the diffusion of innovations across nations, industries, and organizations (e.g., O'Neill, Pouder, and Buchholtz, 1998). In this stream, an innovation is defined as a technology, strategy, or management practice that a firm is using for the first time, whether other organizations or users have previously adopted it, or as a significant restructuring or improvement in a process (O'Neill, Pouder, and Buchholtz, 1998).

The second stream examines the influence of organizational structures, strategic processes, and people on the development and marketing of new products (e.g., Dibrell and Craig 2006; Zahra, 1993). Within this second research stream, an innovation refers to a new product that an organization has created for the market and represents the commercialization of an invention, where invention is an act of insight (Damanpour, 1991). New products may take different forms, such as upgrades, modifications, and extensions of existing products. The most prominent innovation dimensions within these research streams are radical, incremental, product, process, administrative, and technological (Camison-Zomoza Lapiedra-Alcami and Boronat-Navarro, 2004). Technology can also be seen from the perspective of core competencies and dynamic capabilities. In fact, technology is nothing more than a competency insofar as "a competency can be defined as a unique combination of

knowledge and skills that allow the generation of a series of profile innovations" (Chiesa and Barbeschi, 1994, p. 293). The concept of technology can also be associated with a dynamic capability because "dynamic capabilities reflect the ability of an organization to obtain new and innovative forms of competitive advantage" (Teece et al., 1997, p. 516).

After the appearance of an innovation, relevant engineers or professionals witnessing the innovation conduct various kinds of trial and error exercises to compete with each other. In addition to these professionals, relevant social organizations such as professional users' groups join the innovation-diffusion process so as to interpret it. The effect of incentives on worker innovation, productivity and interaction in an experimental production setting is examined. The incentives used were intended to foster either cooperative or competitive behavior within and between work groups.

Appearance of the dominant design and passing through the irreversible phase. Some innovations diffuse explosively when dominant designs appear, while other innovations may disappear because they cannot catch on among members of the social system and cannot reach the threshold for the diffusion. The population of the

potential adopters increases from specific groups to the more generic groups in the social system and full-scale diffusion occurs.

The social system alters its structure from a previous one, and cannot remain effectively without the innovation. Thus, it becomes precipitated and embedded in the social system. On this occasion, the development level of the individual element technologies is not uniform. In order for the innovation to become convergent and stable, relevant element technologies should be fully developed (Hughes, 1983). As the shortcomings of the technology system concerning the innovation diminish to the level at which members of the social system are satisfied with the usage of the innovation, it becomes stable. It can be said that an innovation is shaped not only by engineers but also by various social groups. Now that the innovation-diffusion process enters into the closure phase (Bijker, et al. 1987), the points at issue apparently disappear. The innovative artifact becomes an ordinary one and infiltrates the social system. Creativity and innovation are parts of the daily work in the present century. Many theories have been exposed to redefine its principles and actuation. Some interesting ideas have been explained. Innovation has been.

Throughout intellectual history, the entrepreneur has worn many faces and played many roles. One of those roles is innovator—an association made popular by

Joseph Schumpeter. As Schumpeter's view has come to dominate the field, the earlier history of the concept—particularly that part which linked entrepreneurship and innovation—has become increasingly obscured and forgotten. This essay attempts to set forth a chronological trace of the entrepreneur as innovator in an effort to presage Schumpeter's contribution as well as to enrich the analytical nexus between entrepreneurship and innovation. The entrepreneur concept has become one that must be analyzed in the literature. In the next section we will expose this concept and the *literature recollection.*

2.2 Entrepreneur Theory

In studies of entrepreneurship it is possible to differentiate between two schools of thought, one based on the trait model, and the other on contingency thinking. In studies exploring the trait model, the key question is why certain individuals start firms and are successful as entrepreneurs. In these studies the personality traits of successful entrepreneurs are not examined in the context of the prevailing situation

Following the models based on contingency thinking, the characteristics needed in entrepreneurship are bound up with the firms' environment and the prevailing situation (Gilad and Levine, 1986). Personality characteristics are formed

by the interplay between individuals and their environments. In this interplay, life situation, experiences, and changes in the individual's life play central roles (Rotter, 1975, 1990). Hence, becoming an entrepreneur can amount to a change in one's life which is profound enough to have an effect on one's personality characteristics. The theories most commonly applied in research on entrepreneurship are McClelland's (1961), which focuses on the need to achieve, and Rotter's (1966) locus of control theory. According to McClelland's theory, individuals who have a strong need to achieve are those who want to solve problems themselves, set targets, and strive for these targets through their own efforts. The theory suggests that individuals with a strong need to achieve often find their way to entrepreneurship and succeed as entrepreneurs. According to Rotter (1966), on the other hand, the locus of control of an individual can be seen as either internal or external. An internal control expectation refers to the perception of control over its own life, and that the results of one's actions are dependent either on an individual's behavior or permanent personality characteristics. An external control expectation refers a perception that the actions of other people, or fate, luck or chance are the primary factors influencing an individual's life. According to Rotter's (1966) theory, the internal control expectation is related to learning, and thus motivates and supports active striving. The external control expectation, on the other hand, impedes learning and encourages passivity. An internal control expectation is usually associated with entrepreneurial characteristics.

Barkham (1994) argues that the motivation aspect will affect the ability to assemble resources. This argument is supported by Carland et al. (1984), as well as Hornaday and Bunker (1970). McClelland's theory correctly explains that entrepreneurs work better if they possess creativity and innovation, for example, if they are willing to introduce new products new markets and are able to discover new market opportunities.

2.2.1 Entrepreneurs and information

Entrepreneurs play a major role as information seekers and processors. This role is especially critical in small businesses that are highly dependent on single individuals as providers of vital information. Being responsible for the survival of their firms, small business entrepreneurs must assume the task of choosing appropriate sources of information (Welsch and Young, 1986). Searching for information is a central task for entrepreneurs.

A study developed by Cooper, Flota, and Woo (1995) considers the influences of information search. In particular, the study puts forth the hypothesis that entrepreneurs are rationally bounded in their search behavior, constrained by lack of experience and overconfidence. In a study of 1,176 entrepreneurs, the authors found mixed support for the hypothesis. Those who had no entrepreneurial experience, on average, sought more, not less information. However, consistent with the hypothesis,

those who ventured into fields which were very different and those who were more confident sought less information. Interestingly, the inexperienced entrepreneurs varied their search, depending upon whether they were in familiar or unfamiliar domains. Novice entrepreneurs search less extensively in their fields, a behavior consistent with bounded rationality. In contrast, experienced entrepreneurs seemed to search with about the same intensity, regardless of their familiarity with the field. (Cooper, Flota, and Woo, 1995). The key word to focus on is *information.*

Information provides involvement. Involvement builds up knowledge. Knowledge is assessed and can lead to changes in attitudes and behaviors. It is important for entrepreneurs to have access to a variety of information sources in order to adapt their business strategies to prevailing conditions. The responsibility for seeking information lies with the owner/manager, who will also be responsible for making decisions regarding how the information is applied. It is also important, therefore, to determinate how entrepreneurs utilize the growing array of data sources available in order to develop more efficient means of seeking and using information (Triana, Welsch and Young, 1986). The lack of contact and market knowledge of where to obtain information are problems that plague almost all new entrepreneurs. The psychological attributes of entrepreneurs have been investigated in a number of studies such as personality, performance and creation. Other studies have examined the information sources but there is not a specific study which investigates market

knowledge as a part of the information that the entrepreneurs handle to create innovations or new products.

As entrepreneurs, individuals with internal control are better to manipulate the environment and should have an active-information search pattern. The active information search pattern should be indicated by a significant correlation with the market knowledge sources. They should have the capacity to incorporate the right information, in this case, the relevant market information to make their projects or ideas successfully. Like consumers, entrepreneurs possess an information-seeking behavior as the principal reason to reduce uncertainty, this despite the fact that entrepreneurs are described as risk-takers (Triana, Welsch and Young, 1986). If entrepreneurs are more knowledgeable or have progressed farther into the decision-making process, they may be actively considering a particular alternative as an investment. Entrepreneurs may turn to an information source for an evaluation of this stock, in which case the objective is to determine which information source is most adequate for the evaluation under consideration, and in turn, which opinion, or opinions, should be sought out first. Successful entrepreneurs have also been characterized as able to monitor the environment and willing to accept innovations necessary to adapt their organizations to environmental changes. Schumpeter believed that an entrepreneur tends not to accept the boundaries of structured situations, but instead, acts as a "catalyst of change" who is able to carry out "new combinations,"

and who can be instrumental in discovering new opportunities (Schumpeter, 1965). Swayne and Tucker argued that entrepreneurs are oriented toward innovation, and constantly seek new and different ways to expand their businesses or to start new businesses (Swayne and Tucker, 1990).

2.2.2 Entrepreneur and Knowledge

De Boer et al. (1999) claim that knowledge is the most important resource to help companies gain a competitive advantage. This can be accomplished through building a knowledge network (Nordhaug, 1993), which Leonard-Barton (1995) defines as a mutually dependent knowledge system. In the strategy literature, the concept of environmental scanning conveys how companies more rapidly respond to changes in the environment (Thompson, 1967; Pfeffer and Salancik, 1978). Environmental scanning occurs through interaction with the environment. Johannessen, et al. (1999) emphasize this interaction, claiming that knowledge management must embrace the company's entire knowledge base system, both internal and external. This is, according to Johannessen, et al., in contrast to the management literature, known as scientific management. The importance of knowledge in sustaining and enhancing a firm's compositeness makes the acquisition of new knowledge a top managerial priority (Inkpen, 1998; Abou-Zeid, 2002).

However, because very few new venture firms enjoy the full range of knowledge and experience needed for timely and cost-effective product and service innovation, companies are increasingly engaging in various forms of collaboration, such as joint ventures, strategic alliances and clusters in order to access the knowledge and capabilities unavailable internally (Premaratne, 2001; Abou-Zeid, 2002). These collaborative arrangements are embodied in what we refer to throughout this work as building knowledge reservoirs. Entrepreneurship is a multifunctional, multifaceted exercise. It is, therefore, not controversial to claim that entrepreneurs need access to multifunctional knowledge, or business knowledge to manage a start-up. Business knowledge can be defined as multifunctional knowledge comprised of the product, market, organizational, and financing facets. One can assume that entrepreneurs do not personally hold all the business knowledge required to gain competitive advantage (Chrisman, 1999; Premaratne, 2001).

Entrepreneurs require knowledge beyond themselves, and thus they must cooperate with other actors who possess this knowledge. One cost-effective way of acquiring this knowledge is by creating knowledge reservoirs. Premaratne (2001, p. 363) refers to these resources as "free", which are exchanged without economic agreements between the two parties". The effectiveness resides in getting cost-effective access to the knowledge, and by organizing the knowledge in internal, semi-internal, and external market knowledge forms. A fundamental question

entrepreneurs should ask themselves is: "What knowledge is essential to the development process needed to achieve competitive knowledge?" (Lars, 2005). Many studies claim that access to knowledge resources is essential to gaining competitive advantage and that setting up networks is a means for this. On the other hand, few studies identify what kind of knowledge is available, and where. (Lars, 2005) For example, Pinch, Henry, Jenkins and Tallman's (2003) paper proposes a knowledge-based model of competitive advantage for industrial clusters. In particular, they examine the likelihood that the various types of knowledge formulated by individual firms are either retained internally to gain competitive advantage, or diffused throughout the wider industry of which the firm is a part. They formulate a perspective through which these issues can be grasped and propose a model that can be used to evaluate the efficacy of various types of knowledge in sustaining the competitive advantages enjoyed by firms within an industrial agglomeration.

The authors outline a hierarchy of specialized knowledge stocks at both firm and cluster levels and further propose that the specificity of knowledge resources at each level is protected, in part, by asymmetries in knowledge flows from level to level. These asymmetries result from organization-specific understandings within the industry. Knowledge has been an essential component of most writings on competitive advantage. Tacit knowledge is based on the idea that "we can know more than we can tell" (Polanyi, 1966, p.4). Thus it is argued that there are many tasks that

involve more skills and insights than can be written down on paper. Acquiring such knowledge often requires personal demonstration, experience, practice and imitation and is therefore related to the idea of "learning-by-doing" (Arrow, 1962). This means that tacit knowledge is often related to specific ways of doing things that emerge in particular places and contexts. It is therefore argued that tacit knowledge is often context dependent, being facilitated by a common language, culture and value system. Codifiable knowledge, in contrast, can be expressed in various forms and rapidly disseminated through various geographically dispersed user communities -- a process also termed "ubiquitification" (Maskell, 1999; Maskell and Malmberg, 1999a). It is not difficult to see how this concept of tacit knowledge can be used to explain the alleged competitive advantages enjoyed by geographical clusters of small firms. Superior ways of designing, manufacturing and assembling products, or delivering goods or services can be facilitated by tacit forms of knowledge that are embedded in a local context and which are therefore difficult to transfer elsewhere (Maskell and Malmberg, 1999b). However, in recent years this neat juxtaposition of tacit knowledge with regionalization, and codifiable knowledge on the global scale, has been questioned. For example, Amin and Thrift (2002) question the role of local proximity in fostering innovation based on tacit knowledge. To begin with, they note that tacit knowledge seldom works when isolated from codified knowledge; competitive advantage is a result of how the two are combined (see also Amin and

Cohendet, 1999). Not only is codified knowledge effective when interpreted through a variety of tacit measures, but tacit knowledge often relies on codified knowledge in forms such as instruction manuals. Furthermore, both forms of knowledge are now widely dispersed in extensive transnational organizations based on "communities of practice" (Wenger, 1998; Amin and Cohendet, 2000; Brown and Duguid, 2000, 2001; Lesser et al., 2000).

Entrepreneurial know-how is particularly highlighted in entrepreneurs' ability to recognize and react constantly to changes constantly occurring in a firm's competitive environment (Gartner, 1985). Training, especially in combination with the relevant experience and the tacit knowledge it builds, seems to be a general determinant of the success of firms (Vesper, 1992). The nature of entrepreneurs' training explains the survival of new firms. As a rule, those entrepreneurs who had training in the start-up phase of their firms remained in business. Dominance and mastery was emphasized among entrepreneurs who had training when the firm was in the process of being established. These results can also be interpreted to indicate that training increases the potential for entrepreneurs to influence the factors prevailing in the firm's environment (Littunen, 1997).

2.2.3 Entrepreneur Characteristics

Starting up a new firm is very much an individual decision, which is why an individual's qualities as an entrepreneur are central to the investigation of entrepreneurship. During the start-up phase of a firm, the important characteristics an entrepreneur must have include innovativeness and the will to act (Tibbits, 1979; Bird, 1989). Innovation means that the entrepreneur must have the ability to produce solutions in new situations. This is presumably linked with the entrepreneur's abilities, attained through training and experience. The will to act, besides being partly the product of experience, is probably connected with the entrepreneur's training and the resources under his or her control. These factors shape the values and attitudes of the entrepreneur. They can also be seen as factors bringing the entrepreneur closer to what he or she expects from life, or causing these expectations to disappear. Characteristics typical of successful entrepreneurs are the ability to take risks, innovativeness, knowledge of how markets function, manufacturing know-how, marketing skills, business management skills, and the ability to co-operate (Casson, 1982). The ability to bear risk has been identified as the primary challenge facing entrepreneurs (Knight, 1921). Since entrepreneurship is a "unique occupation characterized by risk-taking" (Cromie, 1994), numerous attempts have been made to measure the risk-taking attribute of entrepreneurs (Palmer, 1971; Brockhaus, 1980; Sexton and Bowman, 1983; Begley and Boyd, 1986; McGrath et al., 1992; Ray,

1993). The basic assumption underlying these studies is that entrepreneurs are in some way different from the general population, and that this difference can be explained in terms of the entrepreneur's innate traits. Furthermore, there are linkages between personal characteristics, business start-up and business performance. The major contributor to the personality theory has been McClelland (1961), who found that risk-taking propensities were dependant upon an individual's achievement motives. Individuals with a high need for achievement tended to take moderate risks while individuals with low levels of achievement showed fewer reservations towards risk-taking. Ray (1986), in a study of risk-taking attribute, discovered that self-esteem was closely associated with, and might have driven, risk-taking propensity. Those with very low self-esteem either take no risks or take very high risks. Either posture reinforces their initial premise that they are unworthy individuals. Those with a healthy level of self-esteem are able to take risks appropriate to various situations that arise. Some studies refer to entrepreneurs as moderate risk-takers (Brockhaus, 1980, 1987), suggesting that entrepreneurs are not gamblers and tend to avoid situations involving extreme risks. Caird (1988) mentions a number of entrepreneurial characteristics including a good nose for business, the desire to take risks, the ability to identify business opportunities, the ability to correct errors effectively, and the ability to grasp profitable opportunities. Bird (1989) divides risks into five types, four of which are clearly relevant to any potential entrepreneur: economic risk, risks in

social relations, risks in career development, as well as psychological and health risks. Brockhaus' findings (1982) show that the preference for a particular risk type does not differ as it does between professional managers and the general population, or as between successful and unsuccessful firms.

2.2.4 The Gap between Entrepreneur and Market Knowledge Literature

Evaluating business ideas is designed to remove unpromising ventures from consideration. According to Bhide (1994), entrepreneurs are already familiar with the facts needed to determine whether an idea has preliminary merit. By conducting research in areas of product development and execution, and market status, entrepreneurs can reduce risks by determining if there are inherent conditions making business success unlikely. Business survival requires an edge derived from some combination of a creative idea and a superior capacity for execution. Entrepreneurial creativity typically involves development of an innovative product or refining a process that improves an existing method. The entrepreneur may also have a unique insight about the course or consequence of external factors. Creating a successful new business does however require more than a creative idea. When evaluating business products or services, entrepreneurs should focus primarily on evaluating the adequacy of their ideas and later their capacity to execute them. An additional consideration when evaluating new business viability is the status of the existing market for a

product. In order for an entrepreneur to establish a profitable business, an adequate amount of information regarding the market must be obtained followed by the expertise to utilize that information. Being able to discover new opportunities and capitalize on the resources that are essential for the opportunity to be profitable are two key aspects to becoming a successful entrepreneur (Minniti, Bygrave, 1999). Often, opportunities are more prevalent in a new or evolving industry than in a more mature industry. Large amounts of resources are needed to lure customers away from competitors in a mature industry where market influences have already eliminated weak organizations. This is in contrast with new markets where start-up businesses are matched against less experienced competitors. There is not a specific study in which market knowledge is evaluated in the entrepreneur's implicit tacit knowledge or a specific instrument adapted to measure this implicit knowledge. For this reason this dissertation aims to explore market knowledge or market information that entrepreneurs apply toward future projects or inventions.

2.2.5 Entrepreneurs and market Knowledge

The basis of the main question is formulated for this study: How can entrepreneurs develop more successful products or projects according to market realities?

In today's fast-paced competitive environment, firms need to be increasingly nimble and adaptive. While often able to establish a certain level of performance based upon existing technologies, firms are just as often left flat-footed in the face of emerging, novel technologies. The present investigation discusses entrepreneurship as the means through which firms simultaneously exploit their current competitive advantages using entrepreneur's knowledge as a potential tool for developing new products adequate to customers needs. The entrepreneur uses the personal contact network and customer communication, a customized form of marketing, which is uncomplicated and follows a common-sense approach to business development. This is how market information is gathered. It derives from the ability to identify and respond to market signals (McGowan and Rocks, 1994). The signals can be in the form of customer requests, supplier suggestions, and ideas from work colleagues or threats from competition. Hill and McGowan (2002) develop a three-level framework of networking competencies in the smaller firm. Level 1 refers to competencies such as experience, knowledge, communication, judgment and intuition; level 2 refers to competencies including vision, opportunity-focus, relational communication and commitment; level 3 competencies include personality, relationship-building, listening skills, adaptability, commitment, motivation, ambition, achievement, enthusiasm, confidence and aggression. Many of these factors have also been

identified as central creative entrepreneurial marketing factors in the arts (Fillis, 2002a).

Profs. Sharda S. Nandram and Karel J. Samsom found that all the entrepreneurs in their study had a high drive to start but their goals varied. They were inspired by either seeing or imagining an opportunity or a strong intention to be their own boss or noticing having relevant competencies to become an entrepreneur (self-efficacy). In this study, entrepreneurs were convinced that they had the relevant competencies to start an entrepreneurial career by actually initiating a venture. These convictions were based on the perception of having control over the required competencies, which refers to the concept of self-efficacy. Some were more specific about their perceived competencies and mentioned financial expertise, capacity to organize, and chemical expertise. In the other hand entrepreneurs mention also that they could easily obtain market knowledge which led to a good state of preparation. Some knew the market already when they developed the opportunity in their minds.

2.3 Market Knowledge Information Construct

In order to examine the nature and role of market information, it is first necessary to define the meaning of the term. Most marketing and marketing research texts make a distinction between market and marketing information (Churchill, 1976;

Tull and Hawkins, 1992). The former relates to information describing the market only, while the latter refers to information concerning the marketing activities of the firm, their impact on and interaction with the market and their effectiveness in achieving marketing objectives. Others, however, use "market information" to cover a broad array of issues, including the dominant economic characteristics of an industry, factors determining competitive success, and industry prospects for profitability (Marty, 1994). In this case, market information might be fed into a firm from a variety of internal and external sources. In detailing how market information should be collated internally, Kohli and Jaworski (1990) suggest that information can and should be generated in throughout an organization and is not solely the responsibility of marketing departments (Daft and Weick, 1984; Webster, 1988). There appears to have been a silent shift from the early definitions of marketing and market information. The latter is now commonly used to cover a wider array of information types than the former. The decision to use a broad or narrow definition of market information is crucial in research since it delineates the spectrum of information to be investigated. Recent developments in the literature on the market orientation of firms suggest that focusing too much attention on only customer and immediate market information may be characterized as narrow and myopic (Day, 1994; Sinkula, 1994; Slater and Narver, 1995). Moreover, the organizational learning literature has contributed to this subject and posits that market information processing is a function

of what the organization has learned previously in terms of both facts about its relevant markets and its particular way of acquiring, distributing, interpreting and storing information, be it formal or informal (Daft and Weick, 1984; Huber, 1991; Levitt and March, 1988; Menon and Varadarajan, 1992; Sinkula, 1994). This influences the "use" of the concept of information.

In competitive market fields, performance-related information is the raw material from which organizational actors make sense of their environment. The outcome of this process is an enactment of a "market." Market information regimes are the media through which producers observe each other and market participants and make sense of their world. Ever more, the regular collection of specific information focuses the attention of field participants on those reports. The existence of a particular market information regime conveys the impression that the information is valid and vitally important. Its availability creates demand for its use in interpreting their environment (Pfeffer and Salancik, 1978).

In market information regimes, information typically takes the forms of sales reports, inventory information, trade magazine reports of "hot selling" items, newspaper articles, or rumors or gossip regarding past, present, and future courses of action. The framing of market information can vary in terms of the scope of information collected, the methodology for compiling information, and the political

tone with which the information is presented. The use of market information in distributed decision-making has benefited from new information technologies, which improve the efficiency and effectiveness of marketing programs (Bloom et al, 1994). The use of market information by organizations has received considerable attention by researchers (Sinkula, 1994), increasing firms' awareness of the benefits of information accumulation in distribution decision making. Knowledge is defined as a justified true belief: when somebody creates knowledge, he or she makes sense out of a new situation by holding justified beliefs and committing to them (von Krough et al.,2000). Knowledge is dynamic, personal and distinctly different from data (discrete, unstructured symbols) and information (a medium for explicit communication). Since the dynamic properties of knowledge are most important for managers, the notion of individual competence can be used as a fair synonym to a capacity-to-act (Sveiby, 2001). Nonaka and Toyama explain that knowledge is created in the spiral that goes through seemingly antithetical concepts such as order and chaos, micro and macro, part and whole, mind and body, tacit and explicit self and other, deduction and induction, and creativity and efficiency (Nonaka and Toyama, 2003). Knowledge creation is a transcending process through which entities (individuals, groups, organizations, etc) transcend the boundary of the old into a new self by acquiring new knowledge.

The model describes the possible components of the entrepreneur's knowledge perception that compose the knowledge perception construct, with the following elements: the perception of technological knowledge, the perception knowledge of market aspects, and the perception of the knowledge of competition. Perceptions vary from person to person. Perceptions of identical situations differ. But more importantly than that, people assign different meanings to what we perceive. One might change one's perspective or simply make things mean something else.

