

## **PERCEPTION OF UNCERTAINTY AND OPERATIONAL PERFORMANCE OF THE BRAZILIAN INDUSTRY FROM 2007 TO 2009**

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### **ABSTRACT**

This article poses to explore the relationship between the manager's perception of uncertainty and the Brazilian industry's operational performance during the period from 2007 to 2009. This timeframe was chosen because it comprised both positive and negative cycles of the global economic panorama, and thus capable of interfering in the manager's perception of uncertainty and consequent business strategies. Periods of market fluctuations and more dynamic and complex business environments clearly demonstrate that managerial models which are applicable to static or predictable scenarios, become fragile and of dubious applicability; that is, practices adopted and described in business administration bibliographies might not produce expected results. A key factor for sound performance is the positioning of companies in relation to future planning (Knight, 2002), the latter defined as actions taken by the entrepreneur given a certain degree of uncertainty, inherent to the management activity. The relationship between uncertainty and corporate performance has been studied, at least, ever since Knight in 1921. The author affirmed that we live in a world of change and in a world of uncertainty. The level of entrepreneur trust from the National Industry Confederation represented

the perception of uncertainty, whilst operational performance was formed as of industrial production and employment IBGE indexes. Results demonstrate that both constructs have equivalent movements during the course of the period, presenting a positive correlation.

**Key-words:** Uncertainty. Operational performance. Trust.

## **A PERCEPÇÃO DA INCERTEZA E O DESEMPENHO OPERACIONAL DA INDÚSTRIA BRASILEIRA DE 2007 A 2009**

### **RESUMO**

Neste artigo, objetiva-se explorar a relação entre percepção de incerteza do gestor e o desempenho operacional da indústria brasileira no período de 2007 a 2009. Este período foi escolhido por ter contemplado ciclos positivos e negativos do panorama econômico global, capazes de interferir na percepção de incerteza do gestor e consequentes estratégias empresariais. Períodos de flutuações de mercado e ambientes empresariais mais dinâmicos e complexos deixam claro que os modelos gerenciais aplicáveis a cenários estáticos ou previsíveis tornam-se indefesos e de aplicabilidade dúbia; ou seja, as práticas adotadas e descritas nas bibliografias de administração podem não surtir os resultados esperados. Um fator chave para o bom desempenho é o posicionamento das empresas em relação ao planejamento futuro (Knight, 2002). Este último definido por ações assumidas pelo empreendedor mediante certo grau de incerteza, inerente à atividade de gestão. A relação entre incerteza e desempenho empresarial tem sido estudada desde Knight, em 1921, pelo menos; o autor afirma que se vive em um mundo de mudanças, e um mundo de incertezas. O grau de confiança do empresário da Confederação Nacional da Indústria representa a percepção de incerteza; já o desempenho operacional é formado por índices de produção industrial e empregos do IBGE. Os resultados demonstram que, no decorrer do período, os dois constructos possuem movimentos equivalentes com correlação positiva.

**Palavras-chave:** Incerteza. Desempenho operacional. Confiança.

## **1 INTRODUCTION**

Corporate management faces and has always faced oscillations that challenge organizational management practices; each moment in time has its challenges, limitations and opportunities. Amongst the extensive assortment of adopted alternatives, companies present differences in their results, some generating higher performances in relation to others of the same sector.

Market fluctuation periods and more dynamic and complex corporate environments clearly demonstrate that managerial models which apply to statistical or predictable scenarios, become fragile and of dubious use; that is, practices employed and set forth in business administration bibliographies might not give rise to expected results.

A key factor for sound performance is the positioning of companies in relation to planning the future (Knight, 2002), the latter defined by actions taken by the entrepreneur before a given level of uncertainty, inherent to the activity of management.

Approximately one century ago, in 1921, Frank Hyneman Knight set the relationship concerning the difference in profits between companies and the manner in which the entrepreneur perceives and deals with uncertainty, including in his studies, a clear explanation discerning subjective uncertainty and risk.