Innovative products are introduced in turbulent and chaotic environments where the odds of success are often low. As a result, the marketing strategies for innovative products must be optimized to enhance the odds of success. Yet, marketing is often not a well-developed competency in many innovative firms (Mohr, 2002). Because of the wide variety of innovative products, brands and prices, the market goes through a stage of uncertainty. This feeling of uncertainty can only be reduced by means of information, particularly that which is received from a reliable source. This is the time when the entrepreneur or inventor of an innovation should get in touch with real market knowledge through different channels, which will be addressed throughout his/her project.

2.3.1 Technological Knowledge Perception

Entrepreneurs contribute to economic development by introducing new product offerings into the market or through new production methods (Schumpeter 1954, 1976). Market pioneering, in which a firm is the first to market, is often considered an expression of an entrepreneurial orientation (Covin et al. 1999). Whether it is through product, process, or management innovation, entrepreneurial business ventures are the drivers of modern global economies (Timmons and Spinelli, 2004). The development and commercialization of new products and services can revitalize old industries or create entirely new ones. Entrepreneurial business ventures are the change agents that move society forward (McClelland, 1976) and bring forth innovation through continuous improvement, creative destruction, and creative transformation (Terziovski 2002; Venkantaraman, 2004). High-tech start-ups and technology development firms, also known as technological entrepreneurs, play an important role in developing and commercializing technologies worldwide. These firms are integral to many industries including artificial intelligence, biotechnology, software, and telecommunications (Zahra, 1996a). As technology adopters, they use new mechanisms for product and process innovation; as technology developers, they initiate commercialization of new technologies (Clarysse and Moray, 2004). These firms rely on technology as a key strategic resource that can be used to develop a competitive advantage through innovation (Kelley and Rice, 2002). Decisions made by a firm on which technologies to develop and exploit can impact its probabilities

for success or failure (Zahra and Chandler, 1999). A coherent technological strategy is one of the key components for success and superior financial performance (Zahra, 1996b). The technology strategy is, in turn, shaped by the firm's scientific, technological, and inherent managerial capabilities (Deeds, et al. 1999).

Early studies in technical entrepreneurship identified the research-based academic environment - including non-profit organizations, and particularly, non-profit research institutes, government research centers and universities - as the predominant backgrounds from which technical entrepreneurs emerged (Cooper, 1971a; Roberts and Wainer, 1966; Schrage, 1965; Wainer and Rubin, 1969). More recent research by Samson and Gurdon (1990) specifically identified these individuals as "scientist-entrepreneurs", namely "the scientist whose primary occupation, prior to playing a role in the venture start-up, and possibly concurrent with that process, was that of clinician, researcher or teacher, affiliated with a university, research institution and/or hospital ... the industrial scientist who, during his industrial affiliation, had usually been exposed to corporate and managerial cultures, was thus not included" (Samson and Gurdon, 1990, p. 441). They showed that this type of technological entrepreneur was an individual with no exposure to either the business world or entrepreneurship. In fact, not a single scientist-entrepreneur examined had any formal training whatsoever in business, team management or interpersonal skills, the most frequently mentioned deficiencies,

followed by marketing and finance. Two other studies, one from Canada (Knight, 1986), and another from Sweden (Klofsten et al., 1988), found similar results. Although the importance of technological knowledge in assuring superior performance is well accepted, few studies have investigated the nature of relationship between those two variables. Those studies have confirmed the existence of a positive relationship between total stock of technological knowledge and firm performance (Cockburn and Griliches, 1988; Jaffe, 1986; Pokes, 1985). However, a recent stream of theoretical (e.g. Helleloid and Simonin, 1994; March, 1991; Winter, 1987) and empirical (e.g. Christensen, 1993; Henderson and Clark, 1990; Morone, 1993; Prahalad and Hamel, 1990; Starbuck, 1992) research suggests that it is not the total stock of knowledge but specific characteristics of the knowledge stock that are important for sustained competitive advantage (Christensen, 1993; Henderson and Clark, 1990; March, 1991; Prahalad and Hamel, 1990; Starbuck, 1992). This study adds to this research stream by focusing on the breadth and depth of components of corporate technological knowledge. Although they may be idea rich, technological entrepreneurs are typically resource-poor. They often lack the operating capital to intensively research an interesting idea, to develop ideas into prototypes, and/or to commercialize a product. In the present study, the concept of Perception of Technological Knowledge is composed of three important concepts:

The knowledge perception of new products or innovations; the knowledge perception of technological change and the knowledge perception of uncertainty technology. We will discuss these dimensions in the following sections.

2.3.2 New Products or Innovations Knowledge Perception.

An individual learns about the existence of innovation and seeks information about the innovation. "What?," "how?," and "why?" are critical questions in the knowledge phase. During this phase, the individual attempts to determine "what the innovation is and how and why it works" (Rogers, 2003, p. 21). According to Rogers, the questions build three types of knowledge: (1) awareness-knowledge, (2) how-to knowledge, and (3) principles-knowledge. (1) Awareness-knowledge: represents the knowledge of the innovation's existence. According to the entrepreneur profile this type of knowledge can motivate him/her to learn more about the innovations in the market. Also, such knowledge may encourage an individual to learn about the other two types of knowledge.

How-to knowledge: contains information about how to use innovations correctly. An individual should have a comfortable level of how-to knowledge prior to the trial of this innovation. Thus, this knowledge becomes more critical for relatively complex innovations (Rogers, 2003).

Principles knowledge: includes the functioning principles describing how and why an innovation works.

To create new knowledge, technology education and practice should provide not only a how-to experience but also a know-why experience (Seemann, 2003). In fact, an entrepreneur may have all the necessary knowledge, to create the innovation.

2.3.3 Technological Change Knowledge Perception

Organizational competence to effectively manage the innovation and change of its systems and products is a skill that does not become obsolete over time, but instead grows in importance for organizational success. The process by which an organization adapts to market pressures is through change management programs and the projects and actions undertaken as part of these programs (Dooley and O'Sullivan, 2001). To respond to complex and changing markets, firms must have a variety of resources, routines, and robust intellectual processes. McKelvey (1982) argues the need for diversity from two quite different theoretical bases. Both biological theory and cybernetic science tell us that survival is dependent on maintaining a required variety of possible alternatives (Ashby, 1964). Stark (2000) notes that firms everywhere are undergoing rapid change in the face of an ever accelerating pace of technological change coupled with the redefinition of markets on regional and global scales. While these processes are most obvious in fields such as

microelectronics, biotechnology, and digital communication, organizational change is not isolated to those industries. From agribusiness to health care, firms increasingly operate in highly uncertain organizational environments characterized by extreme market volatility. There is a race to come out with new types of products, and a shift from decreasing returns to scale to increasing returns from learning.

2.3.4 Technological Uncertainty of Knowledge Perception

Basically, the concept of uncertainty, as used by organization researchers, is derived from this view and has been adjusted to the organizational context. Duncan (1972) defined "environment" as the relevant physical and social factors outside the organizational boundaries that are taken into consideration during decision-making. Burns and Stalker (1961) considered environmental uncertainty to be the result of changes in market composition and technology. The same is true for Emery and Trist's (1965) four types of environmental texture - the placid-randomized, the placid-clustered, the disturbed reactive, and the turbulent environment. Uncertainty, according to this group of researchers, is embodied in the multidimensional nature of the environment (Downey et al., 1975). Child (1972) viewed environmental uncertainty in terms of the frequency of change, the degree of difference entailed by each change, and the degree of irregularity in the overall pattern of change. Duncan (1972), meanwhile, distinguished between instability and complexity (based on the

number of factors comprising the environment and their heterogeneity) and developed an environmental typology founded upon simple-complex and static-dynamic dimensions. Finally, Shortell (1977) suggested a distinction between complexity and heterogeneity or diversity. Although these researchers propose different conceptualizations, all of them assume that uncertainty is a characteristic of the environment.

A number of studies, utilizing technology as the independent variable in the structural contingency equation, emphasized its relationship to uncertainty (Woodward, 1958). These studies provided nominal definitions of technology rather than discussing its the implications of its uncertainty. The relationship to uncertainty, however, is quite apparent in most of the writings. The first to view technology or, in effect, the nature of the transformation process in the organizational subsystem as the variable upon which structure is contingent, was Woodward (1958). Her study of 100 manufacturers classified technology according to complexity and described three types of production: unit or small batch, mass and process. In Woodward's study, the relationship between technology and uncertainty can be easily shown: unit production, for instance, involves a higher level of uncertainty than mass production because manufacturing requirements are less predictable. The same is true for the more elaborate classifications developed later, such as Perrow's (1967) widely used classification of technologies. The strategic management literature has increasingly

adopted a knowledge-based perspective in order to explain the sources of the firm's competitive advantage (Grant, 1996a, 1996b; Teece, 1998; Zack, 1999). Accordingly, the level and the quality of technological knowledge inside the corporation have been related to its ability to achieve product and process innovations and then to its future economic performance (McGrath et al., 1996).

2.3.5 Market Knowledge Perception

There are numerous research contributions supporting this proposed relationship between information and knowledge. For instance, it has been claimed that information use is the intermediate step and, therefore, essential to knowledge development, since it is through information represented through what we say, write and present, that we develop new knowledge (Marchand, 1998). Similarly, Purvis et al. (2001) suggest that knowledge within a firm is created when individuals, teams, and departments "process information, make decisions, and act on existing knowledge." Another view on the relationship between information and knowledge is offered by Bertels and Savage (1998), who state that "information only comes alive by our interpretation," that we create meaning by distinguishing and valuing information. Also psychology and consumer behavior literature define (consumer) knowledge as an aggregate of learned beliefs (Fishbein and Ajzen, 1975), frequency of product-related experiences or familiarity with (e.g. purchasing, product use) or the

expertise or ability to perform product-related tasks (Alba and Hutchinson, 1987). While the above examples show a clear causal linkage between the concepts of use of information and resultant knowledge, there are some indications in the general management literature that the opposite effect exists as well. Davenport and Prusak (1998), for example, define knowledge as "a fluid mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information." This suggests that knowledge also has an impact on how information gets selected, filtered, and interpreted. It in turn indicates that the interpretation of information and its consequent use are determined by the existing knowledge base. This position is strengthened by the words of Teece (2001), who states that "knowledgeable people and organizations can frame problems and select, integrate and augment information to create understandings and answers."

Furthermore, the issue of knowledge creation is more complex than simply responding to external information. Earlier in this chapter, the distinction between information-based knowledge (explicit knowledge) and experience-based knowledge (tacit knowledge) was set out. Organizational knowledge is believed to be created by interactions among individuals, with their diversity in expertise, values, insights, and ability to learn (Nonaka, 1998). Thus, the process of converting external market information into organizational knowledge can follow several tracks (Nonaka et al.,

2001). Instrumental-conceptual information may be transformed into explicit knowledge by incorporating a justified true belief into, for example, company reports and manuals, formal databases, international product concepts and designs. This knowledge is formed more by data and information than by individual learning, values, and know-how. However, instrumental-conceptual use of information can also be transformed into tacit knowledge by making the justified true belief routinized and embedded in actions and practices (Nonaka, 2001). This may include know-how in daily operations, organizational routines as well as more practical knowledge -- increasing activities such as shared, hands-on practice through experience in the marketplace, meetings with foreign buyers, international seminars and workshops. Firms tend to put greater emphasis on explicit knowledge (Takeuchi, 2001) as its formal and systematic nature makes such knowledge easy to communicate (Gupta, 2000).

2.3.6 Market Needs Knowledge Information

Several authors emphasize the vital role of external knowledge sources in innovation activities (von Hippel, 1988; Tripsas, 1997; Cohen et al., 2002; Caloghirou et al, 2004). However, to be able to match market needs and the firm's capabilities, internal information gathering is also needed. Huber (1991) suggests that knowledge acquisition may be carried out through several processes: by learning

when observing other organizations; by grafting knowledge-possessing components such as other firms; by intentional search and monitoring. In general, knowledge-acquisition capabilities consist of processes and mechanisms for collecting information and creating knowledge from internal and external sources. Even though the importance of knowledge acquisition in innovation activities is recognized, it is not so clear how directly effective knowledge-acquisition capabilities are reflected in improved performance. It may have a more indirect than direct role in promoting innovation (Darroch and McNaughton, 2003), or it may be a necessary but insufficient condition for enhancing performance (Zahra and George, 2002). A firm that does not sense opportunities can hardly make use of them. Still, other processes and structures are also needed in innovation activities. The acquired information and knowledge of individuals has to be converted into a transferable form and distributed internally so it can be used in business. Knowledge codification facilitates knowledge dissemination. Formal and informal communication can be supported by several human-resource management practices. Knowledge is transformed from the tacit to explicit through social interaction (Nonaka and Takeuchi, 1995). From the perspective of organizational renewal and innovativeness, the most crucial practices involve organizational-level learning activities that bring understanding of action-outcome causal connections and result in higher-order learning, which in turn allow changes in basic assumptions (Argyris and Schon, 1978; Kim, 1993). The ability to

integrate and transform knowledge is fundamental in ambitions to institutionalize innovativeness in the firm.

A firm that is sensitive to recognizing changes in the market and is able to identify opening opportunities, but lacks the necessary capabilities to transform its knowledge into valuable products or profitable business models, does not improve its performance. Knowledge-utilization capabilities indicate how effectively it can exploit acquired knowledge in the form of new and improved products. On the other hand, a firm with advanced knowledge-utilization capabilities is quick to respond to signals it receives. Serendipitous opportunity seizing is possible without the systematic use of knowledge-exploitation procedures, but in order to sustain a high degree of innovativeness, the firm needs processes for deliberately incorporating acquired knowledge so as to enhance processes and products as well. Responsiveness to market knowledge Qaworski and Kohli, 1993), strategic flexibility (Kogut and Kulatilaka, 2001) and reconfiguring capabilities (Teece et al., 1997) are all mentioned as the most essential elements of organizational-renewal capability. A firm that is alert to changes in the environment (Kirzner, 1997) and is well-prepared to change its processes, strategies and products, has the potential to sustain higher levels of innovativeness, and to profit from innovations

2.3.7 Market Uncertainty Knowledge Perception

Market uncertainty is external and shared across a set of firms. In finance literature, this is analogous to systematic or market risk, which consists of factors common to the entire economy (Brealey and Myers, 2003). Market risk, because it is systematic, cannot be controlled and is independent of what happens at the firm level. Markets vary in their level of uncertainty and unpredictability, and firm fortunes may vary considerably within those markets. Firm-specific uncertainty and market uncertainty are independent theoretical constructs, because it is possible for firms experiencing high uncertainty to be in markets experiencing low uncertainty and vice versa. Many organizational studies examine market uncertainty, emphasizing sources of uncertainty that cannot be managed or reduced by the actions of a single firm. For example, Burgers et al. (1993) examined competitive and demand uncertainty as two forms of uncertainty beyond the control of a particular firm. Competitive uncertainty is created when the competitive actions of a rival influence a firm. This type of market uncertainty has been found to increase with the concentration ratio of the industry (Wiersema and Bantel, 1993). Demand uncertainty comes from the general level of demand for an industry's products (e.g., semiconductors). Although firms can respond to demand uncertainty, it is a consistent source of uncertainty that firms cannot eliminate to the extent that customer preferences are unstable and changing (March, 1978). A third example is input cost uncertainty (McGrath, 1997). Firms

have difficulty managing or reducing input cost uncertainty because often they have only weak influence over their supplier's prices. These examples do not exhaust the many ways scholars have measured or described market-level uncertainty, but they serve to show that there are many sources of such uncertainty that are out of an individual organization's control.

2.3.8. Market Segments Knowledge Perception

The concept of segmentation knowledge was introduced into the marketing vocabulary in 1956 by Wendell Smith (1956/1995) as an alternative to the product differentiation strategy promulgated at the time. Smith (1995) defined product differentiation as "the bending of (customer) demand to the will of supply" where "variations in the demands of individual consumers are minimized or brought into line by means of effective use of appealing product claims designed to make a satisfactory volume of demand converge upon the product or product line being promoted" (pp. 64-65). In contrast he proposed that "segmentation is based upon developments on the demand side of the market and represents a rational and more precise adjustment of the product and marketing effort to consumer and user requirements" (Smith, 1995, p. 65). Over the past 50 years the segmentation concept (with its implied ethical credentials) has accrued universal acceptance among marketing academics and practitioners (e.g. Haley, 1968; Wind, 1978; Beane and

Ennis, 1987; Cohen and Ramaswamy, 1998; O'Regan, 1999). In contrast to product differentiation, it is established as a "value-free" practice. Kotler (2000, p. 19) defines the marketing concept as delivering and communicating value to selected target markets. The message for marketing managers is clear: find and understand a market segment and tailor your offering to the needs of its members. Moreover, the role of advertising is equally clear: communicate with a target segment with content and style most likely to appeal to that segment. The underlying assumption is that the existence or composition of market segments is an objective reality that is in no way contingent upon advertising activity. A segment may be defined in terms of a somewhat wide range of shared membership characteristics from geography, age, gender, income and education to attitudes, values and buyer behavior (Jobber, 1995; Dibb et al., 1997; Nancarrow et al., 1999). Over the years there has been some disagreement as to which of these characteristics constitute the most effective segmentation criteria. As early as the late 60s the utility of demographics, geography and purchase volume as segmentation bases was being called into question and the advantages of "benefit segmentation" extolled (Haley, 1968). More recently researchers have again hailed "response variables" such as brand preference, repeat purchase or profitability metrics as the optimal segmentation criteria (Vriens et al., 1996). Market segmentation schemes help to explain the stunningly high rate of

failure of new-product development. Most companies define markets in terms of product categories and demographics.

Where firms demonstrate stronger entrepreneurial and market orientations, they will tend to approach the marketing function differently. Finding creative ways to foster customer relationships while discovering new market segments becomes paramount. Firms are incentivized to engage in entrepreneurship efforts that are more opportunistic, proactive, risk assumptive, innovative, customer-centric, leveraged, and value-creating.

2.3.9 Knowledge of Competition Perception

Two major strands of evolutionary concepts of competition can be distinguished. The first one encompasses Austrian market process theory, that is, Hayek's theory of "competition as a discovery procedure" as an experimentation process (1978) and the market process theory of Israel M. Kirzner (1997). Much broader are the Schumpeterian approaches (competition as processes of innovation and imitation). Rooted in the basic ideas of Schumpeter (1934) about innovations, the entrepreneur, and economic development, concepts of dynamic competition and the main body of innovation economics have been developed (Dosi, 1988; Freeman and Soete, 1997; Metcalfe, 1998).

This evolutionary approach can be best presented by beginning with Hayek's concept of competition (1948, 1978), which differs radically from neoclassical competition. He criticized that the theory of perfect competition with its assumption of perfect knowledge "throughout assumes that state of affairs already to exist which the process of competition tends to bring about" (1948, 92). From the Hayekian perspective, the knowledge of both firms and consumers in real markets has to be characterized as imperfect, subjective, and fallible knowledge, in other words, the agents can never be sure whether their knowledge is correct, and therefore have to search for better knowledge. As a consequence, market competition primarily should be seen as a process of parallel experimentation, in which firms compete with different hypotheses (conjectures) about good solutions for the problems of the demand side and can learn from each other through imitation. The crucial point of this "discovery procedure" (Hayek, 1978) is that only through the market test is the knowledge generated of which of the products or services of the competing firms are the superior problem solutions. In that respect, competition can be seen as a "test of hypotheses" (Kerber, 1997), in which knowledge is generated and spread by imitation.

2.3.10 Number of Competitors Knowledge Perception

Competition that is not handicapped by severe government regulations or tightly subjected to enforced customary rules has arguably played a critical role in the growth of capitalist economies. Each firm is driven to conclude that its very existence depends, at the least, on matching its rivals' efforts and innovation spending. In an economy in which this is so, a constant stream of innovations can be expected to appear, because the giant warring firms to whom the story pertains do not dare relax their innovation activities (Baumol, 2004). The entrepreneur is naturally associated with the small, startup firm; indeed, as we know, widespread and long-employed usage of the term simply defines entrepreneurs as the creators of new enterprises. This is relevant to the investigation of entrepreneurs' roles in the number of competitors' knowledge perception in the market. This is their key process to success, because for the reasons just indicated, the apportionment of the task of supplying the resources invested in innovation has been materially changing. (Baumol, 2004)

2.3.11. Competitive Volatility Knowledge Perception

Marketing in technologically-oriented industries presents organizations with a unique set of issues and challenges. High technology industries are characterized by high levels of technological and market uncertainty, and by competitive volatility (Moriarty and Kosnik 1989; Mohr, 2001). These industries operate in an environment of rapid product innovation and obsolescence. Firms able to establish their

products/technologies as real or de facto industry standards stand to reap disproportionate market returns (Arthur 1996; Hill 1997; Shapiro and Varian, 1999). An important characteristic of high-tech markets is competitive volatility, which is defined as the rate of change in market participants, both in terms of the number of competitors and the basis on which participants compete (Mohr, 2001). Many high technology industries tend towards hyper-competition, existing in a state of almost constant competitive turbulence due to market disruptions (D'Aveni, 1994).

Uncertainty and frequent changes in the competitive landscape often force participants in high-tech industries to make decisions with insufficient information, thereby creating a perception of risk in participants on both the supply and demand sides of the industry (D'Aveni, 1994). Customer leading, and the process of uncovering and responding to latent customer needs (Day 1990; Narver, Slater and MacLachlan, 2001) offer similar concerns. As with market driven activity, competitor data is gathered in this approach, and may be used to determine the level of competitive volatility. In focusing on latent needs, customer-leading firms direct market preferences in new directions (Day 1990; Narver, Slater and MacLachlan, 2001). These can include directing consumer responses to a new technology, and encouraging technology acceptance, both of which reduce market uncertainty. By using exploratory learning to discover unarticulated needs, customer-leading firms may be better able to adapt to shorter product life cycles through innovation (Martin

1995; Kyriakopoulos and Moorman 1998; Day, 1999). In contrast to these approaches, a market driving philosophy uses product, market, and industry-level changes to create value and set new market directions (Markides, 1999; Kohli, Jaworski and Sahay, 2000; Kumar, Scheer and Kotler, 2000). Similar to customer leading firms, market drivers can direct customer response to a new technology. In addition, entrepreneurs are also encouraged to value new technology, increasing the likelihood that complementary products will be developed, minimizing levels of technological uncertainty. Such knowledge-level change can also lead to convergence upon a business standard. Product standards provide a definable set of practices for industry participants, reducing the overall level of competitive volatility (Hill 1997; Shapiro and Varian, 1999). Market driving firms can proactively engage in developing inter-firm networks to support a specific technological format in an interdependent manner (Moore 1993; Gomes-Casseres, 1994; Coyne and Dye, 1998; Shapiro and Varian, 1999). These networks/ecosystems provide participant firms with risk sharing, greater access to resources, and the ability to create and exploit scale economies (Moore 1993; Gomes-Casseres, 1994). Market driving activities increase the availability of complementary products but also increase the probability that products developed by the network to support a technological format are likely to be mutually compatible. As such, market driving increases the chances of market acceptance of a technology, and reduces the market and technological uncertainties

associated with new technologies. Multiple competing technological formats lead to increased volatility in the competitive environment. However, as alternative business ecosystems and networks of alliances compete (Grewal and Tansuhaj 2001; Mohr, 2001), one or two will emerge as dominant in the industry, relegating the others to industry niches (Hill 1997). Thus, market driving will ultimately reduce the competitive volatility in high-tech markets.

2.3.12. Competitor's Differences Knowledge Perception

In some growing markets where profits for major competitors are negative, there can still be managerial and investor confidence that a firm has both a potential to be profitable and have a long-term existence. The entrepreneur should classify markets with respect to their similarities and differences. Theoretical markets are a useful component of strategic analysis. Markets can be seen as operating either at an equilibrium when it comes to the number of competitors, or moving towards such an equilibrium. The long-term equilibrium number of firms and the time for that equilibrium to be achieved is a function of the economies of scale in the market and the rate at which resources are transferred between firms (Wyn, 2005). One important research question for the justification for this study regards the current knowledgeability of entrepreneurs. No previous studies have addressed the issues of knowledge and it is possible that the lack of market knowledge-information is one of

the principal aspects than can make the difference between success and failure in the entrepreneur's approach. Some individuals have superior knowledge and skill at estimation of consumer wants superior ability to control and direct the actions of others, greater confidence that their business estimates-business judgments will prove correct. In the real world, individuals differ in numerous important ways, including intelligence, training, leadership ability, integrity, physical strength, endurance, and so on. In the real world, producing goods and services involves a multitude of interrelated tasks that differ markedly in the required skills and knowledge necessary for their accomplishment. Men and women specialize in these tasks, one of which is serving as an entrepreneur. The classic entrepreneur is someone with both superior managerial ability of foresight and capacity of ruling others.