Given the above, this study's purpose is to investigate the relationship between the subjective uncertainty of Brazilian managers and the country's industrial operational performance from January 2007 to October 2009, a period that comprises a phase in the market considered positive (2007-2008) and another deemed as being negative (2008-2009); of low and high uncertainty, respectively.

In the beginning of the XXth. Century, Frank Knight (1921) proposed a profit theory that investigated the relationship between uncertainty and corporate profitability. His concern centred in the role of the entrepreneur, how this person took decisions that lead the company to profit or not, irrespective of the time context it found itself. Knight's contribution to economic theory is

acknowledged by another researcher who made incursions in the field during the same timeframe, Hicks (1931), and other contemporary authors, such as Williamson (1999) and Foss (1996).

Likewise, with focus on the role of the manager, Herbert Simon (1997) developed the theory of limited rationale, streamlining on individual management, differences and their consequences to organizations. In the study herein, the theoretical foundation rested on Knight (1921) and Simon's (1997) studies given that they sought to understand the role of the manager in corporate results, thus expanding knowledge concerning the reasons that make companies different when it comes to their performances.

A couple of queries motivated the choice of this theme considering the environment companies faced in 2009. Knight defended the notion that managers before situations of the kind, capture valuable opportunities to lever business. However, limited rationale, studied by Herbert Simon, claims that knowledge and decision making will always be furnished with imprecise information.

The development of this study, comprising an inductive approach, was of exploratory nature, utilising both quantitative and qualitative methods. The quantitative stage employed secondary data from the Brazilian entrepreneur trust research prepared by CNI1 (2008-2009), as a reference of perceived uncertainty, in conjunction with IBGE's 2 (2009) economic reports on industrial production, employment and compensation indexes, representing operational performance indicators.

This phase enabled the evaluation of a macro environmental panorama of the perception of uncertainty and operational performance at two distinct moments of the economic scenario. At a second stage of the research, two interviews with decision makers of the medical hospital, optical and other equipment segment were performed allowing for the expansion of the scope of the investigation concerning manager perception of uncertainty, decision making processes and consequences in terms of corporate results.

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<sup>1</sup> National Industry Confederation

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## 2.1 THEORETICAL REFERENCE

In *Risk Uncertainty and Profit*, Knight (2002) designs a fundamental back panel for the understanding of the relation between the economic context in terms of corporate performance, that is, management decision making before the many day-to-day organizational variables. According to the author, the interaction between knowledge or ignorance of the scenario along with decision making before currently known alternatives, generates greater chances of one obtaining competitive advantages and satisfactory performances.

## 2.2 UNCERTAINTY AND CORPORATE PROFITABILITY

As a fundamental point of this study, the concept of profitability as found in Knight (2002), ought to be explored. In 1826, Thünen and v. Mangoldt in *Der Isolierte Staat* defined profitability – from the entrepreneur’s standpoint – is what remains of interest rate, capital insurance and management compensation, that is, the capital generated minus costs of capital and benefits and compensations involved in the activity.

Courcelle-Seneuil (1852 apud Knight, 2002, p. 25) on the other hand considers the act of assuming risks as a preponderant factor in the obtaining of profits. Nevertheless, it cannot be considered as the entrepreneur’s compensation. Johnson (apud Knight, 2002, p.41) proposes four ways to obtain profits under a more conservative perspective whereby these result from 1) reduction in costs; 2) a more efficient organization of the workforce and of capital 3) growth in savings and; 4) more efficient provision, with views to coping with seasonal variations.

The source of profit is often found, in the short term, in the erratic fluctuations and in the irregularities of progressive changes – those which occur respecting a given standard – and not in the change itself. In sum: profit arises from uncertainty as to the future, that is, each person’s capability (entrepreneur) in better interacting with change in the environment than competition. “The connection between change and profit is uncertain and always indirect”, defends Knight (2002).

Hicks (1931) defends the concept that entrepreneurs should not only follow the path of only focusing on entirely uncertain events. After all, these, as per the description, are exclusive and of scarce occurrence. The objective ought to be centred on concentrating efforts to mitigate risks and not attempt to eliminate them (Mello, 2004).