2.4 Theoretical Model Explanation

In order to present this study, the entrepreneur's knowledge perception will be measured with three principal dimensions followed by their corresponding variables; in this case the dimensions description is as follows:

Dimension 1 is called Technological Knowledge Perception, this dimension is defined as the acquisition and application of a robust knowledge related to information about technology captured and processed by an individual who enjoys being well informed about hi-tech new products. This dimension is composed by three main variables and these are:

1.1) New Products and Innovations Knowledge Perception, this variable is defined as is the acquisition of knowledge that an individual possesses about products that have extensions and are already in the market; this extension is in constant evolution and mutation. It is expected that the individual knows exactly which changes this new products have or even which changes are going to happen and when they will happen.

1.2) Technological Change Knowledge Perception, is the degree of information that individuals possess about the changes in technology related to new products or innovations that add technological proprieties in an evolutionary way.

1.3) Uncertainty Technology Knowledge Perception is defined as the information processed by the individual related to the technological aspect for a specific product within a specific product category. This information is the degree of product information analyzed by the individual in regards to the high rates of technical changes in the product, the increase in product complexity and the risk of product obsolescence in the market place.

Dimension 2 is called Market Knowledge Perception this dimension is defined as the degree of the accumulation of the structured information about the market that an individual has. The market knowledge that an individual possesses is expected to affect his/her attitude toward new products in a specific category and also the direction and intensity of recommendation that s/he shares with others.

This dimension is measured by three independent variables proposed by the researcher these variables are:

2.1)Market Needs Knowledge Perception is defined as the degree of information that the individual possesses in order to perceive a sense of what the real customer needs are related to a specific product category.

2.2)Market Uncertainty Knowledge Perception is defined as Market Uncertainty Knowledge Perception is the degree of information that the individual possesses in order to know the customers' fears, doubts, anxiety and changing preferences and needs related to purchasing a specific product within a specific category.

2.3)Market Segments Knowledge Perception is defined as the ability of the individual to detect, evaluate and select homogeneous groups that have the same characteristics such as similar traits, buying patterns, information needs, product experiences, and belongingness to an industrial participation.

Dimension 3 is called Competition Knowledge Perception and is defined as the degree of information that the individual possesses about the different competitors that are participating in a specific industry which products are competing in the market arena. This knowledge is the evaluative information in order to know the competitor's objectives and assumptions such as his/her past history in the introduction of products to the market, his/her failures or successes. A competitor's

capabilities can be analyzed according to his/her strengths and weaknesses in various functional areas. The competitors' strengths define their capabilities. This information could be used to predict a competitor's behavior.

This dimension is composed by three main variables:

3.1) Number of Competitors in the market Knowledge Perception is defined is the information that the individual possesses in order to describe the number of product participants with at least 1% of the market place.

3.2) Competitive Volatility Knowledge Perception it refers to the degree of knowledge that the individual possesses in order to inform others about the changes in the competitive landscape: which firms represent the competition, their offerings, and the tools they use to compete.

3.3) Competitor's Differences Knowledge Perception it refers to the degree of knowledge all the differences between products, these attributes can be positive or negative.

These three main dimensions will be influencing out in the variable proposed called market presence. This dependent variable is defined in a simple reasoning. The entrepreneur's project or service is or is not in the real market. The firm's value derived from the product or service lounged in the market and the availability to the real customer.

Table 1. Variable Definition

Market Knowledge	Market Knowledge is the degree of the accumulation of the structured information about the market that an individual has. The market knowledge that an individual perceives to possesses is expected to affect his/her attitude toward new products in a specific category and also the direction and intensity of recommendation that s/he shares with others.
Technological Knowledge	The technological knowledge perceived acquisition and application of a robust knowledge related to information about technology captured and processed by an individual who enjoys being well informed about hi-tech new products.
New Products (Innovations) Knowledge	New Products (Innovations) Knowledge is the acquisition of knowledge that an individual possesses about products that have extensions and are already in the market; this extension is in constant evolution and mutation. It is expected that the individual perceives exactly which changes this new products have or even which changes are going to happen and when they will happen.
Technological Change Knowledge	Technological Change Knowledge is the perceived information that individuals possess about the changes in technology related to new products or innovations that add technological proprieties in an evolutionary way.
Uncertainty Technology Knowledge	Uncertainty Technology Knowledge is the perceived information processed by the individual related to the technological aspect for a specific product within a specific product category. This information is the degree of product information analyzed by the individual in regards to the high rates of technical changes in the product, the increase in product complexity and the risk of product obsolescence in the market place.
Market Aspects Knowledge	Market Aspects Knowledge is the perceived information that the individual possesses related to the supply and demand of a product within a specific category in order to know the market needs, the market uncertainty and the market segments.
Market Uncertainty Knowledge	Market Uncertainty Knowledge is the perceived information that the individual possesses in order to know the customers' fears, doubts, anxiety and changing preferences and needs related to purchasing a specific product within a specific category.
Market Segments Knowledge	Market Segments Knowledge is the perceived ability of the individual to detect, evaluate and select homogeneous groups that have the same characteristics such as similar traits, buying patterns, information needs, product experiences, and belongingness to an industrial participation.
Market Needs Knowledge	Market Needs Knowledge is the perceived information that the individual possesses in order to perceive a sense of what the real customer needs are related to a specific product category.
Competition Knowledge	Competition Knowledge is the perceived information that the individual possesses about the different competitors that are participating in a specific industry which products are competing in the market arena. This knowledge is the evaluative information in order to know the competitor's objectives

	and assumptions such as his/her past history in the introduction of products to the market, his/her failures or successes. A competitor's capabilities can be analyzed according to his/her strengths and weaknesses in various functional areas. The competitors' strengths define their capabilities. This information could be used to predict a competitor's behavior.
Number of Competitors in the Market Knowledge	Number of Competitors in the Market Knowledge is the perceived information that the individual possesses in order to describe the number of product participants with at least 1% of the market place.
Competitive Volatility Knowledge	Competitive Volatility Knowledge it refers to the perceived knowledge that the individual possesses in order to inform others about the changes in the competitive landscape: which firms represent the competition, their offerings, and the tools they use to compete.
Competitor's Differences Knowledge	Competitor's Differences knowledge it refers to the perceived knowledge related to the differences between products, these attributes can be positive or negative.
Market Presence	Is when a entrepreneur has a real market participation. If his/her product or service is available to the costumer in the present.

The justification of this study is that the entrepreneur is seen as an innovator breaking an existing state of equilibrium and doing so to create progress. No studies have been reported about the entrepreneur's knowledge perception in subject of technology, market and market competence. A variety of authors have dealt with topics related to knowledge entrepreneurship, but in this section, only the few works that have been identified to have used the concrete term 'knowledge entrepreneur' (and derivates) are reviewed. Most of them have only a broad understanding of the concept and are thus only cited to give a context. The Ph.D. research conducted by McDonald (2002) seems to be the first to have proposed and tested a

conceptualization of the term as defined here. In the following paragraphs it is reviewed what has been published in books and then the journal papers:

With "The knowledge entrepreneur" Coulson-Thomas has written an interesting management consultant book. Having years of experience as business professor and board member, he brings reams of advice he has to give to the table. "The knowledge entrepreneur", has many general chapters (such as 'contemporary information problems', or 'requirements of different stakeholders'). In general this is not an academic but a practitioner oriented book; however some original concepts are worth noting. He describes knowledge-based opportunities as distinct from (classical) resource based opportunities; unfortunately there is no clear definition of a knowledge based opportunity which makes it difficult to demarcate, as all opportunities except for purely spontaneous action or intuition based opportunities are somehow knowledge based. He also puts forward a list of eleven things a knowledge entrepreneur needs to understand. It is a very extensive list starting with the ability to acquire, develop, share, manage and exploit information, knowledge and understanding, and related support tools, and it ends with the ability to lead and manage knowledge workers, network organizations and virtual teams. In between you have all the whole range of skills today's great leader should have. As said, it is a book for practitioners listing proposing an ideal entrepreneurial manager who is aware of the importance of knowledge.

The third book 'The Knowledge Entrepreneur' by Stan Skrzeszewski (2006) was originally meant to be entitled "The Entrepreneurial Librarian" (ibid p. v), it describes practical hands-on advise for how to embrace the entrepreneurship paradigm in the librarian profession. He defines: "A knowledge entrepreneur is someone who is skilled at creating and using intellectual assets for the development of new ventures or services that will lead to personal and community wealth creation or to improved and enhanced services. The knowledge entrepreneur must have sufficient personal knowledge capital to be able to create value and/or wealth through the use of that knowledge capital" (ibid p.3). He continues: "The knowledge entrepreneur must know more about the subject at hand than his or her client of boss. It does not always have to be a great deal more, and sometimes the difference is based on the ability to communicate, present, or more importantly, apply the knowledge asset" (ibid). Now this argument is not convincing as true knowledge entrepreneurship, as for the knowledge entrepreneur identifying and realizing an opportunity, rather than exploiting existing intellectual capital is the motivating factor. Later, when Skrzeszewski elaborates on how information technology is a key trend to be exploited by knowledge entrepreneurs, his librarian perspective shows through again: "There is a growing need and expectation for relevant and usable digital information products and services. At the same time, there is a growing problem of information overload. Therefore, there is an attendant need to organize

and package information for users, to put the information in context, to provide information intermediaries and facilitators, and to digitize all forms and formats of information – all major entrepreneurial opportunities" (ibid 31). Overall Skrzeszewski presents an interesting and valuable book with the aim to foment entrepreneurship among librarians and his general understanding of knowledge entrepreneurship is assessed to be compatible with the wikipedia definition.

The forth author, McDonald (2002), has conducted his PhD research entitled "Knowledge entrepreneurship: Linking organizational learning and innovation" about a comparison of the conditions at hospitals regarding their approaches to knowledge sharing and exploration and the entry of innovations. The work is assessed as the first to develop the distinct characteristics of knowledge entrepreneurship.

Another author that has used the theme is Jennifer Rowley. In her paper "From learning organization to knowledge entrepreneur" (Rowley, 2000) she deals with how organizational learning can be meaningfully conceptualized. Thereby she stresses learning and the usefulness of the knowledge codified. In this context she elaborates on the concept of the knowledge entrepreneur. In her understanding "an organization that is a knowledge entrepreneur recognizes the multi-faceted nature of knowledge, and the implication that this has for organization learning. Specifically, a knowledge entrepreneur understands how to interface organizational learning and

systems evolution in such a way as to optimize and capitalize on its knowledge resources in pursuit of its vision" (ibid p.14). This understanding expresses the role of knowledge entrepreneurship in a different way but interesting. She writes knowledge entrepreneurship serves to "build bridges between people and systems". She then goes on to list what is in her eyes important to achieve the co-evolution of system and organizational learning in tandem. These are: allow for diversity, allow for historicity and a knowledge culture, as well as appropriate systems for storage and dissemination.

Lastly a short paper entitled "It's difficult to innovate: The death of the tenured professor and the birth of the knowledge entrepreneur" (Bouchikhi & Kimberly, 2001) has been published in the Human Relations journal. The paper describes a near future where knowledge entrepreneurs are "working under a diversity of employment contracts and attachments" (ibid p. 82). Therefore "knowledge entrepreneurs will be hired and compensated based on their ability to imagine, execute, and use of the results of research to develop original educational products". The authors are dealing specifically with business and management education, for which they are painting a profoundly transformed scenario as they are "break[in] out of their institutional straight jackets and redefine their roles in the production of knowledge". According to their vision, there will be "an almost medieval hierarchy" amongst professors, with the super-star academics performing

more the role of a "CEO of a firm than like the traditional professor, managing their work and their careers with extraordinary autonomy from customary university constraints" (ibid p. 82).

Knowledge is a topic of current prominence in the entrepreneurial research that reinforces the arguments for a receiver-active paradigm. Cohen and Levinthal (1990) discussed the notion of "absorptive capacity" illustrating an organization's knowledge deployment for creating innovative capabilities. They defined absorptive capacity as a firm's ability "to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends" (1990: 128). Although the current model proposes a new avenue to demonstrate how knowledgeable entrepreneurs are in most important areas to innovate and this are already mentioned: technology, market and competition. These variables are an essential vinculum to knowledge creation that has become increasingly important to the success of organizations because it is the source of most innovation. Moving up a value chain may depend on new forms of differentiation and additional ways of adding value.

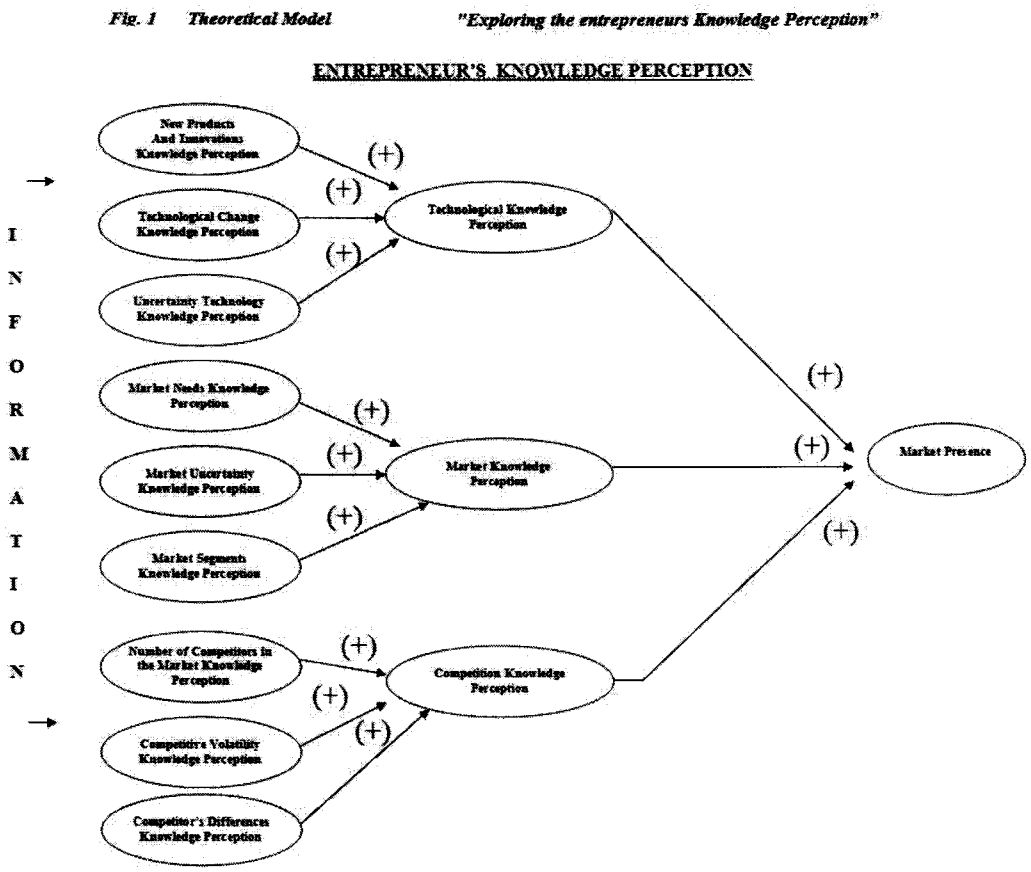
2.4.1 Model dimension and variable relation

The model proposed in this dissertation has three main dimensions proposed by the researcher: Technological Knowledge Perception; Market Knowledge Perception; Competition Knowledge Perception. Each dimension is composed by

three independent variables from other studies as was mentioned. A total of nine independent variables are integrating the three dimensions.

A dependent variable in this case Market Presence is defined as the entrepreneur real participation in the market If his/her product or service is available to the costumer in the present. If is not still in the market then this product or service is still part of an incubation process.

Figure 1. Theoretical Model



CHAPTER 3

ENTREPRENEUR'S KNOWLEDGE PERCEPTION

In this chapter, information concerning the research methodology and procedures used in the current study are provided. The research model is described and followed by a description of specific hypotheses and research questions. The specific instruments used to measure the variables of interest, the sample description and the specific quantitative techniques used to test hypotheses are also described.

Method

Research Questions

Following the model presented in chapter 2, the main questions grounded in this study:

1) Are entrepreneurs knowledgeable on the basis of technology knowledge perception?
2) Are entrepreneurs knowledgeable on the basis of market knowledge perception?
3) Are entrepreneurs knowledgeable on the basis of their competition knowledge perception?
4) Depending on the entrepreneur's product/service market presence is their knowledge in these three main areas higher?

The three main knowledge perception dimensions are expected. One of the main goals of this study is to discover the strengths and weaknesses in entrepreneur's knowledge perception in three main areas, technology, market and competence.

3.1. Hypothesis Antecedents

All the following hypotheses emerge from the general entrepreneur's knowledge literature reviewed in chapter 2. In the literature there is a wide range of hypotheses regarding the relationship(s) between factors including knowledge and the entrepreneur's construct. The following information is about the hypothesis that will be probed in this study.

Alternative Hypothesis

According to Rogers, 2003 individuals learn about the existence of new products and innovation during this phase, and attempt to determine "what the innovation is and how it works." (Rogers,2003,p.21) According to Rogers, the questions build three types of knowledge: awareness-knowledge, how-to-knowledge, and principles-knowledge. The importance of technological knowledge in assuring superior performance is well accepted. As technology adopters, they use new knowledge technologies for new product and process innovation (Clarysse and

Moray, 2004). According to this theory in the model proposed in this study the relation between the new products and innovation knowledge and the knowledge of technology, this produces the following hypothesis:

Hypothesis 1: There is a positive correlation between new products and innovations, knowledge perception variable, and technological knowledge perception dimension.

New products and innovation knowledge is about people. Companies focus on customer needs, wants, and desires as they design new products; after all, products are purchased by and for those who will use them. Those who design the products also are people -- ordinary people who apply their skills to develop new ideas and products. Yet certain individuals have evolved to a level of innovator who envisions, leads, and manages the complete context of a product or service.

Not many philosophical studies have yet been written about the nature of technological knowledge. In the field of epistemology the standard definition of knowledge as 'justified true belief' is often taken as the starting point. Differences between the nature of technological knowledge and other types of knowledge, as well as differences between different types of technological knowledge, should be taken into account when it comes to the transfer of technological knowledge. Technological knowledge effectively manages the innovation and change of its system and product. Technological change knowledge is a skill that does not become obsolete over time, but instead grows in importance for product success (Dooley and O'Sullivan, 2001).

Strak (2000) notes that firms everywhere are undergoing rapid change in the face of an ever accelerating pace of technological change coupled with the redefinition of markets. According to this theory in the model proposed in this study there is relation between knowledge of technological change and the knowledge of technology this produces the following hypothesis:

Hypothesis 2: There is a positive correlation between technological change knowledge perception variable and technological knowledge perception dimension.

Uncertainty knowledge perception is embodied in the environment (Downey, 1975). In terms of the frequency of change and the degree of difference entailed by each change (Child ,1972) Technology has been studied as an independent variable in the structural contingency equation, with an emphasis on its relationship to uncertainty (Woodward,1958). These kinds of studies have provided nominal definitions of technology rather than discussing its implicit uncertainty. Uncertainty as a concept has become a too-familiar theme of business articles and books: How dramatic increases in competitiveness, technological turbulence, deregulation, and globalization and information intensity have created perpetual uncertainty in everyday managerial life. This is the kind of uncertainty that eats conventional companies. In addition, high levels of uncertainty in today's fast-moving economy have opened windows of opportunity for entrepreneurs. Technology and markets often take unexpected turns to which established companies are unable to adapt. High

levels of uncertainty have also been a bane for governments and gurus who once believed that they could successfully plan our economic future. According to this theory in the model proposed in this study there is relation between the knowledge of uncertainty and the knowledge of technology this produces the following hypothesis:

Hypothesis 3: There is a positive correlation between uncertainty knowledge perception variable and technological knowledge perception dimension.

Just like entrepreneurs, companies in today's economy find that their primary source of competitive advantage increasingly lies in the unique proprietary knowledge they possess. Companies and entrepreneurs may have equal talent and access to market needs knowledge, but the special value that comes with unique understanding provides a real edge. The bond trader who is the first to understand an opportunity and customer market needs. A firm is sensitive to recognizing changes in the market and is able to identify opening opportunities, but lacks the necessary capabilities to transform its knowledge into valuable products of profitable business models. (Argyris and Schon, 1978). Market needs capabilities indicate how effectively a firm can exploit acquired knowledge in the form of new and improved products for the real market. A firm that is alert to changes and market needs in the environment (Kirzner, 1997) is well-prepared to change its progress, strategies and products. According to this theory in the model proposed in this study there is relation

between the knowledge of market needs and the knowledge of market this produces the following hypothesis:

Hypothesis 4: There is a positive correlation between market needs knowledge perception variable and market knowledge perception dimension.

Market uncertainty is external and shared across a set of firms (Brealey and Myers, 2003). Competitive uncertainty is created when the competitive actions of a rival influence a firm. A market uncertainty has been found to increase with the concentration ratio of the industry (Wiersema and Bantel, 1993). For Frank H. Knight (1967) and Peter Drucker (1970) entrepreneurship is about taking risk. The behavior of the entrepreneur reflects a kind of person willing to put his or her career and financial security on the line and take risks in the name of an idea, spending much time as well as capital on an uncertain venture. Knight classified three types of uncertainty. The acts of entrepreneurship are often associated with true uncertainty, particularly when it involves bringing something really novel to the world, whose market never exists. According to this theory in the model proposed in this study the relation between the market uncertainty knowledge and the knowledge of market, this produces the following hypothesis:

Hypothesis 5: There is a positive correlation between market uncertainty knowledge perception variable and market knowledge perception dimension.

The concept of segmentation knowledge was introduced into the marketing vocabulary by Wendell Smith (1956) as an alternative to the product differentiation strategy promulgated at the time. He proposed that segmentation is based upon developments on the demand side of the market and represents a rational and more precise adjustment of the product and market knowledge effort to consumer and user requirements (Smith, 1995). Market segmentation, correctly applied, is about understanding the needs of customers and, therefore, how they decide between one offer and another. This insight is used to form groups of customers who share the same or very similar value criteria. A company is then able to determine which groups of customers in the market it is best suited to serve and which product and service offers will both meet the needs of its selected segments and outperform the competition. The primary objective of market segmentation knowledge, therefore, must be how to know to win and retain the customers you want to serve. According to this theory in the model proposed in this study the relation between the market segments knowledge and the knowledge of market, this produces the following hypothesis:

Hypothesis 6: There is a positive correlation between market segments knowledge perception variable and market knowledge perception dimension.

Hayek's concept of competition (1948) differs radically from neoclassical competition. He criticized the theory of perfect competition with its assumption of

perfect knowledge. Hayekian perspective mentions that the knowledge of firms and consumers in real markets has to be characterized as imperfect, subjective, and fallible. The agents can never be sure whether their knowledge is correct, and therefore have to search for better knowledge. As a consequence, competition primarily should be seen as a process of parallel experimentation, in which firms compete with different conjectures about good solutions for problems on the demand side, and can learn from each other through imitation. There are many reasons why measuring the number of competitors in the market place. This is vital strategy to the success of an entrepreneurship development effort. Keeping score or measuring results is probably the very best recruiting tool or motivational approach possible. Results will get more information, more resources, and more positive visibility. Measuring the market participants is also a way of building accountability into any project, whether the focus is on supporting entrepreneurs or on any type of community improvement. According to this theory in the model proposed in this study the relation between the number of competitors knowledge and the knowledge of competition, this produces the following hypothesis:

Hypothesis 7: There is a positive correlation between the perception of the number of competitors knowledge in the market variable and competition knowledge perception dimension.