One of the ways of minimizing risks would involve the dispersion of risk accountability, meaning, creating a chain of suppliers and clients that share the risks of such uncertain events rendering them less burdensome to a single agent. Another idea defended by Hicks (1931) is risk delegation; according to the author, there were many companies being set up – then in the beginning of the XXth. Century, which were specialized in taking on third party risk in exchange for a prize on the risk.

Thus, there is an exchange of uncertainties concerning amounts to be lost for values defined by contracts; a case that also applies to Hedge3 contracts. Hicks (1931) also proposed to minimize risks as of their division amongst those that participate in the organization; risk divisions of the kind would occur between the partners of a company. Considering companies with more than one owner, one can notice that there are those who don't take the same risks as others such as, for instance, shareholders with limited responsibilities.

In the case of these agents, their compensation is, to some extent, tied to a previously determined, in contract, value, whilst agents who directly depend on corporate results to obtain their compensation take on far greater risks (both in terms of gains and losses).

One of Knight's (2002) contributions is the distinction between risk and uncertainty, an important aspect for the comprehension of his Profit Theory.

### 2.3 THE DISTINCTION BETWEEN RISK AND UNCERTAINTY

In his study, the author indicates in a clear manner, the distinction between both. The first, that is, risk, refers to those events which might somehow be measured – whether by statistical models or by seeking standards using similar event categorizations.

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<sup>3</sup> See GITMAN, Lawrence Jeffrey. **Princípios da administração financeira**, 10th Edition. São Paulo, Editora Pearson Addison Wesley, 2004

The second, on the other hand - focus of this study- named by the very author True Uncertainty, relates to events that cannot be in any way measured; there are no events that can be used to obtain any information. They are unique events.

To understand the difference between risk and uncertainty, also known as objective and subjective uncertainty, one must comprehend the different kinds of probabilities identified by Knight. Situations that can be mathematically foreseen and measured, that is, mapped with the use of statistical models, are called (1) probabilities a priori. In this type of probability, distribution is entirely known; situations that can be grouped with other similar scenarios which occurred previously forming a given kind of paired events – here distribution is also known and named (2) statistical probability; and finally, the so called (3) Knightian Uncertainty (Saravasthy e Kotha, 2003) or Estimated Probability which involves, unlike the previous two, events that cannot be measured by means of mathematical models, nor even grouped into similar categories so as to obtain effects as indicated in the latter type.

According to Saravasthy (2003), the three kinds emphasized by Knight may be described as follows: (1) consists in determining a future known distribution, normally known as Risk; (2) involves an unknown future, but can be estimated by studying events that occurred in the past; and, (3) named by Knight True Uncertainty, also known as Knightian Uncertainty, consisting in the study of the future whereby distribution is unknown and cannot be deciphered.

One understands as objective probability (or of judgement) the first two types and as subjective probability (or intuitive), the third kind. “The difference in practice between the two categories, risk and uncertainty, is that in the first, the distribution of results concerning a group of occurrences is known, whilst in the case of uncertainty, this does not hold true”, states Knight (2002. p.233) – (our understanding).

As previously mentioned, Hicks (1931) defends the Idea of focussing efforts on objective probabilities, presuming that the events considered by Knight are not essential to the understanding of obtaining profits; complementing this further with the affirmation that in the long term, uncertain events tend to annul one another, that is, given one cannot predict them, it cannot be determined if a given event shall be beneficial or not and thus events during the course of time might compensate one for another.

Profit and uncertainty factors have already been mentioned. However, the relationship between them must be understood. To this effect, the proposal is to elucidate Simon's (1997) studies that criticize traditional management theories such as Taylor (1911) and Fayol (1916), claiming that these present important gaps because they do not comprise in a satisfactory manner the role of people in organizations (Simon, 1997).