High technology industries are characterized by high levels of technological competitive volatility (Moriarty and Cosmic, 1989; Mohr, 2001). Volatility and

frequent changes in the competitive landscape often force participants in high-tech industries to make decisions with insufficient information, thereby creating a perception of risk in participants on both the supply and demand sides of the industry (D'Alene, 1994). Entrepreneurs often face undiversifiable idiosyncratic risks from their business investments. Volatility is often viewed as a negative in that it represents uncertainty and risk. However, volatility can be good in that if an entrepreneur shorts on the peaks, and buys on the lows one can make money, with greater money coming with greater volatility. According to this theory in the model proposed in this study the relation between competitive volatility knowledge and the knowledge of competition, this produces the following hypothesis:

Hypothesis 8: There is a positive correlation between the competitive volatility, knowledge perception variable, and competition knowledge perception dimension.

Theoretical markets are a useful component of strategic analysis. Markets can be seen as operating either with a number of competitors having reached equilibrium, or moving toward such a state. In some growing markets where profits for major competitors are negative, above-average performance measured by profitability indicators could be negative but there can still be managerial and investor confidence that a firm has a potential to be profitable. The entrepreneur should classify markets with respect to their similarity of differences (Wynn, 2005). Competitors differences are very important to identify bye the entrepreneur because this gaps between

competitors are the most important niches to new product or service development and can be the start of a new innovation business process. According to this theory in the model proposed in this study the relation between the competitor's differences knowledge and the knowledge of competition, this produces the following hypothesis:

Hypothesis 9: There is a positive correlation between competitor's differences knowledge perception variable and competition knowledge perception dimension.

Innovative and new technology products are introduces in turbulent and chaotic markets where the odds of success are often low. As a result, the marketing strategies for innovative and technology products must be optimized to enhance the odd of success (Mohr, 2002). The entrepreneur can always try to access technological knowledge by hiring human resources properly trained to accomplish the knowledge transfer across the institutional boundaries. Where firms already exist, a third entrepreneurial task is to integrate the newly mobilized technological knowledge into the established organization and, where necessary, to adjust the business conception and competition. Only if new knowledge can be made complementary to already existing organizational capabilities can it successfully be exploited by the firm. This may sometimes require major organizational restructuring. In principle, everyone who has thought up a business conception for exploiting new technological knowledge commercially could make an attempt to hire employees and other

resources. And large numbers of business conceptions can be imagined. In principle, everyone who has thought up a business conception for exploiting new technological knowledge commercially could make an attempt to hire employees and other resources to survive in the market place. According to this theory in the model proposed in this study the relation between technological knowledge dimension and the market knowledge dimension produces the following hypothesis:

Hypothesis 10: There is a positive correlation between technological knowledge perception dimension and the market knowledge perception dimension.

Depending on the pace of progress in technological research, improvements and diversifications in the firm's processes and/or product may sooner or later become feasible. A continued transfer of new technological knowledge would then be useful or even necessary to keep up with competitors. In the case of technological knowledge that is accessible in encoded form, the founding entrepreneurs can support the transfer themselves, provided they continue to use their existing cognitive absorptive capacity to adopt the new knowledge and, where necessary, to up-date that capacity. The competitive pressure to adopt state-of-the-art tacit technological knowledge is high and is increasingly reducing the business prospects of the entrepreneurial knowledge-based firm; there is always a default strategy. According to the model proposed in this study the relation between the technological knowledge and the knowledge of competition dimension, this produces the following hypothesis:

Hypothesis 11: There is a positive correlation between technological knowledge perception dimension and the competition knowledge perception dimension.

In competitive market fields, performance-related information is the raw material from which organizational actors make sense of their competition. Market information regimes are the medium through which producers observe each other and through which market participants make sense of their world (Pfeffer and Salancik, 1978). The major significance of the new age is value from innovation that comes from the life-blood of knowledge in action. Shared knowledge and collective intelligence have replaced the three traditional pillars of value creation: land, labor, capital - with knowledge essentially of the type incorporated in machines and other tangible assets.

Knowledge entrepreneurs are those who create value in the boundaryless knowledge competitive markets through the infinite resource of knowledge that they put into action with the purpose of making advancements in the society, the economy and the environment (Formica, 2005) According to the model proposed in this study the relation between the market knowledge and the knowledge of competition dimension, this produces the following hypothesis:

Hypothesis 12: There is a positive correlation between market knowledge perception dimension and the competition knowledge perception dimension.

Entrepreneurs contribute toward economic development by introducing new product or service offerings in to the market or through new production methods (Schumpeter, 1954, 1976). Market presence pioneering, in which firm are first to market, is often considered an expression of entrepreneurial orientation (Covin, 1999).High-tech start-ups and technology firms, also known as technological entrepreneurs, play an important role in developing and commercializing technologies worldwide (Zahra, 1996a). As technology adopters, they use new technologies for product and process innovation; as technology developers, they initiate the commercialization of new technologies in the market (Clarysse and Moray, 2004). First-mover or first-to-market advantage is the belief that there is a benefit to being the first business to enter the marketplace with a new product or service. The advantage may come from being able to grow and develop the market in the absence of competitors at least temporarily. There is also the potential benefit from the attention businesses often receive when they are pioneering a new concept of product or service. The added attention can lead to new customers. If the product or concept is unique, first to market also entitles an enterprise to protect its idea from being used by competitors through patents or copyright. Successful examples of first-mover businesses, however, are limited. According to the model proposed in this study the relation between the technological knowledge and the knowledge of market presence variable, this produces the following hypothesis:

Hypothesis 13: There is a positive correlation between the dimension of technological knowledge perception, and the market presence.

In market knowledge-information regimes, information typically takes the forms of sales reports, inventory information, trade magazine reports, or newspapers articles. The former relates to information describing the market only, while the latter refers to information concerning to marketing activities to the firm, their impact on and interaction with the market, and their effectiveness in achieving market objectives (Marty, 1994). Detailing how market knowledge should be generated in departments throughout the organization and is not the exclusive responsibility of one department (Daft and Weick, 1984). Firms should be particularly aware of their need for market knowledge as they may be operating in markets, whose information systems are very often little formalized, unsophisticated and quickly overloaded. Timely, accurate and relevant information, evaluated effectively, is crucial to marketing decision makers in helping them satisfy customer requirements profitably, taking advantage of opportunities and avoiding threats.

According to the model proposed in this study the relation between the market knowledge and the knowledge of market presence variable, this produces the following hypothesis:

Hypothesis 14: There is a positive correlation between the dimension of market knowledge perception, and the market presence.

In competitive market fields, performance-related information is the raw material from which organizational actors make sense of their environment. The outcome of this process is an enactment of a "market." Market competition regimes are the medium through which producers observe each other and market participants make sense of their world. Ever more, the regular collection of specific information focuses the attention of field participants on those reports. The existence of a particular market competition information regime conveys the impression that the information is valid and vitally important, and its availability creates demand for its use in interpreting their environment (Pfeffer and Salancik, 1978). The presence of competitors in the product markets makes it possible to sharpen the incentive effect of the remuneration system by letting the remuneration correlate with performance relative to that of close competitors rather than letting it correlate with performance relative to that of the market. The less product-market competition, the harder it is to measure the performance of a firm because there are no close competitors with which to compare. This two knowledge together provokes that each firm could know the differences between them and identify opportunity gaps to perform. According to the model proposed in this study the relation between the competition knowledge and the knowledge of market presence variable, this produces the following hypothesis:

Hypothesis 15: There is a positive correlation between the dimension of competition knowledge perception, and market presence.

The journey of entrepreneurship is not necessarily full of flowers, applause, and spotlights. There can be obstacles, traps, and mine fields. It is a long and tough journey that only people equipped with persistency, confidence, enthusiasm, and commitment to perform can accomplish. As an entrepreneur or venture capitalist the term "incubation" is used to describe a business model in which a fledgling company is brought under the wing of a benevolent protector – often another company that provides low-rent space, management, legal, or financial help, or a combination of all of these. The incubator provides valuable support and assistance during a critical stage as the vulnerable young company develops its new product and gets ready to survive on its own. Many entrepreneurs could be with product already in the market place and can be at the same time developing a new product or idea. No difference will be between the groups of entrepreneurs that are in the incubation time and the ones that have their products or services in the present time in the market. Success will depend of the originality of their idea and the customer acceptance. According to the model proposed in this study the difference between groups produces the following hypothesis:

Hypothesis 16: There is no difference between the groups with products or services launched in the market and the ones that do not.

3.2 Variable Description

Construct 1: Technological Knowledge Perception

The defining characteristic of technological knowledge is its relationship to activity. Although technological knowledge is considered to have its own abstract concepts, theories, and rules, as well as its own structure and dynamic of change, these are essentially applications to real situations.

Technological knowledge arises from, and is embedded in, human activity, in contrast to scientific knowledge, for example, which is an expression of the physical world and its phenomena. As Landies (1980) observes, while the intellectual is at the heart of the technological process, the process itself consists of "the acquisition and application of a corpus of knowledge concerning technique, that is, ways of doing things" (p. 111). It is through activity that technological knowledge is defined; it is an activity which establishes and orders the framework within which technological knowledge is generated and used. Because of the link with specific activities, technological knowledge cannot be easily categorized and codified as in the case of scientific knowledge. Technology best finds expression through the specific application of knowledge and technique to particular technological activities. For this reason, it is not considered a discipline in the sense that math or physics is. Skolimowski (1972), for example, suggests that there is no uniform pattern of "technological thinking," or, in other words, universal standards or truths characterizing a "discipline of technology." The application of technology requires

the integration of "a variety of heterogeneous factors" which are both "multi-channeled and multi-leveled," and that specific branches of technology "condition specific modes of thinking" (p. 46). Technology, in other words, makes use of formal knowledge, but its application is interdisciplinary and specific to particular activities. Definition. Technological knowledge is the acquisition and application of a robust knowledge related with information about technology captured and processed by an individual who enjoys being well-informed about new products with high levels of technology. Having reviewed the literature, no special scale was found to measure the entrepreneur's degree of technological knowledge. There are some instruments to measure technological change, technological compatibility, heterogeneity and technological unpredictability. All these scales were developed to measure organizational levels, but not to gauge an individual's knowledge (Heidi and Weiss, 1995).

Since no previous scale was found in the literature, the following items are proposed for this dissertation.

The following 40 items selected for the measure instrument utilized in this study are based on the previous scales from other independent studies that will be mentioned in this chapter. Each variable presents a previous literature from each independent scale that was integrated to the real entrepreneur's knowledge perception model scale.

Table 2. Scale Items.

Technological Knowledge Perception

1. I know a lot about the technology related to this product.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

2. I like to search information related to technological aspects about this new product.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

3. People frequently ask me about technological aspects of this new product.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

4. I definitely know more about technological aspects of this new product than other people do.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

5. This new product involves a lot of technological knowledge				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable New Products (Innovations) knowledge Perception

The knowledge of incremental innovations or new products. This knowledge is built by the practice of continuous use of methods or practices that may involve the knowledge of extensions of products already in the market. They are evolutionary or revolutionary products. Customers have a clear conceptualization of the products and what they can do. (Jake Mohr, 2001).

The innovation-diffusion literature in marketing has provided numerous insights into the aggregate adoption patterns of new technologies. Diffusion models have been successfully used to forecast sales, to direct pricing and advertising strategies, and to time launches of successive generations of new products (Gating and Robertson 1985; Mahayana, Muller, and Bass, 1995). Relatively little research, however, has examined the processes underlying adoption decisions-specifically, or how individual consumers learn about and develop preferences for new products (Olshavsky and Spreng 1996; Ross and Robertson, 1990). As the strategic and financial importance of launching new products increases, a better understanding of the consumer's adoption process and the factors affecting it can lead to more effective segmentation, positioning, and launching strategies. A central factor that influences the adoption process is consumers' knowledge of an existing product category.

Results from both consumer behavior and psychology indicate that prior knowledge influences both the cost and the content of thinking (e.g., Alba and Hutchinson 1987; Bettman, Johnson, and Payne 1991; Gregan-Paxton and John 1997). Similarly, the literature on diffusion suggests that both the cost and the content of thinking, in turn, influence the speed and success of diffusion (e.g., Gatignon and Robertson 1985; Ostlund 1973; Robertson 1971; Rogers 1983). Drawing on Rogers's (1983) scheme for classifying innovations, we link these streams of literature by proposing that prior knowledge influences (1) consumers' comprehension of new products (i.e., its complexity; see Gatignon and Robertson 1991, p. 324) and (2) consumers' perceptions of the product's relative advantages and risks. The effects of these constructs on adoption are well established. Ceteris paribus, the likelihood of adoption is greater (1) when the consumers' comprehension is higher (Gatignon and Robertson 1991; Holak 1988; Rogers 1983; Sheth 1981), (2) the fewer the risks (Bauer 1960; Ostlund 1973; Ram and Sheth 1989), and (3) the greater the relative advantages (Rogers 1983).Although these results have been found consistently in the literature on diffusion, little research has examined the determining power of these factors. Here, we focus on a key determinant -- prior knowledge -- and examine its influence on consumers' perceptions of both continuous and discontinuous innovations.

Definition. The knowledge of new products (innovations) is the acquisition of knowledge an individual possesses about products that have extensions and are already on the market. These extensions are in a state of constant evolution and mutation. It is expected that the individual knows exactly what changes the new products have or even what changes they are going to have and when they will happen.

In the literature, there are various scales that measure variables related to knowledge of new products but they do not ask directly about the entrepreneur. For this variable, some items from some already established scales will be used. Thus, it is relevant to review the background of such scales.

Gatigon and Xuereb in 1997 developed a scale called: Innovativeness (New Product). A six-point Likert-type scale was used to measure perceptions of the level of innovativeness and technological change associated with a new product or innovation. The authors referred to this scale as innovation radicalness.

The reliability for this scale reported a .84 alpha co-efficient for this measure, and the validity was reported through a pilot study was conducted for this purpose, but no other details were provided.

Scale Items:

Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	

1. This new product is a minor improvement over current technology.
2. This new product has changed market conditions.
3. This new product is one of the first applications of a technological breakthrough.
4. This new product is based on a revolutionary change in technology.
5. This new product incorporated a large new body of technological knowledge.
6. This new product has changed the nature of competition.

Another interesting scale found in the literature is the one developed by Park, Mothersbaugh and Fieck (1994). The products that they used to test the scale were compact disk players. The scale is known as Knowledge (Product Class)
The reliability that the authors reported was a .91 alpha with item-total correlations ranging from .82 to .83. The validity of the scale was not directly examined.

Scale Items:

Very Little										Very Much
	1	2	3	4	5	6	7	8	9	

1. How much do you feel you know about _____ ? *
2. Compared to your friends and acquaintances, how much do you feel you know about _____?
3. Compared to a _____ expert, how much do you feel you know about _____?

- The name of the product of interest should be placed in the blanks.

Another scale related to this variable was constructed by Beatty and Talpade in 1994. The scale's name is also Knowledge (Product Class). A three-item, five-point, summated rating scale is purported to measure a person's subjective knowledge of a specific category of products. The authors apparently used this scale twice: once for the sampling (teens) to evaluate relative contributions in a decision regarding a durable product for teenager use, and a second time related to a durable product for family use.

The reliability was a .86 alpha for both the family and teenager "versions" of the scale. The validity of the scale was not directly assessed by the authors.

Scale Items:

Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1	2	3	4	5

Before purchasing this product:

1. I had a lot of experience with this product.
2. As compared to the average person, I would have said that I was highly knowledgeable about this product category.
3. I would have described myself as being very familiar with this product category.

Table 2. Scale Items:

New Products (Innovations) knowledge Perception

6. I have a lot of knowledge about this product.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

7. As compared to other people, I am very knowledgeable about this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

8. I describe myself as a knowledgeable person on this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable Technological Change knowledge perception

Background. The knowledge of technological change happens when customers are savvy about technology and the lack of value when it comes to incremental improvements. For this reason, at some point the knowledge of many products that are on the market seeks to compete by adding more and more technological capabilities (Allen, 2002). However, customers are not willing to pay for "bells and whistles" that do not satisfy a specific need just because those

enhancements are technologically available. Customers do not purchase technology per se, but rather buy technological products because they offer solutions to particular problems. (Allen, 2002).

Definition: The knowledge of technological change is the degree of information that individuals possess about the changes in technology related to new products or innovations that add technological properties in an evolutionary way.

The items for this variable will be constructed. Almost all of the scales found in the literature are applied specifically to firms' performance or in individual cases of buyers perceptions and do not have a direct application to the purposes of this study. One interesting scale in the literature is constructed by Menon, Jaworski, and Kohli (1997). This scale measures the perceived degree of technological change within an industry. This scale has four five-point items. The reliability reported was a .88 alpha coefficient. One item with low interterm correlations was eliminated from the original five-item scale set to yield the final four-item measure listed here. The authors presented no specific examination of scale validity.

Scale Items:

Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1	2	3	4	5

1. The technology in this industry is changing rapidly.
2. Technological changes provide big opportunities in this industry.
3. A large number of new products and ideas have been made possible through technological breakthroughs in this industry.
4. Technological developments in this industry are rather minor.
5. It is very difficult to forecast where the technology in this product area will be in the next five years.

The scale developed for this study is the following:

Table 4. Scale Items:

Technological Change knowledge perception

9. The technology in this product category changes rapidly.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

10. I know about the latest technological changes that this product category has recently suffered.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

11. The technological development in this product category is rather minor.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

12. The technological changes in this product category have a fast evolving fashion.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable Uncertainty Technology knowledge perception

Technological uncertainty is "not knowing whether technology" – or the company providing it- can deliver on its promise to meet specific needs (Moriarty and Kosnik, 1989). Technological uncertainty arises from high rates of technical change, increases in product complexity, and has the risk of obsolescence (Quinn and Hilmer, 1994).

Definition: The knowledge of technology uncertainty is the information processed by the individual related to technological aspects for a specific product that belongs to a specific category. This information is the degree of unpredictability, product information analyzed by the individual related to the high rates of product technical change, increases in product complexity, and the risks of product obsolescence in the market place. In regards to this variable, it is important to mention that Menon, Jaworski and Kohli (1997) developed a scale which measures the technological turbulence mentioned above. Also, it is important to mention the existence of a scale constructed by Stump and Heide (1996). This four-item, seven-point scale measures the extent to which buyers are unable to accurately predict the technological changes in the product purchased and its underlying manufacturing process.

The reliability calculated for this scale was a .69 alpha. The validity examined was an exploratory factor analysis of the measures used in the study. Evidence of the discriminant validity of the measure was provided by means of a series of chi-square difference tests performed on the factor correlations.

Scale Items:

Predictable ___ ___ ___ ___ ___ ___ ___ Unpredictable
1 2 3 4 5 6 7

1. Technological changes in the end product.
2. General technological developments in the supply market for the identified item.
3. Your firm's changes in specifications for the identified item.
4. This supplier's changes in specifications for the identified item.

The scale developed for this study is the following:

Table 5. Scale Items:

Uncertainty Technology knowledge perception

13. The technological changes in this product are unpredictable.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

14. Buying this product implies taking the risk of buying a product that will soon become obsolete.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

15. This product technology has a high degree of complexity in research and development.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Construct 2 Market Knowledge Perceptions

Analyzing the market for a product is arguably the most important task to undertake during feasibility analysis.

Market knowledge is analyzed (Tiger and Calantone, 1998) as organized and structured market information. Here, organized means it is the result of systematic

processing (as opposed to random picking), and structured implies that it is endowed with useful meaning (as opposed to discrete items of irrelevant data).

Definition. Market knowledge is the degree of the accumulation of the structured information about the market that an individual or company has. The market knowledge that individual possesses is expected to affect his or her attitude toward new products in a specific category and also the direction and intensity of recommendations that he or she shares with other consumers.

There is no specific scale to measure the degree of the individuals' market knowledge. Some scales that measure the grocery market knowledge, such as the one developed by Joel Urbany, Peter Dickson and Rosemary Kalapurakal in 1996. This special scale was divided into two categories of Grocery Market knowledge (Price and Specialty Departments).

Variable Market Needs Knowledge Perception

The knowledge of market needs is to get information about the market. Analyzing the market for a product is arguably the most important task to undertake

during feasibility analysis. It involves identifying the product's primary market, that is, those customers that are more likely to purchase first.

Several valuable pieces of information will come out of effective market information knowledge. This information is considered as a realistic definition of the target market, an estimate of demand, a sense of how willing customers are to purchase from the company, and an in-depth profile of the customer. Prior to collecting market information, it is important to decide which data will be the most important to use.

The principal goal of the individual who possesses market needs knowledge is to predict customer demand for the product, provide a realistic definition of the target market, estimate demand, and sense how willing customers are to purchase from the company. The person possessing the market knowledge should also generate an in-depth profile of the customer (Allen, 2002)

Definition. market needs knowledge is the degree of information that an individual possesses in order to perceive a sense of what the real customer needs are, and how they are related to a specific product category.

The items for this variable will also be constructed and adapted to the purpose of this study. Many scales in the literature are focused to the firms' intentions to know their customers' market needs, but there is no specific scale that directly asks a specific group of people relevant information about market needs. The instrument of this variable will ask entrepreneurs about their implicit knowledge of market needs. The scale developed for this study is the following:

Table 6. Scale Items:

Market Needs Knowledge Perception

16. I know most of the customers needs for this kind of product.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

17. If somebody asks me about the product deficiencies when the customer uses it, I could probably mention more than one.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

18. I can easily mention what improvements this product needs to satisfy the customers' needs				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable Market Uncertainty knowledge perception

Market Uncertainty refers to the ambiguity in the type and extent of customer needs for particular technology (Moritary and Kosnil, 1989). In her book "Market of High-Technology Products and Innovations," Jakki Mohr emphasizes that there are five sources of market uncertainty. Marketing uncertainty arises, first and foremost, from customer fear, uncertainty, and doubt (Moore, 1991) about what needs or problems the new technology will address, as well as how well it will meet those needs. Anxiety about these factors means customers may delay adopting new innovations. Customers require a high degree of education and information about new innovation, and need post-purchase reassurance and reinforcement to assuage any lingering doubt.

Second, customer needs may change rapidly, and in an unpredictable fashion, in high-tech environments.

Third, customer anxiety is perpetuated by the lack of a clear standard for new innovations in the market (Mohr, 2001). One important role of high-tech marketing is to recognize the market uncertainty customers face in the making decisions about whether or not to purchase new technology. Coalescing disparate product development efforts around common standards can help reduce the perceived risk for customers in terms of making bad choices. Reducing fear and uncertainty can help serve as a catalyst for adoptions. Fourth, due -- in large part -- to the three prior

factors, uncertainty exists between consumers and manufacturers over how fast innovations will spread. In many cases, the market for high-tech innovations is slower to materialize than most would predict (Moore, 1991). Finally, uncertainty over how fast innovations will spread contributes to an inability for manufacturers to estimate the size of the market (Mohr, 2001).

Definition: Market uncertainty knowledge is the degree of information that the individual possesses in order to deduce the customer fear, doubt, anxiety and changing preferences and needs related to purchasing a specific product from a specific category.

Scale Background:

A scale developed by Bello and Gilliland (1997) used three, seven-point semantic differential items to assess the speed at which the environment of a foreign market changes and the degree of its uncertainty. The reliability reported was a confirmatory analysis of .81. As for validity, the authors reported a confirmatory factor analysis.

Scale Items:

1	Stable Environment	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Volatile Environment
2	Certain	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Uncertain
3	Changes Slowly	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Changes Rapidly

Another interesting scale about market uncertainty is developed by Heide and John (1988). This scale measures the degree of marketing uncertainty, volatility and unpredictability faced by particular groups (salespeople, retailers, vendors, suppliers etc.) often in the context of making decisions.

The reliability reported by John and Weits (1989), Kumar, Scherr, and Steenkamp (1995), and Celly and Fraizer (1996) were .65,.68 and .85 alpha coefficients respectively. As the discriminant validity of the measures in their studies, they used the results of the principal component factor analysis with orthogonal rotation. The validity of the measure was found to be satisfactory.

Scale Items:

1	Easy to monitor trends	1	2	3	4	5	6	7	Difficult to monitor trends
2	Stable industry Volume	1	2	3	4	5	6	7	Volatile industry volume
3	Sale forcasts are quite accurate	1	2	3	4	5	6	7	Sales forcasts are quite inaccurate
4	Predictable	1	2	3	4	5	6	7	Unpredictable
5	Unpredictable Demand	1	2	3	4	5	6	7	Predictable demand
6	Complex	1	2	3	4	5	6	7	Simple
7	Stable market Share	1	2	3	4	5	6	7	Volatile market share
8	Sufficient information for marketing decisions	1	2	3	4	5	6	7	Insufficient information for marketing decisions
9	Sales forecasts are likely to be accurate	1	2	3	4	5	6	7	Sales forecasts are likely to be inaccurate

The scale developed for this study is the following:

Table 7. Scale Items:

Market Uncertainty knowledge perception

19. The preferences and needs related to this product change slowly.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

20. This product category has a volatile environment.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

21. Most of the people who search for this kind of product are fearful or doubtful in relation to its purchase.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

22. The trends for this product category are easy to monitor.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

23. This product industry is a stable industry.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

24. This product has an unpredictable demand.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable Market Segments knowledge perception

Market segmentation consists of detecting, evaluating and selecting homogeneous groups of individuals - whether they are consumers or not - with the intention of designing and directing competitive strategies towards them (Sarabia, 1996).

Market segmentation involves partitioning the general need for a solution to a class of problems into smaller clusters involving distinct markets. These clusters are comprised of buyers or potential buyers that share similar traits, buying patterns, information needs, benefits sought, psychographic profiles, product experiences, industry participation, and other factors. The knowledge of market segments is meaningful to the extent that they are differentially responsive to different marketing programs (Dwyer and Tanner, 2001)

Definition. The market segments knowledge is the ability of the individual to detect, evaluate and select homogeneous groups that have the same characteristics

including similar traits, buying patterns, information needs, product experiences, and belong to an industrial participation.

For this variable (market segments knowledge perception) there is no specific scale developed to measure the entrepreneur's knowledge of market segments. The items for this variable will be built specifically to identify the degree of information these individuals possess about groups that have the same characteristics.

The introduction of a number of items which need to be borne in mind by knowledgeable entrepreneurs and reference has been made in terms of dynamic organic market segments which contain their own "subsystems, tensions and changing alliances". Building on the work of Brown, Farrell (2001, p. 171) states that: "The new segments are not discrete, homogeneous sub-segments, but overlap, interact and interpenetrate. Indeed, this interpenetration is an example of another postmodern phenomenon: product or service differentiation".

The scale developed for this study is the following:

Table 8. Scale Items:

Market Segments knowledge perception

25. The potential customers for this kind of product have similar characteristics and traits.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

26. The potential customers of this product share the same needs that make them buy it.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

27. Most of the people who buy this kind of product seek for the same pre-purchase information.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Construct 3 Competition Knowledge Perceptions

The knowledge of competition becomes a vital part of strategic planning. This kind of knowledge has two primary activities, 1) obtaining information about important competitors, and 2) the use of that information which is necessary to predict competitor behavior. The principal goal of the individual who possesses the knowledge of competitors by brand is to understand, a) which competitors to compete

with, and b) competitors' strategies and planned actions. This knowledge of competitors arises in the form of product in all the categories from competition that is developed to satisfy customer needs and resolve customer problems.

The information about competitors gives individuals who possesses it an explanation of the competitor's objectives, assumptions, strategies and capabilities that can be compiled into a response profile of possible moves that might be made by each competitor. This profile includes both potential offensive and defensive moves. The specific moves and their expected strength can be estimated using information gleaned from analysis of this knowledge.

Definition. The knowledge of competition is the degree of information that the entrepreneur possesses about the different competitors that are participating in a specific industry which products are competing in the market arena. This knowledge is the evaluative information in order to know the competitor's objective and assumptions such as his/her past history in the introduction of products to the market, his/her failures and successes. A competitor's capabilities can be analyzed according to his/her strengths and weaknesses in various functional areas. The competitor's strengths define his/her capabilities. This information could be used to predict the competitor's behavior.

Variable Number of Competitors Knowledge Perception

This variable is examined in different studies as the market concentration and competitive activity. The number of competitors is described as participants with at least one percent (1%) of the market (Thorrelli & Burnett, 1981). Finding the number of competitors in the market in a specific product category is no easy task. Internet searches for competitors' Web sites, examples of their advertising, and seeing their facilities are some ways to gather such information. The results of such research will reveal something about who a prospective firms' customers are and what their stated goals are.

Definition. The number of competitor's knowledge is information that the individual possesses in order to describe the number of product participants with at least a 1% share of the market. The items for this variable (number of competitors knowledge perception) will be constructed and adapted for this study with the objective to measure the knowledge of number of competitors fitting that requirement. The justification to integrate these items to the scale is the entrepreneurial cognitions that are implicit in the development of grow from market to competition. It is well accepted that much of the solution to economic problems lies in "enhancing the effectiveness and knowledge of competition, especially markets

where it [competition] is now weak; and there are some task rests ultimately in the hands of government" (Thompson 1989, p. 1).

The knowledge of new competitors are opportunities for entrepreneurship, better and cheaper products, and a better economy within which all businesses, including small businesses, can compete, innovate, and thrive.

Competition drives our economy. And even countries that used to rely on planned economies and national champions are rushing to competition. Competition clearly is one of the most significant reasons why we are an economic success. Thus, although it is important to understand the entrepreneur's benefits of number of competitor's knowledge, it is also important to know that the central role of a competitive marketplace also benefits small businesses in a direct and very significant way.

Table 9. Scale Items:

Number of Competitors knowledge Perception

28. I know all the competitors that participate in the market of this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

29. I can mention the number of participants by brand.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

30. I know the brands that compete in this product category, and they are as follows:

_____

_____

_____

The following scale items are grounded on previous studies, which have developed scale items that will be adapted for this study.

Variable Competitive Volatility Knowledge Perception

One special characteristic of high-tech markets are their competitive volatility, which is defined as the rate of change in market participants, both in terms of the number of competitors and the foundations upon which participants compete (Mohr 2001). Many high-technology industries tend towards hypercompetition, existing in a state of almost constant competitive turbulence due to market disruptions (D'Aveni, 1994). Uncertainty and frequent changes in the competitive landscape often force participants in high-tech industries to make decisions with insufficient information thereby creating a perception of risk in participants on both the supply and demand sides of the industry (D'Aveni, 1994). The presence of uncertainty and volatility creates the need for an industry-wide product standard in many high technology markets (Arthur 1996; Hill 1997; Shapiro and Varian, 1999). Firms that are able to establish their technology/products/processes as standards for the industry dictate what attributes should be valued (Carpenter and Nakamoto, 1989), and what complementary offerings should be available (Hill 1997; Shapiro and Varian 1999). This signals to relevant stakeholders the viability and reliability of the technology, and reduces market uncertainty (Gomes-Casseres 1994; Liebowicz and Margolis, 1999). In addition, creating a product standard lends credibility to the developing organization, and strengthens the position of any firm that has adopted and supported that standard (Gomes-Casseres 1994; Liebowicz and Margolis, 1999). This reduces the overall competitive volatility as the industry converges on a single, well-defined

set of technologies. Customer leading -- the process of uncovering and responding to latent customer needs -- (Day 1990; Narver, Slater and MacLachlan, 2001) offers similar concerns. As with market driven activity, competitor data is gathered and may be used to determine the level of competitive volatility in the market. In focusing on latent needs, customer leading firms direct market preferences in new directions (Day 1990; Narver, Slater and MacLachlan, 2001). This can include directing consumer responses to new technology, and encouraging technology acceptance, both of which reduce market uncertainty. By using exploratory learning to discover unarticulated needs, customer leading firms may be better able to adapt to shorter product life cycles through innovation (Martin 1995; Kyriakopoulos and Moorman 1998; Day 1999). Still, this approach seems to lack a mechanism for developing an increasing return feedback loop (and thus a product standard) from the initial user base, as well as means of insuring functioning product ecosystems. Product standards provide a definable set of practices for industry participants, reducing the overall level of competitive volatility (Hill 1997; Shapiro and Varian, 1999).

Definition. Knowledge of competitive volatility refers to the degree of knowledge that the individual possesses in order to inform others about changes in the competitive landscape: which firms are their competitors, what the competitors offer, and the tools they use to compete.

Bello and Gilliland (1997) used a three-item, seven-point semantic differential item scale to assess the speed at which the environment of a foreign market changes and is uncertain.

The reliability reported was a confirmatory analysis of .81. As for validity, the authors reported a confirmatory factor analysis.

Scale Items:

1	Stable Environment	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Volatile Environment
2	Certain	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Uncertain
3	Changes Slowly	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Changes Rapidly

Another scale detected to measure competitive volatility is called Competitive Intensity. This variable measures and studies the levels of competitiveness which represent the ability of competitors to differentiate themselves from one another on the bases of price, promotion, and other factors.

Moorman (1995) used this six-item, seven-point Likert-type scale. The reliability reported a .84 alpha coefficient. As for validity, the author performed a series of two-factor confirmatory analyses using LISREL VII to assess the discriminant validity of the measures used in her study. Chi-square difference tests were performed on constrained versus unconstrained models. The significantly lower chi-square values observed for all of the unconstrained models tested were accepted as evidence of the discriminant validity of the measures.

Scale Items:

Strongly Agree								Strongly Disagree
	1	2	3	4	5	6	7	

1. Competition in this product area is cutthroat.
2. There are many promotion wars in this product area.
3. Anything that one competitor can offer in this product area, others can match readily.
4. Price competition is a hallmark in this area.
5. One hears of a new competitive move in this product area almost everyday.
6. Our competitors in this product area are relatively weak.

Based on the previous scales, the following set of item will be used to measure this variable.

Table 10. Scale Items:

Competitive Volatility Knowledge Perception

31. I know what competitors offer their customers in this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

32. I know what tools competitors of this product category use to compete in the market.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

33. Many people ask me about the changes in the competitive landscape of this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

34. Competition in this product area can be described as volatile.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Variable 9 Competitor's Differences Knowledge Perception

Definition. Competitor's Differences knowledge Perception refers to the degree of knowledge about all the differences – negative or positive -- between products.

The items for this variable will be constructed and adapted for this study with the objective of measuring the knowledge of the number of competitors with at least 1% of the market place in a specific product category.

Some scales found in the literature to measure the knowledge of competition are related to market intelligence. Song and Parry (1997a) used a five-item, eleven-point Likert-type scale to gauge the level of competitive and market intelligence efforts undertaken in preparation for the development and launching of a new product.

The reliability used was a confirmatory factor analysis of the data in the calibration sample to purify the scale. The authors reported a .89 alpha coefficient. The authors did not specifically report any examination. It is important to remember that this scale-item is intended for the firm's level participation.

Scale Items:

Strongly Disagree											Strongly Agree
	1	2	3	4	5	6	7	8	9	10	

1. We knew our competitors well – their products, pricing, strategies, and strengths.
2. We knew how our competitors would react to the introduction of this product.

The scale developed for this study is the following:

Table 11. Scale Items:

Number of Competition Knowledge Perception

34. I know the different competitors that participate in this product category market.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

35. I know which is the best purchase choice is considering all the participants in the market of this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

36. I know which the successes and failures of each competitor participating in the market of this product category are.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

37. I know better than anyone which competitor is stronger in the market of this product category.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

38. I know which of these competitors have more followers and clients.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

39. One competitor in this product category is my favorite.				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

40. I know well which competitor has the best prices for its customers				
Strongly Disagree	Somewhat Disagree	Neither agree Nor Disagree	Somewhat Agree	Strongly Agree
1	2	3	4	5

Market Presence Variable

This variable is the only one from the study that is no metric. As the definition mention this variable will express the product or service presence or absence in the market with respondent entrepreneur information.

Definition: Is when a entrepreneur has a real market participation. If his/her product or service is available to the costumer in the present and it has sales reported. A participant in the market is considered active with a 1 % of the market place (Day, 1999).

34. My product or service is already in the Market?

YES OR NO

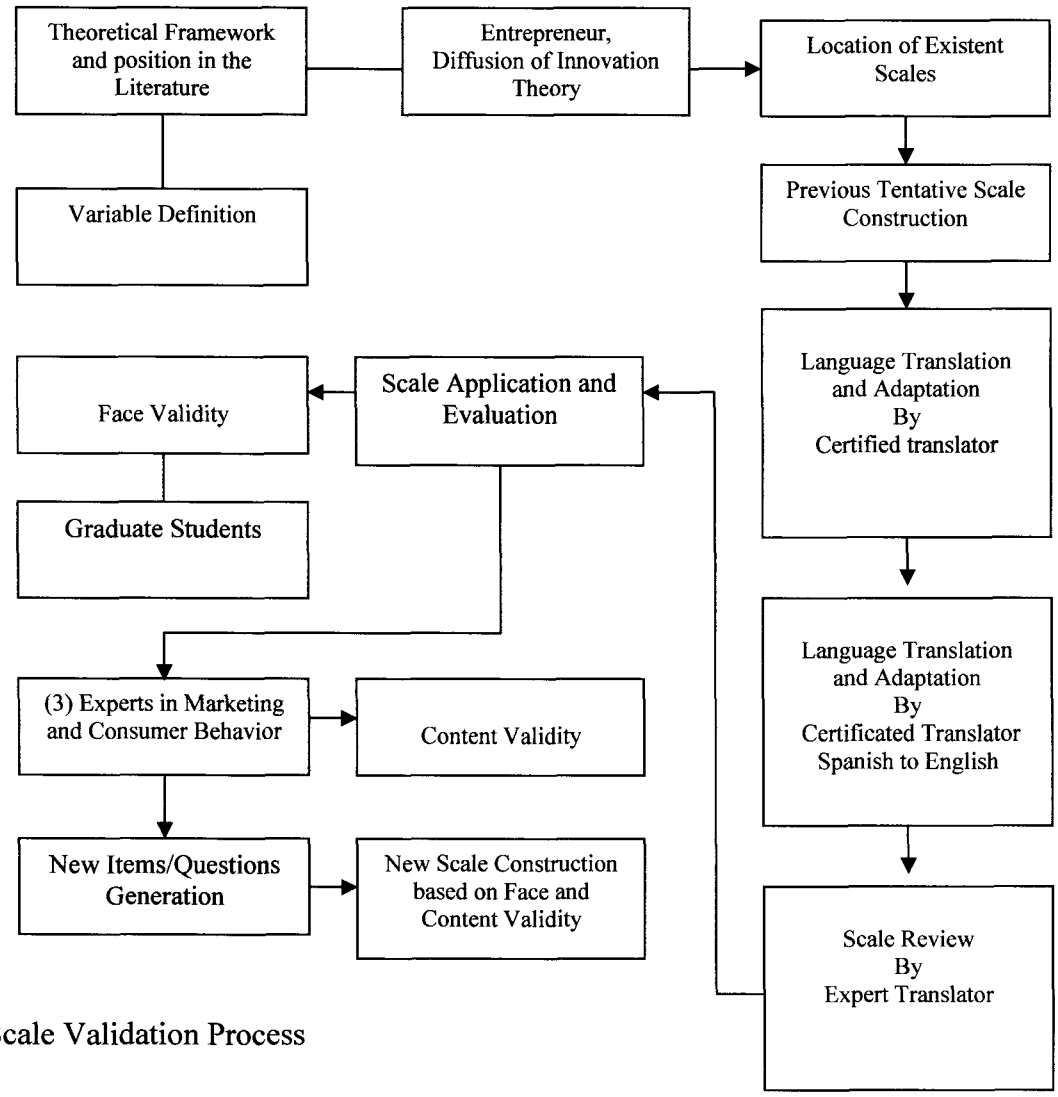
3.3. Measurement Methodology

The original English-language questionnaires were translated into Spanish. Then an entire process of content and face validity was applied in order to develop the final measuring instrument. The basic scale developed and adapted for this study is integrated in the final scale. The rest of the items are questions for demographic use and market maven external evaluation.

3.4 Scale Validation

The objective of this section is to describe the procedure to design the measure instruments in the present study.

3.5. Figure 2. Scale Validation process Diagram



3.6 Scale Validation Process

The Scale Validation process is explained in Fig 3.

First an exhaustive literature review is studied. Then the theoretical framework is constructed and the research position is explained. A literature analysis

review related to the topics of entrepreneurs and knowledge perception was constructed. Then a set of variables was grounded with their respective conceptual and operationalization definitions. After this procedure, a literature scale research localization was required. A recompilation of the most important scales was analyzed and their content was exposed to the development of the scales related to this project.

3.7 Scale Language Adaptation

As Spanish speakers make up the proposed sample for hypotheses tests, a translation of the scale is necessary. The checking of the validity of the adaptation and translation of the scale was undertaken in the following way: first, a scale built by the researcher was edited by a language expert and certified translator; after the language adaptation a final language revision for the scale was decided upon; after this procedure, face validity and content validity were applied to the scale in the following process.

3.8 Scale Face Validity

The face validity of survey instruments and tests used in psychometrics is assessed by a cursory review of the items (questions) by untrained individuals. The individuals make their judgments on whether the items are relevant. The face validity

is a qualitative measure of validity; it is not quantified with statistical methods. Of all validity measures, the face validity is normally considered the least scientific measure because untrained individuals chosen on the basis of convenience are involved, and because the measure is subjective and not quantifiable. In the case of this study, 20 students of a Master's in Business Administration program participated, answering the previous scale and the face validity survey. The results were very interesting. Most of the items were well evaluated. They confirmed their adequacy, clarity and high degree of relevance. Of the 64 items in this section two were refined. For most participants, item number 41 was clear but not relevant. Item 57 was clear, but not relevant. It seemed repetitive in regards to item 56 (the opposite) and item 60 was repetitive in regard to item 59 which asked for the best brand in this category of products.

The resolution to this problem was to eliminate items 41 and 57 from the scale. Item 60 was not eliminated because some of the students suggested that it would be interesting to know the worst brand of laptops on the market.

Another important suggestion was that the dimension called perception of the knowledge of competitors was a little confusing for those not familiarized with these terms. One student suggested it would be clearer to change this for knowledge of

competitors by brand in the market. This suggestion was accepted and the researcher changed the name of this variable.

The Face Validity Indexes are as follows:

Face Validity Results

Table 12

	Section 1 Market knowledge perception		
1	1. I know alot about this product's market (X).	Appropriate Clarity Relevancy	4 4 4
2	2. I know more than others about this product and its category.	Appropriate Clarity Relevancy	4 4 4
3	3. People consider me as someone that knows much about this new product (x) and that related to the market.	Appropriate Clarity Relevancy	4 4 4
	Section II Technological knowledge perception		
4	4. I know much about the technology related to this product.	Appropriate Clarity Relevancy	4 4 4
5	5. I like to look for information related to the technological aspects of this new product.	Appropriate Clarity Relevancy	4 4 4
6	6. People frequently ask me about the technological aspects of this new product instead of asking others.	Appropriate Clarity Relevancy	4 4 4
7	7. I definitely know more about the technological aspects of this new products than anyone else.	Appropriate Clarity Relevancy	4 4 4
8	8. This new product involves a great deal of technological knowledge.	Appropriate Clarity Relevancy	4 4 4
	Section III Knowledge perception of new product innovation. (X).		

9	9. I know much about this product.	Appropriate Clarity Relevancy	4 4 4
10	10.Compared to others, I know much more about this product category.	Appropriate Clarity Relevancy	4 4 4
11	11.I consider myself as someone that knows about this product's category.	Appropriate Clarity Relevancy	4 4 4
	Section IV Knowledge perception of technological change knowledge.		
12	12.Technology in this product category changes quickly.	Appropriate Clarity Relevancy	4 4 4
13	13. I know about the latest technological changes in this product's category that it has had recently.	Appropriate Clarity Relevancy	4 4 4
14	14. The technological development of this category has been few.	Appropriate Clarity Relevancy	4 4 4
15	15. The technological changes in this product's category have a rapid evolution.	Appropriate Clarity Relevancy	4 4 4
	Section V Knowledge perception of uncertain technology		
16	16. The technological changes in this product's category are unpredictable.	Appropriate Clarity Relevancy	4 4 4
17	17. Buying this product implies the risk of buying a product that soon will be obsolete.	Appropriate Clarity Relevancy	4 4 4
18	18. This product's technology has a high degree of complex investigation and development.	Appropriate Clarity Relevancy	4 4 4
	Section VI Knowledge perception of the market aspects		
19	19. This product's market has grown quickly.	Appropriate Clarity Relevancy	4 4 4
20	20. There are a great number of potential clients in this product category.	Appropriate Clarity Relevancy	4 4 4
	Section VII Knowledge perception o fan uncertain market		

21	21. The preferences and necessities related to this product change slowly.	Appropriate	4
		Clarity	4
		Relevancy	4
22	22. This product category has a changing environment.	Appropriate	4
		Clarity	4
		Relevancy	4
23	23. Most people that look for this product fear or doubt buying it.	Appropriate	4
		Clarity	4
		Relevancy	4
24	24. The product category tendencies are easy to monitor.	Appropriate	4
		Clarity	4
		Relevancy	4
25	25. The industry of this product is stable.	Appropriate	4
		Clarity	4
		Relevancy	4
26	26. This product has an unpredictable demand.	Appropriate	4
		Clarity	4
		Relevancy	4
	Section VIII Knowledge perception of market segments		
27	27. Potential customers of this type of product have similar traits and characteristics.	Appropriate	4
		Clarity	4
		Relevancy	4
28	28. Potencial clientes of this product share the same type of needs that makes them buy.	Appropriate	4
		Clarity	4
		Relevancy	4
29	29. Most people that buy this product look for the same information before buying it.	Appropriate	4
		Clarity	4
		Relevancy	4
	Section IX Knowledge perception of market needs.		
30	30. I know my majority of needs that the clients of this kind of product have.	Appropriate	4
		Clarity	4
		Relevancy	4
31	31. If someone asks me about the product deficiencies when a customer uses it, I could mention more than one.	Appropriate	4
		Clarity	4
		Relevancy	4
32	32. I can easily mention the improvements requested by the product's clients.	Appropriate	4
		Clarity	4
		Relevancy	4
	Section X Knowledge perception of the competitors		
33	33. I know different competitors that participate in the market of this product's category.	Appropriate	4
		Clarity	4
		Relevancy	4

34	34. I know which is the best option in relation to the market participants of this product category.	Appropriate	4
		Clarity	4
		Relevancy	4
35	35. I know well the success and failure of all the competitors that participate in this market category.	Appropriate	4
		Clarity	4
		Relevancy	4
36	36.I know better than anyone which competitor is the strongest in the market for this product category.	Appropriate	4
		Clarity	4
		Relevancy	4
37	37. I know which of these competitors has more customers and followers.	Appropriate	4
		Clarity	4
		Relevancy	4
38	38. One of the competitors of this category is my favorite.	Appropriate	4
		Clarity	4
		Relevancy	4
39	39. I know well which competitor has the best prices for its clients.	Appropriate	4
		Clarity	4
		Relevancy	4
	Section XI Knowledge perception of the number of competitors		
40	40. I know all of the competitors that participate in this product category.	Appropriate	4
		Clarity	4
		Relevancy	4
41	41.I can mention the number of participants by brand.	Appropriate	4
		Clarity	4
		Relevancy	1
42	42.I know the brands in this product category and they are the ones named as followed.	Appropriate	4
		Clarity	4
		Relevancy	4
	Section XII Knowledge perception of the competition's volatility		
43	43. I know what competitors offer its clients in this product category.	Appropriate	4
		Clarity	4
		Relevancy	4
44	44. I know tools that competitors use in this category to compete in the market.	Appropriate	4
		Clarity	4
		Relevancy	4
45	45. Many people ask me about the changes in the competition horizon for this product category.	Appropriate	4
		Clarity	4
		Relevancy	4
46	46. The competition in this product's area can be described as volatile	Appropriate	4
		Clarity	4
		Relevancy	4
	Demographical Study		
47	63. Sex	Appropriate	4

		Clarity	4
		Relevancy	4
		Appropriate	4
48	64. Age	Clarity	4
		Relevancy	4
		Appropriate	4
49	65. Educational Level	Clarity	4
		Relevancy	4
		Appropriate	4
50	66. Employment	Clarity	4
		Relevancy	4

3.9 Content Validity

Measuring the content validity of instruments is important. This type of validity can help ensure construct validity and give confidence to readers and researchers about instruments. Content validity refers to the degree that the instruments cover the content that it is supposed to measure. For content validity two judgments are necessary: the measurable extent of each item for defining the traits and the set of items that represents all aspects of the traits. For this study it is relevant to experts in the field of marketing. Choosing one or several experts in one measure can be fruitful to determine if the measuring instrument is well-built and if it can be proven (Davis, 1992).