### 2.3 THE THEORY OF LIMITED RATIONALITY

Centring on managers, we should keep in mind that people have limitations and it was on these limitations that Herbert Simon's (1997) studies focused. For the author, limitations can be divided into two large groups: (a) limits in performance abilities; and (b) limits in one's abilities in taking correct decisions. Thus, in the first there are technical skills and in the second capabilities that are inherent to the ability in taking decisions that are more coherent with desired outcomes.

The individual is limited by such abilities, habits and reflexes that are not conscientiously controlled. One's performance, for instance, might be limited by manual abilities, or time to react or physical strength. One's decision making process might be limited by the speed of mental processes, knowledge in arithmetic and so forth. In this field, business administration principles ought to pay close attention to the human body's physiology and the development of skills and habits.

Another limit for the individual are one's values and purpose concepts which influence the decision making process. Should there be a strong commitment with the organization, one's decisions will probably be coherent with the objectives defined by the organization; if one's commitment is low, personal motivations might interfere in one's efficiency.

The individual is limited by the extension of one's knowledge of matters which are relevant to their job. In this connection, administrative theories try to find an answer for some queries: what are the limits in mass knowledge that the individual can accumulate and apply; how rapidly knowledge can be assimilated; how can the company's specialization be related to the specialization of



knowledge that prevail in the community's occupational structure; how can the means of communication transmit knowledge and information to the decision making process; what kinds of knowledge can or not be easily transmitted; how is the need for the transmission of information impacted by the specialization modes at the organization.

Therefore, the so called Simon's Administrative Theory (1997) is tuned on factors which will determine with which abilities, values and knowledge the organization's member commits to use whilst at work. What are the limits one is prone or capable of offering to the organization? The author affirms that the role of rational decisions is to select, amongst existing strategies, that which best adapts to given situations.

As proposed by Knight (2002), organizations which best adapt to environmental changes, have greater chances of obtaining superior results; and it is as of this assumption that Simon defends the notion concerning strategies adopted by people. These seek, within their limits – whether technical or personal – to choose the best strategies so as to develop certain processes with views to objectives.

Any management model, or as stated previously, any successful strategy at a given moment, may, at another, face setbacks. "No organizational model is adequate or tolerated for all purposes in all fields", states Knight (2002. p. XIII).

As observed by Schumpeter (1943), markets are in constant change; they have mutable and dynamic characteristics; this makes the choosing of the best strategy an extremely complex process. The amount of time people have to take a decision and select the course of action is often scarce. Even if time were not limited, one doesn't have the chance to ponder all the variables involved in a given process so as to analyse the best option for each situation.

In this connection, Simon (1997) emphasizes the need to select the best strategies before a limited perspective of the situation. This selection process comprises several stages; as set forth, technical and personal aspects must come together seeking a best strategy as perceived at that moment in particular. Often the best option ends up being that which maximizes the cost/benefit perception. However, each manager has their own point of view as to future events; it's a matter of trade-off between perceived alternatives.

Next, the issue concerning the decision process appears. According to the author, the decision making process depends on the adequate selection of means to reach end objectives. The decision in itself involves:

- ✓ the listing of all possible strategies;
- ✓ all the consequences of each strategy;
- ✓ an evaluation of the set of consequences and their impacts on strategies.

Knowing that one cannot feasibly determine all variables, what remains to managers is to make rational choices, that is, the role of rational decision making is to select one of the strategies that portray the most appropriate consequences before situations.

Knight (2002) claims that the role of conscience in animals allows previous learning experiences to support the choice of reactions expressed in relation to the future. However, the notion of rationality that conscience provides is biased. Geoffrey Brooke (2007) in his studies indicated that people tend to overestimate their opinions in lieu of determined alternatives which don't quite seem to be the most favourable.

Knight (2002) on the other hand, approaches the notion of the cultural formation of each given society, such as: the notion of luck, of gut feeling, intuition, etc. These elements cannot be measured or standardized; they are inserted within the social-cultural context.