Expert Participation Process

The first step was to identify a potential expert panel. Thus, several marketing experts were identified. The expert panel for content validity of this study was made up of four professionals who hold PhDs and have broad experience in the area of market evaluation.

The experts were invited to participate for a personal interview, during which the purpose of the project was explained, as well as the theoretical framework supporting it. They were then asked to participate in validating the content of the scale to be used in measuring the variables. Each of the four experts was given a copy of the survey which contained a scale so they could evaluate the items for each variable. This scale was adapted to evaluate each item on a scale of 1 to 4. Using this scale they were asked to grade each item in terms of representativeness and clarity. Likewise, they were asked to point out if the item corresponded to the factor or variable to be measured. They were also given a list of factors and their definitions to observe their content. The outcome in content validity was interesting. Each expert completed the survey successfully.

The criteria for evaluating the items were:

The reliability or Interrater Agreement (IRA) was calculated for each item. The IRA was calculated by counting the number of items that had an IRA of at least .80. That figure was divided by number by the total of items. In this case the entire IRA scale of Item Representativeness was 0.85 and the IRA for Item Clarity was 0.91. Both results were acceptable because they were higher than .80. The content validity index was calculated by counting the number of items rated as three or four by all the experts and that number was divided by the total number of items. The general scale result was 0.95 which according to the literature is very acceptable.

The Factorial Validity Index is the degree to which the experts appropriately associated the item with its respective factor. To calculate the FVI for each item, the number of experts who correctly associated the item with the factor was divided by the total number of experts. A result of at least of .80 is recommended. In this scale the four experts agreed with the item category. The Total FVI of the scale was 1.00 = 100%

Table 13. General Scale Indexes

IRA	
Reliability	0.85
IRA Clarity	0.91
CVI Survey:	0.95
FVI Survey:	1.00

3.10. Scale Observations and Changes

The experts made some additional recommendations. The strongest was made by one of the experts, who suggested rewriting items 1, 4, 7, 8, 9 and 11. The suggestion concerned adapting the items to the kind of product. He also suggested a painstaking revision of items related to the attitude toward new products, the direction and intensity of recommendation. These last factors were rewritten to adapt them to the product surveyed in order to avoid duplication. They were also re-ordered for sensible and logical reading.

In the data collection of content validity, the items listed below came out as unclear under the criteria of representativeness (.80).

Table 14.Section II Market knowledge perception		Prom.	IRA	CVI	FVI
1. I know alot about this product's market (X).	Reliability	3.5	0.8	75%	
	Clarity	3.25	0.5	75%	
	No. Factors				100%

Sección III Technological Knowledge Perception		Prom.	IRA	CVI	FVI
4. I know much about the technology related to this product.	Reliability	3.5	0.5	100%	
	Clarity	3.75	0.8	100%	
	No. Factors				100%
7. I definitely know more about the technological aspects of this new product than anyone else.	Reliability	3	0.5	50%	
	Clarity	3.5	0.8	75%	
	No. Factors				100%
8. This new product involves a great deal of technological knowledge	Reliability	3.25	0.5	75%	
	Clarity	3.75	0.8	100%	
	No. Factors				100%

Section IV New Product Inovation Knowledge Perception		Prom.	IRA	CVI	FVI
9. I know much about this product.	Reliability	3.25	0.5	75%	
	Clarity	3.25	0.5	75%	
	No. Factors				100%
10.Compared to others, I know much more about this product category	Reliability	3.75	0.8	100%	
	Clarity	3.75	0.8	100%	
	No. Factors	3		100%	100%
11.I consider myself as someone that knows about this product's category.	Reliability	3.5	0.5	100%	
	Clarity	3.5	0.5	100%	
	No. Factors	3		100%	100%

The scale revision of external evaluation administered to entrepreneurs to prove their concentration of knowledge and rightness in direction and intensity in the recommendation received good comments. Their indexes were as follows:

IRA	
Reliability	1.00
IRA Clarity	1.00
CVI Survey:	1.00
FVI Survey:	1.00

Since the suggestions were related to the rewriting, rather than the eliminating, of certain items, these items were rewritten and reordered in the scale for the expert's approval. After approval, the questionnaire was taken to the validation stage.

CHAPTER 4

RESULTS AND DISCUSSION

Recent attention in product innovation literature has focused on how market orientation influences product innovation performance (e.g., Aaby and Discenza 1995; Slater and Narver, 1998). The findings frequently reveal that market orientation and new product success are positively related because more information is more typically accrued to more market-oriented firms (e.g., Cooper and Kleinschmidt 1993; Cooper et al. 1994; Ottum and Moore, 1997). This information is viewed as valuable for identifying new market opportunities and new products that satisfy consumer needs (Glazer 1991; Nonaka 1991; Slater and Narver, 1995). Research on administrative process innovation (i.e., innovation in work flows or procedures) also demonstrates that information search positively affects innovation initiation by increasing the amount of information available to group members for idea generation (Aiken, Bacharach, and French 1980; Damanpour 1991; Zmud, 1982). The new age of technology and information has created an environment of constant change. Today's world spins on new information, and new information fuels change. The faster we create and communicate new information, the faster change occurs. In this environment, the best technique for survival and success is to be for organization to be automatically and continually responsive to new market information and new

customer needs--an entrepreneurial organization with fast reactions, fast changes and fast responses to customer needs -- these are traits associated with entrepreneurs.

Being entrepreneurial also means being willing to take risks, desiring to create change, and not being tied down by current methods of operations or entangled in internal knowledge. Entrepreneurs are totally committed to achieving a goal to the point of risking all -- their homes and their children's futures and educations, in many cases. Most successful entrepreneurs also have an innate ability to work on close-knit teams. Therefore, the contribution of this study is to determine how entrepreneurs acquire technological and market knowledge-information the issues upon which they base their innovations and inventions. The present study tests the exploration of the perception of knowledge perception in a sample of entrepreneurs that are in a process of developing new products or services. This chapter provides an analysis of survey results in light of the research hypotheses developed in the previous chapter.

4.2 Description of sample

One hundred and eighty-six entrepreneurs participated in the survey. The sample includes 86 entrepreneurs belonging to the Research Chair of the Instituto Tecnologico de Estudios Superiores de Monterrey (ITESM) and (n= 100) from the business incubator of Universidad de Monterrey. Each subject was categorized as an

entrepreneur. Both universities support independent projects. The incubator was created to support an develop entrepreneurs' projects and ideas, who are planning to form their own businesses. However, a number of (17) the entrepreneurs did not respond to all 51 items. This process reduced the number of respondents to 169 cases in all. This scale is based on three main dimensions mentioned in the previous chapter.

- Technological Perception Knowledge
- Market Perception Knowledge
- Competition Perception Knowledge

4.3 Data Collection Process

The main justification for validating the participants subjects is that they are considered to have a high degree of entrepreneurship, because they belong to a business incubator established as a publicly-funded vehicles for job creation, economic regeneration or commercialization.

Campbell *et al.* (1985) suggest four areas where the incubation process creates value:

the diagnosis of business needs;

the selection and monitored application of business services;

the provision of financing, and

access to the incubator network.

There is little work available specifically on how incubating businesses develop within the incubator - the experience of the incubates, even though much has been written about new business development in entrepreneurial research papers. Reviewing the literature, Hackett and Dilts (2004b) postulate that there are many factors through which incubators contribute to the entrepreneur performance and success.

Most of them have more than one innovation project already on the market. In the context of the creation of for-profit enterprises, entrepreneur is often synonymous with founder. Most commonly, the term entrepreneur applies to someone who creates value by offering a product or service in order to obtain profit. While there is social entrepreneurship in most markets, business entrepreneurs often have strong beliefs about a market opportunity and are willing to accept a high level of personal, professional or financial risk to pursue that pursue it. Business entrepreneurs are viewed as fundamentally important in capitalistic societies.

4.4 Determination of sample size

The first priority in this study is the identification or definition of the population considered. Jaccard (1983) defined population as the aggregate of all cases

to which one wishes to generalize. The minimum sample size consisted of 20 individuals to provide statistical information for this study. The number of variables tested in this study were the three main dimensions with three variables. The total number of variables in this study is 13. Following the considered literature in a sample with this number of variables (n = 20) is the minimum subject required for the minimum error (Hair, 2007).

The data for this study was conducted by distributing and recollecting the questionnaire by Internet.

The Pros and Cons considerations for Internet Survey

Some pros for an Internet survey are the following: Can reach a large geographical area, people are used to completing paper-and-pencil surveys, Can take the survey with you and complete it anywhere and anytime. And some of the cons to use an Internet survey are the following: No clarification available during completion, need a motivated population to return the survey, Respondents must be able to read, see, and write, Need an up-to-date address list, Visual cues and illustrative figures. Another point to considerations is the cost. Even if the sending e-mail is low the motivation to the people to answer the survey must be followed by an Incentive.

In a recent article on conducting international marketing research in the 21st century the application of new (electronic) technology for data collection was encouraged. Email and web-based data collection methods are attractive to researchers particularly in international marketing, because of low costs and fast response rates. Yet the conventional wisdom is that, as some people still do not have access to email and the Internet, such data collection techniques may often result in a sample of respondents that is not representative of the population in question. For this study these problems were taken into consideration and managed for having less impact on the response rate by offering to participate in a raffle on an I-pod.

The Survey

The survey for this study contained 51. A special subjects list was generated by six survey administrators. Then, the first e-mail message was and sent to participants with a letter of introduction and an invitation. The time selected to wait for all the responses was four weeks. Each week, an e-mail reminder about the survey was sent. The data for ITESM was completed by 86 respondents. No incentive was offered in this face of the sample.

A second sample, belonging to UDEM was invited to participate in the same process. The main difference with the second group was that an incentive was offered in the form of a "special gift" sent to a "winner" determined by at random. In this case the gift was an ipod Nano. Within three days, 100 responses were received, bring the total number of respondents to (n=186). After four weeks, the survey was closed.

It was found that 17 respondents did not finish the entire survey and their submissions were not considered. The effective and final number of respondents without missing data was (n=169).

T-TEST

The T-TEST compared the performance of the participants in group A with that of participants in group B. The data for this study was parametric and each sample was an independent groups design. (The T-Test table analysis could be provided upon request). There was no significant difference between the conditions for each group. All variables from the study reported a Levene's test for equality variables with a significance ($p > 0.05$), indicating an equality of variance. With these results we can be sure both samples have a high degree of equality. The performance of this test was only necessary, as we mentioned at the start of this chapter, because the sample was composed of groups of entrepreneurs from two universities. As we can see in the T-Test table both groups have equality between them.

Sample Description

Twenty seven subjects responded that their product was not on the market. 10 subject were from UDEM and 17 from the ITESM. The rest of the sample (142), responded that their products or services were already on the market. The following table indicates the entrepreneurs that are not still in the market.

UDEM	10
ITESM	17

The group with the least market participation is made up of scientific researchers. Many have developed projects or services that are disruptive technologies which introduce a very different package of attributes from mainstream goods and services. Disruptive technologies tend to be used and valued only in new markets or new applications; in fact, they generally make possible the emergence of new markets (Christensen, 1995). Disrupters can destroy the competencies of an industry leader by changing the industry's critical success factors to make the leader's competence obsolete by using new technology and other know-how to establish a superior value-creation process (Daveni, 1999).

The following table indicates the number of entrepreneurs with products or services already on the market.

Table 15. The product or service that you develop is already in the market and the public has access to it? * University Crosstabulation

			Univeristy		
			ITESM	UDEM	Total
The product or service that you develop is already in the market and the public has access to it?	Yes	Count	57	85	142
		% of Total	33.7%	50.3%	84.0%
	No	Count	17	10	27
		% of Total	10.1%	5.9%	16.0%
	Total	Count	74	95	169
		% of Total	43.8%	56.2%	100.0%

The next table shows the participants from the sample measuring market presence and education level. The table, levels of education, is represented by: 1 high school, 2 Bachelor, 3 Masters Degree and 4 PhD. As we can see, the highest number of respondents, 115 fell under category 2. The smallest number of respondents are ranked un category, indicating that just (6) had a doctoral education level. In the group with no market presence we can see that the highest number of participants is also under category 2 and that only one respondent has a PhD.

		Table 16. Education Level				
		High school	College	Master Degree	PhD Degree	Total
Market Presence	Count	8	115	13	6	142
	% of Total	4.7%	68.0%	7.7%	3.6%	84.0%
Without Market Presence	Count	1	19	6	1	27
	% of Total	.6%	11.2%	3.6%	.6%	16.0%
Total	Count	9	134	19	7	169
	% of Total	5.3%	79.3%	11.2%	4.1%	100.0%

The next table shows the proportion of respondents by university and gender. There were 49 men and 25 women from ITESM and 47 men and 48 women from UDEM.. The completed sample is made up of 96 men and 73 women, or a total of 169 entrepreneurs.

Table 17. University * Sex Crosstabulation

			Sex		
			Male	Female	Total
Univeristy	ITESM	Count	49	25	74
	UDEM	Count	47	48	95
	Total	Count	96	73	169

The next table represents the relationship between gender and market presence. As we see, there are 17 male entrepreneurs and 10 female entrepreneurs with no current market presence. There are a total of 79 men and 63 women in the complete sample.

Table 18. Sex The product or service that you develo pis available in the market in which the public has access to it? Crosstabulation

			The product or service that you develop is already in the market and the public has access to it?		
			Si	No	Total
Sex	1	Count	79	17	96
	2	Count	63	10	73
	Total	Count	142	27	169

Another relevant data for the sample description measured the ages of the entrepreneurs The range was between 17 and 74 years old. 96 of them were men and 73 women.

4.5 Data Analysis

Reliability of Scales

The Reliability was computed for all scales used in the research instrument.

Table 19. Scale	Number of items	Cronbach's alpha coefficient
Technological Knowledge Perception	Dimension 1	
New Products and Innovations Knowledge Perception	3	.8077
Technological Change Knowledge Perception	4	.2511
Uncertainty Technology Knowledge Perception	3	.6474
Market Knowledge Perception	Dimension 2	
Market Needs Knowledge Perception	3	.5901
Market Uncertainty Knowledge Perception	6	.3585
Market Segments Knowledge Perceptions	3	.7420
Competition Knowledge Perception	Dimension 3	
Number of Competitors in the Market Knowledge Perception	3	.7866
Competitive Volatility Knowledge Perception	4	.6464
Competitor's Differences Knowledge Perception	7	.7378

Each variable presents Cronbach's alpha coefficient. Performing this analysis separately by each variable, the Cronbach's alpha is low in some cases such as market uncertainty knowledge perception (.3585) and technological change knowledge perception (.2511). Note that it does not mean a low Cronbach's alpha is not an problem. These case just shows that, low Cronbach's alpha does not necessarily imply that the items do not measure one single construct. Low Cronbach's alpha, in this case, tells us that the proportion of shared variance is small, or alternatively, the proportion of error variance is large, had we combined the item scores to form a scale

score and measure the selected factor or dimension in this case. In other words, it is possible to correct measure, although a not so reliable one (Cortina, 1993).

The entire reliability scale was calculated by integrating all items of each variable and dimension. These integrated scale resulted in a very positive result according to the Cronbach's alpha coefficient, as is illustrated in the following table:

Reliability Coefficients of all the scale items

Table 20. RELIABILITY ANALYSIS-SCALE

Reliability Coefficients			
N of Cases = 169		N of Items = 45	
Alpha = .8973		Standardized item alpha=	.8981

This table shows the analysis for 45 items in 169 cases. The Cronbach's alpha coefficient was: Alpha = .8973

Here, the reliability is shown to be very high using all items because the alpha is .8973.

A reliability coefficient of .70 or higher is considered"acceptable" in most social science research situations) the reliability shown is acceptable.

According to Joseph Hair Jr (1999), the alfa Cronbach coefficient is the most used unit and only requires to be applied once. It indicates de general agreement of the inferior limit for this coefficient is 0.70 although it could decrease to 0.60 in exploration investigations, which is higher than 0.70

One interesting finding in this study was that the measure instrument constructed had a coefficient alpha of .89. Considered value for coefficient alpha are generally .7 and .8 range and exceeded (Nunnally', 1978). A review of other scales in the literature we found the following scales that have a lower alpha than the scale developed for this study.

Table 21. Scale	Coefficient alpha
Market Maven	0.785
Opinion Leadership	0.889
Consumer Assertiveness	0.71
Cognitive Innovativeness	0.77
Value Consciousness	0.82

Entrepreneur's knowledge perception scale

Entrepreneur's knowledge perception	**.897**

The entrepreneur's knowledge perception scale reported a coefficient alpha of .897 higher than market maven scale (.785) (Fieck and Price, 1986) and Opinion Leadership .889 (Childers, Terry L.,1986). The measure instrument integrates the three main important dimensions proposed for the entrepreneur's knowledge perception, in this case technology knowledge perception, market knowledge perception and competition knowledge perception.

As it was analyzed the independent variables proposed to be part of a three main dimensions of knowledge perception were reported with a high correlation. With this scale it is possible to perceive how knowledgeable are the entrepreneurs and in which areas they have strong o weak knowledge. This tool is the first step to identify more about the entrepreneur's profile and recognize their potentialities.

4.6 Statistical Analysis Techniques

Two statistical techniques were applied to this study these Hypothesis tests were used to compare differences in use of statistical methods, in this case Statistical Technique one was a factor analysis and the statistical technique two was Bivariate Correlation.

Statistical Technique one: Factor Analysis

Many statistical methods are used to study the relation between independent and dependent variables. For this study Factor analysis was selected; it is used to

study the patterns of relationship among variables, with the goal of discovering something about the nature of the independent variables that affect them, even though those independent variables were not measured directly. Thus answers obtained by factor analysis are necessarily more hypothetical and tentative than is true when independent variables are observed directly. The inferred independent variables are called factors.

4.7. Factor Analysis

The software used was the 16th version of SPSS. To begin the hypothesis verification process, the following dimensions were created. The three dimensions were grouped with their corresponding variables:

Dimension 1 called Technological Knowledge Perception was composed by the following independent variables: New Products and Innovations Knowledge Perception, Technological Change Knowledge Perception, and Uncertainty Technology Knowledge Perception.

Dimension 2 called Market Knowledge Perception was composed by the following independent variables: Market Needs Knowledge Perception, Market Uncertainty Knowledge Perception, and Market Segments Knowledge Perception.

And finally Dimension 3 called Competition Knowledge Perception was composed by the following independent variables Number of Competitors in the market Knowledge Perception, Competitive Volatility Knowledge Perception and Competitor's Differences Knowledge Perception.

In the SPSS menu the options transform, calculate variable and numerical expression were chosen and MEAN was typed (var1, var2...).

In the following we will present the analysis of factors with the objective of checking the hypothesis that we wish to prove with this dissertation

The factor analysis was done introducing the new dimensions to sum them up in three new dimensions. This analysis is useful to summarize a large number of variables as a whole in dimensions even smaller which are latent. Besides this analysis serves to verify the relations which have variables and to determine if the information can be concentrated in a reduced number of dimensions.

The factor analysis[1] was made to prove if the variables found in this investigation are correlated[2]; an analysis of main components[3] and varimax[4] rotation was included.

During the factor analysis the dimensions were identified or the component resulting from the analysis, in a rotated matrix the variables were identified with charged factors[5] equal or superior to 0.45, since it was the criteria established for the variable selection that are significant, part of the results of the factor analysis are shown in the following:

4.7.1 Correlation Analysis among variables

The table shows the correlations among the variables that were introduced in the analysis: Table 22.

	New Products	Tech Change	Uncertain Techno	Market Needs	Market Uncertain	Market Segments	Competitor Number	Competitor Volatility	Competitor Difference
New Products	1								
Tech Change	0.360 **	1							
Uncertain Techno	0.118	0.492 **	1						
Market Needs	0.266 **	0.232 **	-0.017	1					
Market Uncertain	0.062	0.199 **	0.341 **	0.278 **	1				
Market Segments	0.164 *	0.153 *	0.042	0.322 **	0.279 **	1			
Competitor Number	0.348 **	0.292 **	0.335 **	0.230 **	0.221 **	-0.003	1		
Competitor Volatility	0.362 **	0.402 **	0.345 **	0.407 **	0.421 **	0.170 *	0.470 **	1	
Competitor Difference	0.407 **	0.312 **	0.262 **	0.328 **	0.291 **	0.144 *	0.589 **	0.628 **	1

The correlations that are significant to 5% are indicated with * and those that are significant to 1% are shown with **

Table 22 summarized correlation matrix indicating which variables are significant to 5 and 1%.

In the factorial analysis the following analysis were done to verify the convenience of the use of a factor analysis, among them are: Bartlett's statistical test of spherical contrast, general analysis sufficiency and an analysis test of individual adaptation.

The following analysis:

4.7.2. General Sufficiency Analysis

Hair et al (1999) indicates that within the factor analysis the Measure of Adaptation of the General Sample[6] $MASg$ is used since it is a global measure that indicates how appropriate the possible solution would be found in the factor analysis and the ideal would be: $MASg \geq 0.5$ and the larger this value is, the solution found would be stronger.

The results of the technique found the factor analysis executed in the SPSS is found in figure (first image) which was shown before.

Table 23.

KMO y prueba de Bartlett

Measure of Adaptation Simple of K-M-O Kaiser-Meyer-Olkin.		.763
Bartlett Test	Chi-square	419.860
	gl	36
	Sig.	.000

Figure Measure of Adaptation Simple of K-M-O

With the value $MASg = 0.763$ being larger than 0.7, this is a sample in which the result found is above regular, therefore it could be stated that the solution that would be found in the factor analysis is appropriate.

4.7.3 Bartlett's sphericity test

Hair et al (1999) indicates that Bartlett's sphericity test[7] is useful to prove the degree of relationship existing among variables, therefore the following analysis to the hypothesis indicates the following:

$H_0 : R = I$ Indicates that the correlation matrix is an identity matrix and there is no correlation between the variables, therefore the factor analysis should not be performed.

$H_1 : R \neq I$ Indicates that the correlation matrix is not an identity matrix and that there is correlation among variables, therefore a factor analysis should e performed.

In which:

$R =$ Is the Correlation Matrix

$I =$ Is the Identity Matrix

The results the technique had in the SPSS are found in the following illustration which was shown before:

Table 24.

KMO and Bartlett Test

Measure of Adaptation Simple of K-M-O Kaiser-Meyer-Olkin.		.763
Bartlett Test	Chi-square	419.860
	gl	36
	Sig.	.000

Figure Table with the results of the Bartlett test

Before performing this test it is important to establish a trust level[8] to know is the hypothesis is rejected or null, therefore for the test performed in this thesis a trust level of 95% was established, in which the level of relevancy[9] is 5%. Where the test is found the following or the p factor of the Bartlett's sphericity test which is 0.000.

Therefore when this value is compared to the level of significance, it should be remembered that

If the p-value < a H_0 is rejected

Comparing if there is

Since 0.000 < 0.05 H_0 is rejected

Since H_0 is rejected then the results that are being analyzed indicate that since the correlation matrix is not an identity matrix, a factor analysis should be used.

4.7.4. Individual Adaptation Analysis

Table 25. Anti-image Matrixes

Matrices anti-imagen

		New Products	Tech Change	Uncertain Techno	Market Needs	Market Uncertain	Market Segments	Competitor Number	Competitor Volatility	Competitor Difference
Covarianza anti-imag	New Products	.720	-.161	.066	-.045	.096	-.082	-.091	-.054	-.092
	Tech Change	-.161	.624	-.271	-.090	.053	-.043	.007	-.071	.005
	Uncertain Techno	.066	-.271	.608	.171	-.170	.013	-.113	-.057	.007
	Market Needs	-.045	-.090	.171	.698	-.099	-.174	-.045	-.122	-.025
	Market Uncertain	.096	.053	-.170	-.099	.700	-.167	-.006	-.136	-.017
	Market Segments	-.082	-.043	.013	-.174	-.167	.823	.107	.025	-.034
	Competitor Number	-.091	.007	-.113	-.045	-.006	.107	.584	-.039	-.207
	Competitor Volatilit	-.054	-.071	-.057	-.122	-.136	.025	-.039	.471	-.185
	Competitor Differen	-.092	.005	.007	-.025	-.017	-.034	-.207	-.185	.474
Correlación anti-imag	New Products	.811[a]	-.241	.089	-.063	.135	-.107	-.141	-.092	-.158
	Tech Change	-.241	.737[a]	-.440	-.137	.080	-.060	.012	-.131	.010
	Uncertain Techno	.099	-.440	.654[a]	.262	-.261	.019	-.190	-.106	.013
	Market Needs	-.063	-.137	.262	.748[a]	-.141	-.229	-.070	-.213	-.043
	Market Uncertain	.135	.080	-.261	-.141	.742[a]	-.220	-.010	-.236	-.029
	Market Segments	-.107	-.060	.019	-.229	-.220	.662[a]	.154	.040	-.054
	Competitor Number	-.141	.012	-.190	-.070	-.010	.154	.801[a]	-.074	-.393
	Competitor Volatilit	-.092	-.131	-.106	-.213	-.236	.040	-.074	.825[a]	-.390
	Competitor Differen	-.158	.010	.013	-.043	-.029	-.054	-.393	-.390	.792[a]

a. Medida de adecuación muestral

Hair et al (1999) states that with the correlation matrix an anti-image matrix[10] can be found. In diagonal of the said matrix is found in the Individual Adaptation Measure Sample of each variable, or the $MASi$, the values should be $MASi \geq 0.5$, the results that the SPSS produces are the following:

Table 25 Anti-Image Matrixes, in the correlation matrix
the MASi values are shown, which are indicated by
the SPSS with a superindex "a"

The diagonal of the anti-image correlation matrix shows that the lowest of the values is $MASi = 0.634$, for the variable "Uncertain Techno" this indicates that all variables must remain within the factor analysis.

4.7.5. Variations collected by the analysis

Since it is necessary to perform a factor analysis, the next step is to determine the criteria to identify the number of components or factors to consider finding a final logical solution.

Using the apriori, which establishes that the number of factors or components to leave as a final solution is proposed by the investigator, the model proposed for this thesis is 3; since the following three dimensions are being suggested:

- Technological knowledge perception,
- Market knowledge perception
- Competition knowledge perception.

Using the latent root criteria, which establishes that all the eigenvalues or proper values[11] should be greater than 1, the following table shows that the first 3 components or factors should be kept. These manage to explain the 64.293% of the total variation of the 9 variables found in the analysis.

Table 26 Analysis of the explained total variation

Varianza total explicada

	Autovalores iniciales			Sumas de las saturaciones al cuadrado de la extracción			Suma de las saturaciones al cuadrado de la rotación		
Componente	Total	% de la varianza	% acumulado	Total	% de la varianza	% acumulado	Total	% de la varianza	% acumulado
1	3.402	37.803	37.803	3.402	37.803	37.803	2.435	27.060	27.060
2	1.269	14.095	51.898	1.269	14.095	51.898	1.795	19.946	47.006
3	1.116	12.395	64.293	1.116	12.395	64.293	1.556	17.287	64.293
4	.907	10.079	74.372						
5	.636	7.063	81.435						
6	.530	5.893	87.328						
7	.468	5.195	92.523						
8	.362	4.020	96.543						
9	.311	3.457	100.000						

Método de extracción: Análisis de Componentes principales.

The criteria for the accumulated variation percentage establishes that the final solution lies between 60 and 95% of the collected variation, if that criteria is used the range of factors is between 3 and 7 factors or components, as shown in the following table:

Table 27. Explanation of the total variation analysis

Varianza total explicada

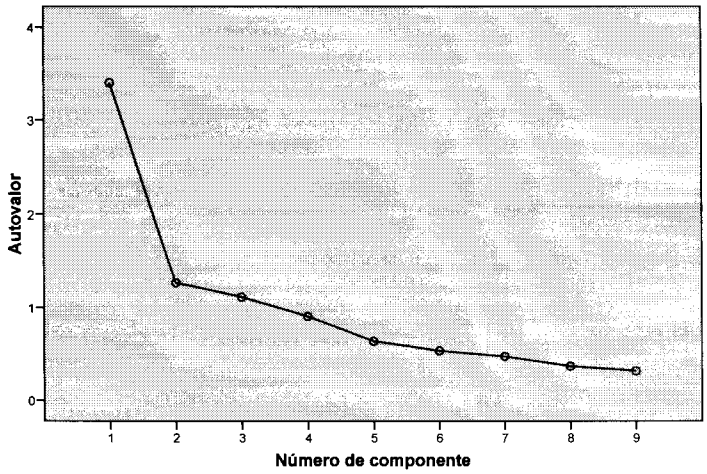
Componente	Autovalores iniciales			Sumas de las saturaciones al cuadrado de la extracción			Suma de las saturaciones al cuadrado de la rotación		
	Total	% de la varianza	% acumulado	Total	% de la varianza	% acumulado	Total	% de la varianza	% acumulado
1	3.402	37.803	37.803	3.402	37.803	37.803	2.435	27.060	27.060
2	1.269	14.095	51.898	1.269	14.095	51.898	1.795	19.946	47.006
3	1.116	12.395	64.293	1.116	12.395	64.293	1.556	17.287	64.293
4	.907	10.079	74.372						
5	.636	7.063	81.435						
6	.530	5.893	87.328						
7	.468	5.195	92.523						
8	.362	4.020	96.543						
9	.311	3.457	100.000						

Método de extracción: Análisis de Componentes principales.

The "Scree Test" criteria or sedimentation criteria establishes that the final solution is found in the contrast fall criteria, as shown in the following illustration. The dotted line indicates the solution factors between 2 and 5.

Table 28. Sedimentation Graph

Gráfico de sedimentación



The solution that was determined as final were 3 factors or components to prove the new dimensions proposed in this thesis.

4.7.6 Communalities

The following tables shows the communalities[12]

Table 29. Communalities

Comunalidades

	Inicial	Extracción
New Products	1.000	.552
Tech Change	1.000	.484
Uncertain Techno	1.000	.815
Market Needs	1.000	.646
Market Uncertain	1.000	.647
Market Segments	1.000	.667
Competitor Number	1.000	.635
Competitor Volatility	1.000	.659
Competitor Difference	1.000	.681

Método de extracción: Análisis de Componentes principales.

Communalities that explain the variables larger than 60%

According to the communalities, the variable that was most able to be explained was "Uncertain Tech", which was able to represent 81.5%. This is outstanding, in this thesis it was determined to leave as the highest communal value as 0.45. The variable that was unable to be explained was "Tech Change", but it is above the established limit of this thesis, therefore all the variables should be included in the analysis.

4.7.7. Rotated Matrix

The previous tests and criteria determined that the factor analysis was appropriate, that all the variables should be included, and that most of the variables show a correlation with the others. The results of the factor analysis were summarized in the following table, which shall be analyzed:

Table 30

Variables	Componente 1 27.06%	2 19.95%	3 17.29%	Coeficiente Alpha de Cronbach
Competitor Difference	0.775			0.764
New Products	0.734			
Competitor Number	0.730			
Competitor Volatility	0.638			
Uncertain Techno		0.890		0.610
Market Uncertain		0.590	0.546	
Tech Change		0.573		
Market Segments			0.815	0.477
Market Needs			0.667	
Método de extracción: Análisis de componentes principales.				
Método de rotación: Normalización Varimax con Kaiser.				
KMO And Bartlett Test MASg=	0.763			
Bartlett's Sphericity Test (Sig.)=	0.000			
Determinant=	0.077			

Figure Summary of the Factorial Analysis and the Investigation Reliability Analysis

4.7.8. New dimension analysis

The questions that were grouped in each factor measure the significant relationship that each variable has with each factor. The figure above shows, the first factor (1) managed to gather 27.06% of all of the variables; the second factor, 19.95% and the third 17.29%.

To verify the reliability or internal consistency among the variables in a additive scale, in other words the individual items should measure the same

constructions so they could be highly correlated. An alpha Cronbach[13] was used, which is found in the reliability analysis routine in SPSS. The alpha Cronbach coefficient was developed by J. Lee Cronbach and was only necessary for one use of the questionnaire. Said coefficient takes values that lie between 0 and 1, where 0 represents the null reliability and 1 represents maximum reliability.

The variables that show each factor were the ones taken with a significant charge above 0.45. The first factor or the new dimension could be tagged as "Competition knowledge perception" were the variables "Competitor differences knowledge perception", "New products and innovations knowledge perception," "Competitor number knowledge perception" and "Competitor volatility knowledge perception" had an Alpha Cronbach of 0.764[14]. "Competitor difference knowledge perception" is the variable with the highest significant relation (0.775) between it and the new dimension. The variable with the lowest significant relation (0.638) was "Competitor volatility knowledge perception".

The second factor or new dimension could be tagged as "Technological knowledge perception" in which the variables "Uncertainty technology knowledge

perception", "Market uncertainty knowledge perception"[15] and "Technological change knowledge perception" have an Alpha Cronbach of 0.610[16]. "Uncertainity technology knowledge perception" is the variable with the highest significant relation (0.890) between it and the new dimension; "Technological change knowledge perception" has the lowest significant relation (0.573). Finally the third factor or new dimension "Market knowledge perception", where the variables "Market segments knowledge perception" and "Market needs knowledge perception" are found with an Alpha Cronbach of 0.477[17] . "Market segments knowledge perception" is the variable with the highest significant relation (0.815) between it and the new dimension and "Market needs knowledge perception" with the lowest significant relation (0.667).

The following chart shows the complete rotation matrix

Table 31. Rotated Component Matrix

Matriz de componentes rotados[a]

	Componente		
	1	2	3
Competitor Difference	.775	.240	.152
New Products	.734	-.053	.103
Competitor Number	.730	.306	-.095
Competitor Volatility	.638	.402	.300
Uncertain Techno	.123	.890	-.094
Market Uncertain	.029	.590	.546
Tech Change	.385	.573	.087
Market Segments	-.013	.056	.815
Market Needs	.439	-.092	.667

Método de extracción: Análisis de componentes principales.
Método de rotación: Normalización Varimax con Kaiser.

a. La rotación ha convergido en 6 iteraciones.

4.7.9 Factor Analysis Hypothesis Test

Factor Analysis Hypothesis Test description:

Hypothesis 1: There is a positive correlation between new products and innovations, knowledge perception, and technological knowledge perception.

This hypothesis is rejected because the correlation of the new products and innovations knowledge perception variable is negative with the dimension of technological knowledge perception (-.053). This variable tends to be grouped with the dimension of competition knowledge perception with a correlation of (0.734).

The theoretical explanation for this phenomenon is explained by the following authors, the understanding competence as a series of processes stems from several studies. Day (1994, p. 38) defines competence as "complex bundles of skills and collective learning, exercised through organizational processes." In their study of the core competencies of the corporation, Prahalad and Hamel (1990) identify a firm's

processes of market interaction and functional integration as core organizational competencies. Furthermore, in an investigation of key issues in product innovation, Drucker (1985) traces a firm's competence in new product development to its processes of generating knowledge about customers and competitors and integrating such knowledge with technology. The competence knowledge perception integrates the new product and innovation knowledge in this case as a part of the concept definition it is necessary to the knowledger to be informed about the new products an innovations of the competence.

Hypothesis 2: There is a positive correlation between technological change knowledge perception and technological knowledge perception.

In this case three is a positive correlation between the variable of technological change knowledge perception and the dimension of technological knowledge perception (0.573). This hypothesis is accepted.

Hypothesis 3: There is a positive correlation between uncertainty knowledge perception and technological knowledge perception.

The correlation between uncertainty knowledge perception and technological knowledge perception is positive (0.590) this hypothesis is accepted.

Hypothesis 4: There is a positive correlation between market needs knowledge perception and market knowledge perception.

A positive correlation is perceived between market needs knowledge perception variable and the dimension of Market knowledge perception this correlation is (0.667). This hypothesis is accepted.

Hypothesis 5: There is a positive correlation between market uncertainty knowledge perception and market knowledge perception.

In this case the variable of market uncertainty knowledge perception tends to be grouped in two factors in this case can be classify in two dimension proposed: market knowledge perception dimension (0.546), and in the technological knowledge perception (0.590). The market uncertainty concept is related with technology in many studies.

The decision on which technology to adopt will impact on the market capability. Technology uncertainty often causes new product development uncertainty. Magnusson and Berggren (2001) argued that the application of new technology to comply with environmental demands may change the product development process. Their research shows that technology uncertainty drives beyond the prevailing lean product development approach. New product development is often linked to negotiating for manufacturing resources expansion or new resources investment based on demand and market prediction for the new product after finalizing the design. New product development uncertainty can be referred to as unpredictable events during the process of market research, product design and

product prototyping. Market Uncertainty variable can be grouped in this two dimensions as a conceptual definition market uncertainty belongs to the market knowledge perception to know about the market is to know about it changes and the uncertainty of new products. But also market uncertainty can be part of the technological knowledge perception dimension because to know about technology implies the knowledge about the high levels of technology uncertainty represents.

Hypothesis 6: There is a positive correlation between market segments knowledge perception and market knowledge perception.

This hypothesis is accepted because there is a positive correlation between market segments knowledge and the market knowledge perception dimension (0.815).

Hypothesis 7: There is a positive correlation between the perception of the number of competitors in the market and competition knowledge perception.

The correlation between the perception of the number of competitors in the market and the competition knowledge perception dimension is positive with (0.730) the hypothesis is accepted.

Hypothesis 8: There is a positive correlation between the competitive volatility, knowledge perception, and competition knowledge perception.

The correlation between competitive volatility knowledge perception and competition knowledge perception is positive with (0.638)

Hypothesis 9: There is a positive correlation between competitor's differences knowledge perception and competition knowledge perception.

A positive correlation is detected between competitor's differences knowledge perception and the dimension of competition knowledge perception (0.775).

The following Hypothesis H10 to H14had a positive correlation between the constructs as we can see in the following table:

Factor 1 corresponds to Competition knowledge perception dimension, Factor 2 corresponds to Technological Knowledge Perception and the factor 3 corresponds to the market knowledge perception dimension.

Table 32. Market Knowledge Perception Dimension

	Componente			Coeficiente
Variables	1 27.06%	2 19.95%	3 17.29%	Alpha de Cronbach
Competitor Difference	0.775			0.764
New Products	0.734			
Competitor Number	0.730			
Competitor Volatility	0.638			
Uncertain Techno		0.890		0.610
Market Uncertain		0.590	0.546	
Tech Change		0.573		
Market Segments			0.815	0.477
Market Needs			0.667	
Método de extracción: Análisis de componentes principales.				
Método de rotación: Normalización Varimax con Kaiser.				
KMO And Bartlett Test MASg=	0.763			
Bartlett´s Sphericity Test (Sig.)=	0.000			
Determinant=	0.077			

Hypothesis 10: There is a positive correlation between technological knowledge perception construct and the market knowledge perception construct.

The correlation between this two dimensions is positive and higher than 0.5

Hypothesis 11: There is a positive correlation between technological knowledge perception construct and the competition knowledge perception construct.

The correlation between this two dimensions is positive and higher than 0.5

Hypothesis 12: There is a positive correlation between market knowledge perception construct and the competition knowledge perception construct.

The correlation between this two dimensions is positive and higher than 0.5

The correlation between this two dimensions is positive and higher than 0.5

These hypotheses are accepted because the higher values indicating the correlation. The literature justification for this case is mentioned by Joseph Hair Jr (1999) status that a factorial charge or charge of factors is the correlation between original variables and the factors. It is the key to understand the nature of a specific factor. Said charges squared indicate the percentage of the variable variance that was taken by the factor, pg 769. It also establishes if the sample size is 150, the significant factorial charge of 0.45 and 200 the charge would be 0.40, pg 100.

To answer Hypothesis 13 to 15 the methods of extraction un one principal component was applied in this case this component correspond to the dependent variable called Market presence.

Table 33. Component Matrix

Component Matrix(a)

	Component
	1
Technological Knowledge Perception	0.808140692
Competition Knowledge Perception	0.796622081
Market Knowledge Perception	0.724196937

Método de extracción: Análisis de componentes principales.

1 extracted component

Matriz de componentes

	Componente
	1
Technological Knowledge Perception	.808
Competition Knowledge Perception	.797
Market Knowledge Perception	.724

Método de extracción: Análisis de componentes principales.

a. 1 componentes extraídos

Hypothesis 13: There is a positive correlation between the dimension of technological knowledge perception, and the market presence.

A positive correlation was detected between the dimension of technological knowledge perception and the market presence this correlation was (.808)

Hypothesis 14: There is a positive correlation between the dimension of market knowledge perception, and the market presence.

A positive correlation was detected between the dimension of market knowledge perception and the market presence this correlation was (.724)

Hypothesis 15: There is a positive correlation between the dimension of competition knowledge perception, and the market presence.

A positive correlation was detected between the dimension of competition knowledge perception and the market presence this correlation was (.797)

Hypothesis H16 was answered with a T-Test technique.

Hypothesis 16: There is no difference between the groups with products or services launched in the market and the ones that do not.

To answer this hypothesis a T-TEST was applied. Compared the performance of the participants in group A with that of participants in group B. The data for this study was parametric and each sample was an independent groups design. The T-Test analysis is presented in the corresponding table (annexes). There was no significant difference between the conditions for each group. All variables from the study reported a Levene's test for equality variables with a significance ($p > 0.05$), indicating an equality of variance. With these results we can be sure both samples have a high degree of equality. The performance of this test was only necessary, as we mentioned at the start of this chapter, because the sample was composed of groups of entrepreneurs from two universities. As we can see in the T-Test table (annexes) both groups have equality between them.

CHAPTER 5

CONCLUSION AND FUTURE RESEARCH

5.1.2. Hypothesis findings

Our first three hypothesis deal with the probable positive relationships among: new products and innovation knowledge perception, technological knowledge perception and uncertainty technology knowledge perception with the dimension of technological knowledge perception.

With the Factor Analysis technique we found that the variable called new products an innovation knowledge perception had a negative correlation with the dimension of technological knowledge perception.
This hypothesis (H1) was the only one rejected in the entire study using a different statistical technique.

The rest of the hypotheses tested in this study were accepted in both statistical techniques reported positive correlation between the variables and their corresponding dimension.

The second dimension market knowledge perception also reported a positive correlation with the variables proposed to measure this construct. These variables were: market needs knowledge perception, market uncertainty knowledge perception and market segments knowledge perception.

Hypothesis seven through nine suggests that there is a positive relationship between number of competitors in the market competitive volatility, competitors differences knowledge perception and the construct of competition knowledge perception.

To estimate the relationships between the three main variables a correlation test was also performed. The analysis generated positives correlation between the dimensions technological knowledge perception, market knowledge perception and competitor's knowledge perception.

In order to confirm the last three hypotheses related with the dependent variable Market presence a discriminant analysis was performed. The real purpose of this procedure was to produce an empirically technique which could expose the main dimension with higher significance which could predict entrepreneurs market

presence and the more relevant knowledge in this case the result was technological knowledge perception.

5.1.3. Conclusion

We began this dissertation with the argument that knowledge is often the most important strategic resource within organizations (Grant, 1996). Yet knowledge usually resides with individuals (Nonaka 1994). This implies that knowledge integration is a fundamental process by which firms gain the benefits of knowledge to create competitive advantage (Grant 1996).

Regarding the proposed model in this dissertation, the results perceived are quite interesting. When the statistical technique factor analysis was applied, the variable "new products and innovations knowledge perception" had a tendency to be part of the "competitors knowledge perception" dimension. Another variable that became part of another dimension was "market uncertainty knowledge perception" which tended to group with the "technological knowledge perception" dimension. With this information, it can be concluded that the original model had a tenancy to chance the original grouping of three variables to measure three dimensions would

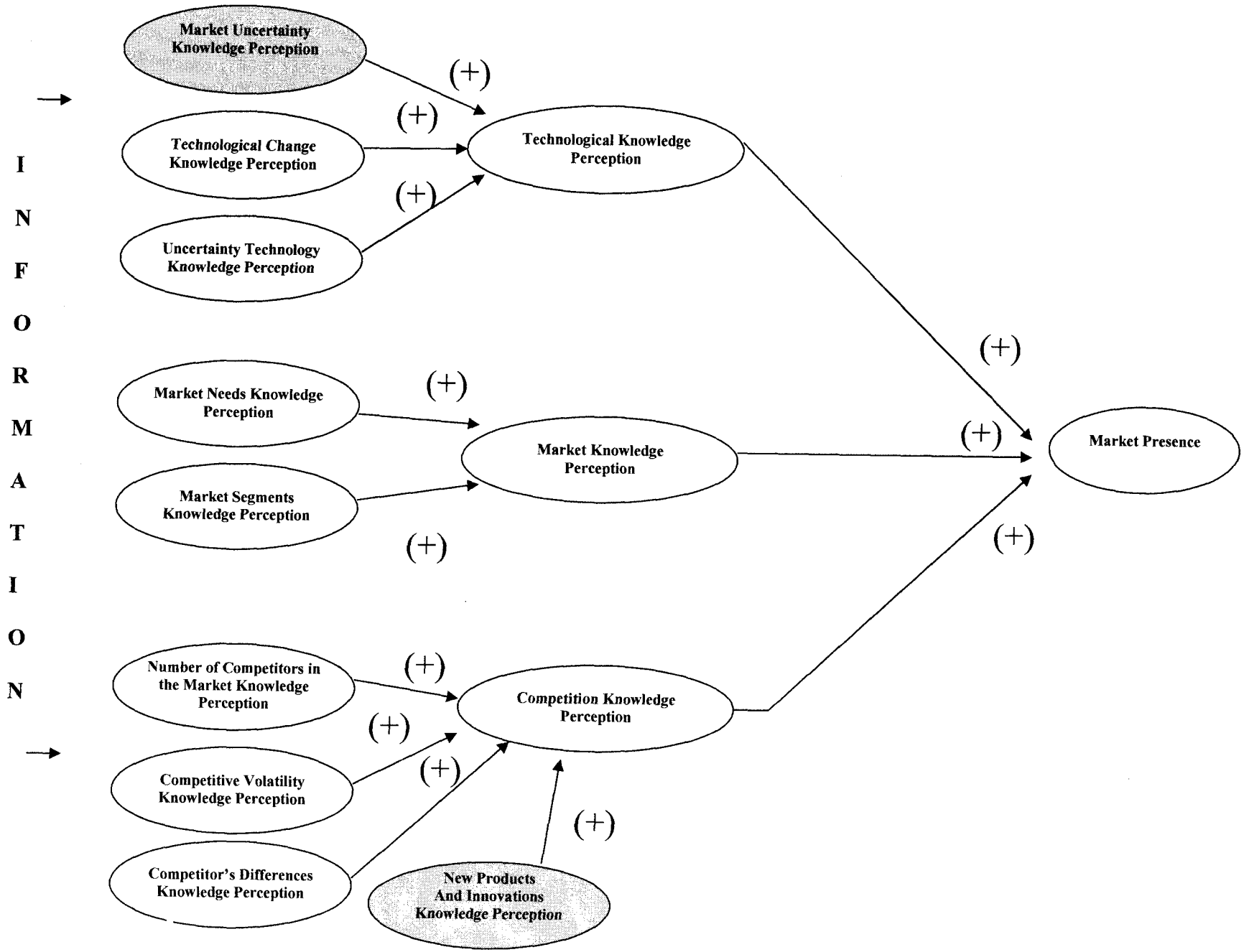
now be modified to the manner shown in figure 3 (the new entrepreneur's knowledge perception model). The logic in the literature and reality is that an entrepreneur is the one who knows about new technology for his products and knows to a certain extent the uncertainty that new products cause, this being the reason of the coming and going of participants in the industry (Allen.2004).

The variable "new products and innovation knowledge perception" is of vital importance to all those entrepreneurs that pretend to know the competition and logically after knowing it or being exposed to the information, carrying out a competence analysis is logical to know the market's new products and innovations.

There is a long period of time before a new technology appears in the market place in the form of products, processes, or services. To be effective, innovation demands not one kind of knowledge but many. Consider one of the most potent knowledge based innovations: technology.