Thus, taking up the issue concerning decisions formed by technical and personal factors, both authors, Knight and Simon, affirm that this relation is inevitable, in our society. "It must be once again emphasized that almost all decisions taken in real life rest on opinions and undoubtedly, most of them are based on opinions concerning a probability" (Knight, 2002. p. 237, our translation), synthesizes the author.

As identified by Frank Knight (2002) and Herbert Simon (1997), managers directly influence corporate performance and are limited by some previously mentioned factors such as their skills, values, specific knowledge of the business they are involved with and also, intuition, all of which are individual characteristics which can, consequently, lead to the taking of different decisions.

## 2.4 OPERATIONAL PERFORMANCE

Basically, two types of indicators can be presented, which are known as relative and absolute indicators. Absolute indicators comprise absolute measures, whether financial or not. For instance, operational profit is a company's absolute financial indicator. Sales volume on the other hand, can be considered a non-financial indicator and, when compared with other financial or non-financial ones, might be deemed as a relative indicator (Padoveze, 1994).

Operational performance can be evaluated by means of indicators that, further to factors which are external to the organization, can be represented by internal variables, mostly driven by corporate culture and the adopted managerial style. In this manner, managers become essential players in the control of internal variables, seeking to adapt external factors to the economical cycles in course such as the real estate crisis, currently in place since mid 2008. (Parisi; Nobre, 2001)

The management model, according to Robbins (1978), may present amongst major characteristics, the evaluation, control and ruling of the organization's overall performance, including operational performance. Given this statement, one must also put into practice the fact that the company's leadership style, in terms of planning, directly influences employees to measure and control corporate performance and in so doing generates a virtuous cycle, seeking the optimization of the company's performance.

Other characteristics must also be taken into consideration when evaluating a company's operational performance which comprises a prime factor: the corporate decision making process. These are extremely relevant to a strategic planning process where operational planning occurs in a corporate participative manner once it's operational layer, in addition to representing the company's operational front, is often also accountable for executing the organization's performance evaluation according to defined criteria (Parisi; Nobre, 2001)

Performance evaluation then becomes an important factor to corporate management, given it must define which criteria are to be adopted. These directly influence the comparison of the organization's economic results with other market players, ensuring strategies adopted by corporate management are

based on measurable results such as increases in productivity, focus on cost reductions, reduction in the time of execution, increases in the quality of offered product/services, amongst others.

So that there might be constant and efficient corporate monitoring, there must be close and integrated participation of the company's leaders with those who are led, placing effort in the taking of action before surprises occur within the organization and also, outside the company. Thus, the corporation must also deal with external environment monitoring methods, generating scenarios which it might encounter, determining which risks it might have to face and which attitudes ought to be taken should any in fact occur. In these scenarios, the productive capacity required to meet objectives, which investments might be required, and finally, which productivity and necessary sales to provide for investments and the required shareholder's return, must be forecast.

Therefore, the operational performance evaluation cycle is extremely relevant when managers take decisions and the result presented might be considered as a consequence of a previously conducted planning process, considering all the variables that comprise an organization, as well as basis of knowledge and inspiration for a new planning procedure that the company might perform in the future.

Brito and Vasconcelos (2005) conducted a study analysing the factors that interfere in corporate performance. Despite the fact that the author's studies is different from the mentioned research, because they utilized a financial performance indicator - ROA (Return On Asset) - the decomposition of the variance of factors that impact corporate performance resulted in a significant percentage (47%) of what they called Individual Company influence. This factor relates to the managerial component where each firm's choices and strategies are taken into account, which, in turn, make up efficiency factors that are subject to the direct influence of managers, their limited rationality and consequently, the manner how they handle uncertainty.

The so-called "corporate effect" comprises factors that correlate with the company's strategies, such as for instance, the quality of personnel, selectivity of resources that are utilized, market position (Kotler; Keller, 2006), amongst others. "Individual actions and positions generate relevant differences and therefore the most adequate unit of analysis is the company and not the field of business" (Rumelt, 1991 apud Brito & Vasconcelos, 2005, p. 66).

According to Brito and Vasconcelos (2005), the company effect accounts for approximately 50% of the Brazilian scenario's corporate performance, that is, management's activities, the individual factor of each organization. Which leads us to a crucial point of this study: considering that performance is largely explained by company management, the limited rationality of managers becomes core to the analysis of corporate behaviour before the perception of uncertainty. Ignorance in relation to the future mentioned by Knight (2002) and information asymmetries and experience noted by Simon (1997), drive each company towards seeking distinct strategies which shall consequently result in different outcomes and performances. Much like the profit theory mentioned by the first author whereby he pinpoints that profitability derives from day to day decision making in relation to the perception of uncertainty.

With the purpose of analysing such a relation in reality, the methodological procedures detailing the empiric research are hereinafter presented.

### **3 METHODOLOGICAL PROCEDURES**

In this paper, research was conducted based on an inductive paradigm, once the intent is to proceed from a particular investigation, to the overall context. The question this study sought to address was: What is the relation between the manager's perception of uncertainty and the Brazilian industry's operational performance during the 2007 to 2009 period?

This research's motivation arises from the interest in investigating theory in practice and given the opportunity of having the competitive environment present in two opposite, close in time, situations: that is, a moment of euphoria and apparent abundance in 2007 and a moment of crisis in 2008. To this effect, two stages were undertaken: the first, exploratory, with secondary and quantitative data; and the second stage, of descriptive nature, which sought to better understand the identified phenomena; here, primary, qualitative data was identified collected at interviews with managers of the medical hospital instrumental, optical and others equipment segment (CNAE 1.0)<sup>4</sup>.

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<sup>4</sup> National Economic Activities Classification (IBGE, 2009)

To arrive at the proposed prime purpose, the following specific objectives were fulfilled: a) what is the level of trust that Brazilian entrepreneurs have in the Brazilian economy and their firms; b) what is the Brazilian entrepreneur's expected trust for the next six months in the Brazilian economy and their companies; c) what is the Brazilian industry's operational performance during the studied period d) how do managers perceive uncertainty; e) how do managers take decisions before uncertainties; f) what is the impact of uncertainty during the period studied on the performance of their companies.

CNI data was utilized: Industrial Entrepreneur Trust Index (c) and that of IBGE, that relate to sector research: Monthly National Industrial Physical Production Research (a), Monthly Industrial Employment and Salaries Research (b);

The Monthly National Physical Production Research contains information on 830 products and 3.700 local units, totalling 4.900 monthly informations with national coverage, considering that the selected products correspond to, at least, 80% the Annual Industrial Research – Product (PIA)'s Industrial Production Gross Value (VBPI). The Industrial Production Gross Value (VBPI) is determined as follows:

The monthly industrial physical production index compares the production of the month in reference in relation to the previous year, evaluating both these periods. The objective of the physical production indexes is to supply, on a monthly basis, an estimate of the true product's production short term movement in the industry. As an economic panorama index, it's relevance lies in the indicator's ability in determining the effective behaviour of the industry's true production with minimal deviance in relation to the period in reference, representing a preliminary measurement of the variation rate of the Internal Gross Product's (IGP) industrial component.

The fixed base index (Index-Number) compares the production of the month in reference with the monthly average produced in the research's base year, that is, 2002. The Monthly Index, on the other hand, compares the production of the month in reference with the same month of the previous year. In both indicators, the classification of the industry segment is in agreement in terms of their main economic activity, according to the CNAE 1.0. Monthly Industrial Employment and Salary Research, presents results that cover 18 industrial segments and regionally, the following States and Large Regions:

Pernambuco; Ceará; Bahia; Espírito Santo; Minas Gerais; Rio de Janeiro; São Paulo; Paraná; Santa Catarina and Rio Grande do Sul; North and Central West Regions: Northeast Region; Southeast Region; and South Region.