Managers have known for a long time that knowledge matters, but they have always believed that innovation in new products or services need not be discontinuous in nature, as economists such as Shumpeter have suggested. Rather he holds that innovation can in fact be programmed to occur (Shumpeter 1964). The

ENTREPRENEUR'S KNOWLEDGE PERCEPTION MODEL



innovation of product or services offers strong opportunities. Changes in the numbers of people, their age distribution, education, occupations, and geographic location are among the most rewarding and least risky of entrepreneurial pursuits. Another important issue of this statistical technique was the confirmation that the model has a probabilistic utility in which the discriminant equation determines an entrepreneur's absence or presence in the market. The technological knowledge perception value, obtained from the entrepreneur's survey results, will be substitutive in the knowledge perception entrepreneur's equation.

Scale Reduction

The following analysis is part of the managerial application that will be applied in the technology chair, in which the proposed measurement instrument that will be applied to evaluate the knowledge in the technology, market and competition dimensions of the entrepreneurs that are in this subject. The following is a proposal of a scale reduction for a better effectiveness of the mentioned entrepreneurs' sample. This document will be valid for future scientific studies that include an Alpha Cronbach, pg 897. As a primary result of this statistical technique we obtained a sorter and validated scale in order to exanimate the knowledge perception in future entrepreneurs. A factor analysis was performed and shows the following results: The Following table represents the factor loadings values after the rotation is carried out.

Table 35. Rotated Component Matrix			
Component	Component		
The product or service you develop is already found in the market, that the public has access to it?	1.000	2.000	3.000
I know much about this product/service's market.	0.819	0.110	0.085
I know more than others about this product and its category.	0.761	0.133	0.034
People consider me as someone that knows much about this product and that related to its market.	0.740	0.096	0.116
I know much about the technology related to this product/service.	0.736	0.040	-0.042
.I like to look for information related to the technological aspects of this new product.	0.730	0.063	0.121
People frequently ask me about the technological aspects of this new product instead of asking others.	0.630	0.122	0.080
I definitely know more about the technological aspects of this new product than anyone else.	0.626	0.372	-0.030
This new product involves a great deal of technological knowledge.	0.624	0.430	-0.022
I know much about this product/service's industry.	0.621	0.185	-0.076
Compared to others, I know much more about this product category	0.608	0.013	0.215
I consider myself as someone that knows about this product's category.	0.561	0.295	0.241
Technology in this product category changes quickly.	0.552	0.280	0.033
I know about the latest technological changes in this product's category that it has had recently.	-0.308	0.191	0.039
he technological development of this category has been few.	-0.240	0.121	-0.172
The technological changes in this product's category have a rapid evolution.	0.270	0.668	0.153
The technological changes in this product's category are unpredictable.	0.177	0.639	0.210
Buying this product implies the risk of buying a product that soon will be obsolete.	0.105	0.629	0.248
This product's technology has a high degree of complex investigation and development.	0.115	0.612	-0.020
This product's market has grown quickly.	0.238	0.608	0.051
There are a great number of potential clients in this product category.	0.134	0.607	0.255
The preferences and necessities related to this product change slowly.	0.198	0.596	0.303
This product category has a volatile environment	0.156	0.591	0.353
Most people that look for this product fear or doubt when buying it.	0.087	0.520	0.373
The product category tendencies are easy to monitor.	0.132	0.515	0.072

The industry of this product is stable.	0.123	0.493	-0.151
This product has an unpredictable demand.	-0.223	0.468	-0.085
Potential customers of this type of product have similar traits and characteristics.	0.246	0.433	0.384
Potencial clientes of this product share the same type of needs that makes them buy.	0.222	0.397	0.371
Most people that buy this product look for the same information before buying it.	0.119	0.383	-0.015
I know my majority of needs that the clients of this kind of product have.	-0.030	0.356	-0.265
If someone asks me about the product deficiencies when a customer uses it, I could mention more than one.	-0.053	0.338	-0.039
I can easily mention the improvements requested by the product's clients.	0.026	0.321	-0.042
I know different competitors that participate in the market of this product's category.	0.003	0.304	0.140
I know which is the best option in relation to the market participants of this product category.	-0.021	0.298	-0.031
I know well the success and failure of all the competitors that participate in this market category.	0.053	-0.046	0.758
I know better than anyone which competitor is the strongest in the market for this product category.	0.343	-0.047	0.640
I know which of these competitors has more customers and followers.	0.379	-0.008	0.568
One of the competitors of this category is my favorite.	-0.096	-0.080	0.561
I know well which competitor has the best prices for its clients	0.110	-0.079	0.552
I know all of the competitors that participate in this product category.	0.286	0.035	0.545
I can mention the number of participants by brand.	-0.139	0.140	0.537
.I know the brands in this product category and they are the ones named as followed.	-0.100	0.185	0.528
I know what competitors offer its clients in this product category.	0.057	0.124	0.468
Many people ask me about the changes in the competition horizon for this product category.	0.237	0.306	0.429
The competition in this product's area can be described as volatile	-0.238	0.275	0.425
	Rotation converged in 5 iterations.		

Factor Loadings

The data was analyzed by means a principal component analysis, with varimax rotation. The factor Analysis was tested in this case three factors the ones proposed for the model. Each one corresponds to each one of the dimensions. The various indicators of factorability were good, and the residuals indicate that the solution was a good, and the residuals indicate that the solution was a good one. Three components with an eigenvalue of greater than 1.0 were found; the screen plot also indicated three components. The components can be thought of as representing liking for the three main dimensions mentioned in the principal model.

As we can see in the table below the factor loading are distributed in each component most of the variable concordat with the belonging case of factor in this analysis of the dimension proposed. Dimension one Technological Knowledge Perception loads all the independent variables proposed. The variable exposed with the items belonging to Uncertainty Technology Knowledge Perceptions presents the higher loadings at the third component. The items corresponding to competiton and market knowledge perception are both in factor 2, the items which corresponds to technological knowledge perception are distributed in facto1 and 3. As we can see there is one dimension have a strong position to be absorbed in this case the dimensions that are grouped in the factor 2 are market knowledge perception and

competition knowledge perception.

The technological changes in this product's category have a rapid evolution.	0.285	0.041	0.539
The technological changes in this product's category are unpredictable.	-0.095	-0.079	0.558
Buying this product implies the risk of buying a product that soon will be obsolete.	0.059	-0.048	0.762
This product's technology has a high degree of complex investigation and development.	0.348	-0.047	0.642

For the second component we had just 2 cases of items that were stronger until the third component not the second one.

Most people that look for this product fear or doubt buying it	0.110	-0.077	0.548
This product has an unpredictable demand.	0.054	0.128	0.463

The third component which corresponds to the Competition Knowledge Perception shows more loadings at the second component than the third.

I know different competitors that participate in the market of this product's category.	0.229	0.615	0.043
I know which is the best option in relation to the market participants of this product category.	0.265	0.672	0.149
I know well the success and failure of all the competitors that participate in this market category.	0.194	0.598	0.301
I know better than anyone which competitor is the strongest in the market for this product category.	0.154	0.593	0.353
I know which of these competitors has more customers and followers.	0.129	0.610	0.250
One of the competitors of this category is my favorite.	-0.234	0.268	0.432

I know well which competitor has the best prices for its clients.	0.083	0.523	0.370
I know all of the competitors that participate in this product category.	0.247	0.432	0.386
I can mention the number of participants by brand.	0.220	0.399	0.369
I know what competitors offer its clients in this product category.	0.171	0.643	0.206
I know tools that competitors use in this category to compete in the market.	0.102	0.630	0.248
Many people ask me about the changes in the competition horizon for this product category.	0.241	0.303	0.434
The competition in this product's area can be described as volatile.	-0.100	0.185	0.527

As we can see in the first test there was a strong tendency to the item factor loadings to be part just of 2 factors. A second Factor Analysis was tested this time selecting just 2 Factors instead than 3. The results were better in significance and the factor grouping was a tendency to form 2 factors.

Table 36. Rotated Component Matrix	Factor	Factor2
	Component	
	1.000	2.000
I know alot about this product's market.	0.632	0.056
I know more than others about this product and its category.	0.736	-0.052
People consider me as someone that knows much about this new product and that related to the market.	0.827	0.071
I know much about the technology related to this product	0.735	0.060
I like to look for information related to the technological aspects of this new product	0.639	0.093
People frequently ask me about the technological aspects of this new product instead of asking others	0.748	0.084
I definitely know more about the technological aspects of this new products than anyone else	0.770	0.065
This new product involves a great deal of technological knowledge	0.612	0.083
I know much about this product	0.574	0.202
Compared to others, I know much more about this product category	0.657	0.287
I consider myself as someone that knows about this product's category	0.654	0.235
Technology in this product category changes quickly	0.391	0.287
I know about the latest technological changes in this product's category that it has had recently	0.589	0.332
The technological development of this category has been few	-0.233	0.020
The technological changes in this product's category have a rapid evolution	0.301	0.317
The technological changes in this product's category are unpredictable	-0.089	0.263
Buying this product implies the risk of buying a product that soon will be obsolete	0.067	0.392
This product's technology has a high degree of complex investigation and development	0.353	0.299
This product's market has grown quickly	0.150	0.294
There are a great number of potential clients in this product category	0.160	0.306
The preferences and necessities related to this product change slowly	-0.289	0.203
This product category has a volatile environment	-0.113	0.433
Most people that look for this product fear or doubt buying it	0.116	0.242
The product category tendencies are easy to monitor	-0.185	0.348
The industry of this product is stable	-0.007	0.141
This product has an unpredictable demand	0.078	0.364
Potential customers of this type of product have similar traits and characteristics	-0.026	0.258
Potential clients of this product share the same type of needs that makes them buy	0.052	0.236
Most people that buy this product look for the same information before buying it	0.032	0.328
I know most of the need that customers have for this type of	0.165	0.479

product/service.		
If someone asks me about the product deficiencies when a customer uses it, I could mention more than one	0.003	0.227
Puedo mencionar fácilmente qué mejoras piden los clientes del producto/servicio.	0.176	0.450
I know different competitors that participate in the market of this product's category	0.289	0.506
I know which is the best option in relation to the market participants of this product category	0.329	0.610
I know well the success and failure of all the competitors that participate in this market category	0.254	0.643
I know better than anyone which competitor is the strongest in the market for this product category	0.214	0.672
I know which of these competitors has more customers and followers	0.191	0.630
One of the competitors of this category is my favorite	-0.204	0.487
I know well which competitor has the best prices for its clients	0.139	0.631
I know all of the competitors that participate in this product category.	0.291	0.553
I can mention the number of participants by brand	0.264	0.518
I know what competitors offer its clients in this product category	0.235	0.628
I know tools that competitors use in this category to compete in the market	0.163	0.647
Many people ask me about the changes in the competition horizon for this product category	0.273	0.475
The competition in this product's area can be described as volatile	-0.071	0.461
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

As a result of this test we can summary that the model proposed will be reduced to two dimensions instead of three. These dimensions will be:

Technology Knowledge Perception Dimension 1

I know a lot about this product's market.	0.632	0.056
I know more than others about this product and its category	0.736	-0.052
People consider me as someone that knows much about this new product and that related to the market	0.827	0.071
I know much about the technology related to this product	0.735	0.060
I like to look for information related to the technological aspects of this new product	0.639	0.093
People frequently ask me about the technological aspects of this new product instead of asking others	0.748	0.084
I definitely know more about the technological aspects of this new products than anyone else	0.770	0.065
This new product involves a great deal of technological knowledge	0.612	0.083
I know much about this product	0.574	0.202

Compared to others, I know much more about this product category	0.657	0.287
I consider myself as someone that knows about this product's category	0.654	0.235
Technology in this product category changes quickly	0.391	0.287
I know about the latest technological changes in this product's category that it has had recently	0.589	0.332
This product's technology has a high degree of complex investigation and development	0.353	0.299

The Dimensions with less strength in his case the dimensions called Market Knowledge Perception Dimension 2 and competition knowledge perception both have a the tendency to be eliminated or has a strong tendency to be absorbed to the second dimension. After the last Factor Analysis Test we can see the performance of each item. The items which belong to this dimension will be:

The items that in the first model were part of the Technology Knowledge Perception:

The technological development of this category has been few	-0.233	0.020
The technological changes in this product's category have a rapid evolution	0.301	0.317
The technological changes in this product's category are unpredictable	-0.089	0.263
Buying this product implies the risk of buying a product that soon will be obsolete	0.067	0.392

As we can see this question involves a) the technology performance in the industry, technological changes and evolution in the industry, the unpredictable technological changes and purchase risk, if we think about this question most of the are related with market knowledge.

The rest of the items will be:

This product's market has grown quickly	0.150	0.294
There are a great number of potential clients in this product category	0.160	0.306
The preferences and necessities related to this product change slowly	-0.289	0.203
This product category has a volatile environment	-0.113	0.433

Most people that look for this product fear or doubt buying it	0.116	0.242
The product category tendencies are easy to monitor	-0.185	0.348
The industry of this product is stable	-0.007	0.141
This product has an unpredictable demand	0.078	0.364
Potential customers of this type of product have similar traits and characteristics	-0.026	0.258
Potential clients of this product share the same type of needs that makes them buy	0.052	0.236
Most people that buy this product look for the same information before buying it	0.032	0.328
I know the majority of needs that the clients of this kind of product have	0.165	0.479
If someone asks me about the product deficiencies when a customer uses it, I could mention more than one	0.003	0.227
I can easily mention the improvements requested by the product's clients	0.176	0.450
I know different competitors that participate in the market of this product's category	0.289	0.506
I know which is the best option in relation to the market participants of this product category	0.329	0.610
I know well the success and failure of all the competitors that participate in this market category	0.254	0.643
I know better than anyone which competitor is the strongest in the market for this product category	0.214	0.672
I know which competitor has more customers and followers.	0.191	0.630
One of competitors in this product/service's industry is my favorite.	-0.204	0.487
I know which competitor had the best prices for its' customers.	0.139	0.631
I know all the competitors that participate in this product/service's market.	0.291	0.553
I can mention the number of participants by brand.	0.264	0.518
I know what competitors offer their customers in this product category.	0.235	0.628
I know which strategies competitor's use in this product/service's industry to compete.	0.163	0.647
Many people ask me about the movement in the future in the competition for this product/service's industry.	0.273	0.475
The competition of this product's area can be described as volatile.	-0.071	0.461

In a summary of these results we can conclude that a shorted and valid scale to simplify the use and practice of entrepreneur's knowledge perception. The reduction scale will be a 33 item scale with 1 to 5 Likert responses, from totally agree to totally disagree. This instrument could be used in future research for future

researchers in the area to measure the entrepreneur's Knowledge Degree in Technology, Market and Competition.

Reduction and Final Scale

Table 37. Reduced Items.The following table shows the final scale reduced to 33 items:

Is the product/service you develop is already found in the market in a manner that the public has access to it?
I know much about the product/service's market.
I know more than other people about this product/service and its' industry.
People consider me as someone that knows much about this product/service and what is related to its' market.
I know much about the technology related to this product/service.
I like to look for information related to the technological aspects to this product/service.
People frequently ask me about the technological aspects of this product/service.
I definitely know more about the technological aspects of this product/service than others.
This product/service involves a great deal of technological knowledge.
I know much about this product/service's industry.
In comparison to others, I know much about this product/service's industry.
I consider myself as a person that knows about this product/service's category.
The technology in this product/service's industry changes quickly.
The technological changes in this product/service's industry have a quick evolution.
The technological changes of this product/service are unpredictable.
Buying this product/service is taking the risk of it becoming obsolete.
This product/service's technology has a high degree of complex investigation and development..
This product/service's market has grown quickly.
There is a great number of potential customers for this product/service.
The needs and preferences related to this product/service change slowly.
This product/service's category has a volatile environment.
Most people that look for this kina of product/service are afraid or doubt when they buy it.
The trends in this product/service's industry are easy to monitor.
I know the success and failure of all the competitors that participate in this product/service's market.
I know which competitor is the strongest in this product/service's market.
I know which competitor has more customers and followers.
One of the competitors in this product/service's industry is my favorite.
I know which competitor has the best prices for its' customers.
I know all the competitors that are in this product/service's market.
I can mention the amount of participants by brand.
I know what the competitors offer their customers in this product category.

With al these results we can conclude that the Entrepreneur's knowledge perception model is a contribution to the science in the construct of entrepreneurs , a measure instrument with a high validation was proposed and can be used for other scientists to prove new studies and finally we can certify that this model is precisely to prognosticate the entrepreneur's market presences depending of the degree of perception knowledge in the context of technology, market an competition.

5.1.4. Study Limitation

It is important to note the limitations of this research in interpreting the findings. The sample was somewhat atypical of the sample of market presence of entrepreneurs who have their products and the ones that do not. The population was not equilibrate. We had 27 entrepreneurs without market presence and 142 with products or services already in the market.

Questionnaire length/response rate: A 51-item questionnaire has the potential to be somewhat intimidating and time-consuming. This, perhaps, led to a lower response rate than was hoped, limiting the ability to make well-founded generalizations based on the findings. A better response rate might have been yielded

through some other means such as a cash reward, a lottery coupon or a raffle for a prize.

While this study limited its discussion to technological and market knowledge, it was not made through face-to-face contact, but rather, through an internet survey. Entrepreneur's knowledge perception: It is conceivable that an individual can be competitive without any marketplace knowledge. For this reason, the initial determination of who had technological and market knowledge required an empirical study to probe which knowledge was the most important to in order to achieve a future market presence.

5.1.5. Future Research

For future research we propose a serial of new models with the same simple size. A longitudinal study is recommended to determine exactly what products or services could be successful in the market.

Though this research contributes to the notion of the entrepreneur's as a knowledgeable influencer, several unanswered questions remain concerning the knowledge perception process. For example:

- During the process of acquiring knowledge, do entrepreneurs require more or less time to develop innovative products or services ideas?
- Can entrepreneur with high technological knowledge perception produce more products or services with market success?
- Can entrepreneurs with high knowledge and business intuition develop more successive products or services for the market needs?

Another future line of investigation about the presented topic that would be interesting is a longitudinal study; to analyze the success or failure of the entrepreneur according to the knowledge he possess. Beginning with probing the possessed knowledge in the three proposed dimensions, then evaluate the development in the product or service after its commercialization and compare those entrepreneurs that knew more than others and which achieved success in a product.

In sum, this study of how knowledgeable entrepreneurs are, (the technological, market and competition dimensions) categorizes entrepreneurs by technological knowledge-holders with high probabilities to participate in the market place with their products or services. This study enriches our understanding of knowledge perception and presents possible strategic opportunities to new products or services

development. At a time when entrepreneurial theory is oriented to knowledge, human capital, intellectual development creation, our research contributes to this end.

5.1.6. Management Implications.

Entrepreneurship is the practice of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to identified opportunities. It is often a difficult undertaking, as a vast majority of new businesses fail. Entrepreneurial activities are substantially different depending on the type of organization that is being started.

The following explains the management opportunities in order to apply the findings of this study. Similarly to the early great man theories of leadership, trait-based theories of entrepreneurship are increasingly being called into question. Entrepreneurs are often contrasted with managers and administrators who are said to be more methodical and less prone to risk-taking. Such person-centric models of entrepreneurship have shown to be of questionable validity, not least as many real-life entrepreneurs operate in teams rather than as single individuals. Still, a vast literature studying the entrepreneurial personality found that certain traits seem to be associated with entrepreneurs:

According to the results shown in the present study, some of the strategic point could be followed by an administration responsible for company incubation of new products or services.

The tool used to measure the implicit knowledge of an entrepreneur in subjects like technological knowledge perception, market knowledge perception and competition knowledge perception, has a scale with a validity of a .87 Alpha Cronbach. The final result is a scale of 33 items that can be applied to an entrepreneur in the initial process of incubation. This will provide an exact percentage of his/her knowledge in these three areas.

Managers could benefit from the contribution of this research by understanding that the knowledge they have about technology, market and competition could lead them to a greater market presence. However, this research considered that managers in this study responded according to their perceptions on these dimensions. Therefore, this research developed an instrument that can evaluate the knowledge perception that an entrepreneur possesses in technology, market and competition according to his/her innovations.

The model proposed in this study that relates technology, market, and competition knowledge is useful to predict the probability that an entrepreneur obtains market

presence. This contribution is particularly important to those institutions that offer financing programs for new businesses. In this case: incubators, governments, business accelerators and other institutions that are interested in developing innovations could use this model for decision making and resources allocation. Moreover, this model is accompanied by an instrument that predicts market presence of an entrepreneur business. The information provided by this instrument could help to decrease inversion risks in products/services and thus guaranteeing its probabilities for success.

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Foot notes :

(1) Joseph Hair Jr (1999) status the (supuestos) to make said analysis are: normality, homocedasticity and linearity, a certain degree of multicolinearity is desirable (since the objective is to identify a series of interrelated variables), pg 88.
(2) Levin and Rubin (1996) state that the correlation is used to see the degree in which a variable is linearly related to another
(3) Joseph Hair Jr. (1999) states that the analysis of main components considers a total variation and estimates the factors have low proportions of specific variation (or unique) and random variation (an error), given that with this analysis the structure of the joined variables isn't distorted, pg 91
(4) Joseph Hair Jr. (1999) states that the varimax rotation is any method in which maximizes the sum of the variances of the required (loads) from the factor matrix, since with this approximation there is a tendency of high factorial charges (that is close to 1 or -1, indicating a clear positive or negative association between the variable and the factor) and some low charges (or close to zero, indicating the lack of association). It also establishes the Kaiser experiment indicates that the factorial pattern obtained through the varimax rotation tends to be more robust, therefore it is the most used, pg 98.
(5) Joseph Hair Jr (1999) status that a factorial charge or charge of factors is the correlation between original variables and the factors. It is the key to understand the nature of a specific factor. Said charges squared indicate the percentage of the variable variance that was taken by the factor, pg 769. It also establishes if the sample size is 150, the significant factorial charge of 0.45 and 200 the charge would be 0.40, pg 100.

(6) Joseph Hair Jr (1999) states that the measure of adaptation of the sample or the general sufficiency measure is used "to quantify the degree of intercorrelations among variables and if it is convenient make a factor analysis", establishes that said index lies between 0 and 1, with a value of 1 indicates that each value is perfectly predictable without error by other variables; 0.8 to 1 is outstanding; 0.7 is above average; 0.6 above mediocre; 0.5 is above despicable and below 0.5 is unacceptable, pg 88.

(7) Joseph Hair Jr. (1999) describes Bartlett's test of spherical contrast as a statistical test for the presence of correlations among variables and provides the statistical probability that the variable correlation matrix will be an identity matrix, pg 88.

(8) The level of trust
(9) The level of relevancy

(10) Joseph Hair Jr (1999) also states that the anti-image matrix is the negative value of the partial correlation and the diagonal of the matrix include the measures of the individual adaptation. Said measures indicate if the variables should remain or be removed of the analysis, the measure should be greater than 0.5 (it includes the same guideline as MASg) and that a value below 0.5 indicates that the variable should be eliminated, since it is unacceptable, pg 88

(11) Joseph Hair Jr (1999) Eigenvalues (selfvalue, latent root, characteristic root or proper values) are a quantity unit of variance found on the matrix of correlation, therefore the sum of all of the factors would be equal to the number of variables (since the variables were standardized for this analysis, it will be calculated as the sum of all loads for each factor and represent the amount of variance represented for a factor, pg 768

(12) Joseph Hair Jr. (1999) states that the communality is a shared variance with other variables in the factor analysis, pg 770; and it establishes that it is a method of evaluation for each variable to prove whether it is acceptable to be explained and the investigator should decide what variance should e determined as a limit; if the communality is very low, the variable could be eliminated or interpreted as is, pg 101.

(13) According to Joseph Hair Jr (1999), the alfa Cronbach coefficient is the most used unit and only requires to be applied once. It indicates de general agreement of the inferior limit for this coefficient is 0.70 although it could decrease to 0.60 in exploration investigations.
(14) Which is higher than 0.70
(15) The variable "Market uncertain" has a significant superior positive charge in two factors it as decided to leave the second in which it has a high correlation (which was obtained from the correlation matrix) with the variable ""Uncertain techno" which was 0.341
(16) Which lies below 0.70, although it could indicate that this thesis' nature is exploratory, for its limit could be marked at 0.60, indicating a superior limit.
(17) Which is found below 0.70, although it could indicate that the nature of this thesis is exploratory, for it could be marked with a limit of 0.60, this indicates that it still isn't above the limit. This means that the stated variables grouped in the third factor aren't highly intercorrelated.