Representing the perception of uncertainty, the Industrial Entrepreneur's Trust Index (ICEI), prepared by the National Industry Confederation (CNI, 2009) was created with the purpose of identifying industrial production change trends because, as the very industry states, confident entrepreneurs tend to increase investment and production to meet expected growth in the demand. Information required to build the ICEI index is collected by means of questionnaires of industrial surveys (CNI, 2009), based on the entrepreneurial opinion that is conducted every trimester. The survey comprises all of Brazil and is conducted in partnership with 24 industry federations<sup>5</sup>.

#### **4 PRESENTATION AND DISCUSSION OF RESULTS**

This stage presents the analysis and results which seek to address specific objectives, culminating in the overall purpose. It is divided into two stages: a quantitative, of exploratory nature and a qualitative, of descriptive kind.

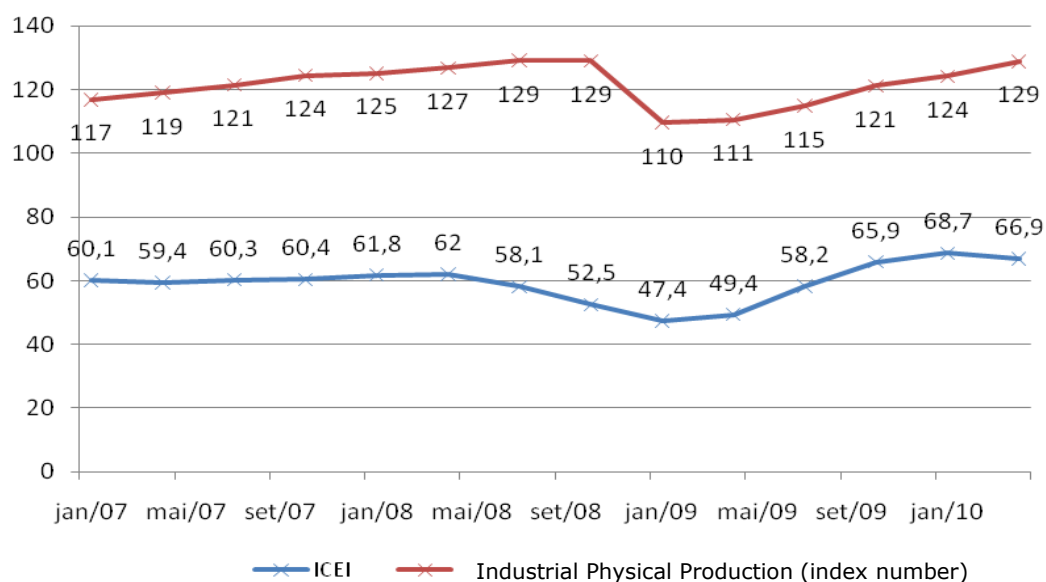
##### **4.1 RESEARCH QUANTITATIVE STAGE: SECONDARY DATA**

For the index that measures the entrepreneur's trust, during the period in question, one could observe that the positive expectation concerning the future started to fall in mid 2008, in a less accentuated manner in comparison with the period this study was performed, this being due to the fact that during these months (July to December) the financial crisis reached major world economies, but its effects hadn't as yet been felt in Brazil (see graph 1). This impact occurred in a clearer manner at the end of 2008 and in early 2009, when the second indicator (Expectation) presented an abrupt decrease. Pessimism was so great in April 2009 that the trust index at the time was far smaller than that of future expectations (33,2 versus 57,6 points).

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<sup>5</sup> AC, AL, AM, BA, CE, DF, ES, GO, MA, MG, MS, PA, PB, PE, PR, RJ, RN, RO, RR, RS, SC, SE, SP and TO

With the reaction of the national economy as of the second trimester of 2009 and the improvement in the international scenario, both indicators presented significant improvement in the last evaluation, recovering optimism and projecting a better market for the following year, 2010. This can be verified as of the current condition's and expectations higher indexes in the research conducted in October/2009. In terms of entrepreneur trust, the same unstable scenario observed, is found in that concerning the physical industrial production, during the same period. Production maintains itself constant, with relative improvement in the period between September 2007 and July 2008, and from November 2008 and January 2009 there is a significant fall in the indicator, which is followed by, to a smaller extent, by the Industrial Entrepreneur's Trust Index (ICEI). This can probably be explained by the fact that this index considers weight 1 to past trust and weight 2 for future trust.



**Graph 1: Comparison of Current Conditions X Market Expectations**

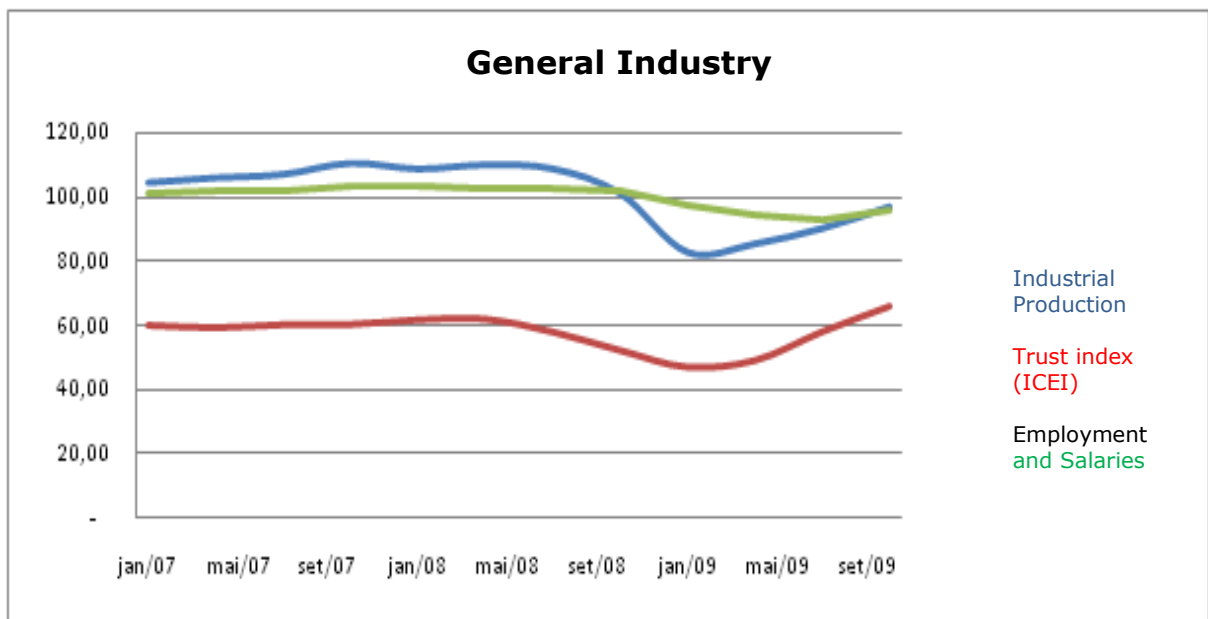
Source: CNI, 2009

In the comparative data one can identify that both industrial production and entrepreneur trust remained constant during the January 2007 to July 2008 period, with a slight increase in the trust and production indexes. In the following period, indicators began to fall reaching their lowest level in January 2009, at the peak of the crisis in Brazil<sup>6</sup>.

<sup>6</sup> See **Revista Veja**. O Brasil e a crise: Dez razões para otimismo... e uma para preocupação. Ed. 2102. March 2009.)



In the comparison between ICEI data and those of Employment and Salaries Research, one observes a relation between the first and Industrial Production given that both remain constant and there is a slight increase in the period between January/07 and July/08 (see Graph 2). Therefore, evidence indicates that during the period of economic stability in the country, there is a good balance between entrepreneur trust and the level of employment and salaries in the segment. However, as of the start of the crisis, it can be verified that the impact on entrepreneur's trust was high, not however to the extent of there being proportional cutbacks and layoffs. In addition, although it's evident that entrepreneurs began having greater trust as of mid May to July 2009, this did not reflect itself instantaneously in the likewise increase in employment and salaries. The natural tendency is that entrepreneurs must be slightly more confident so employment and salary levels might begin to rise again.

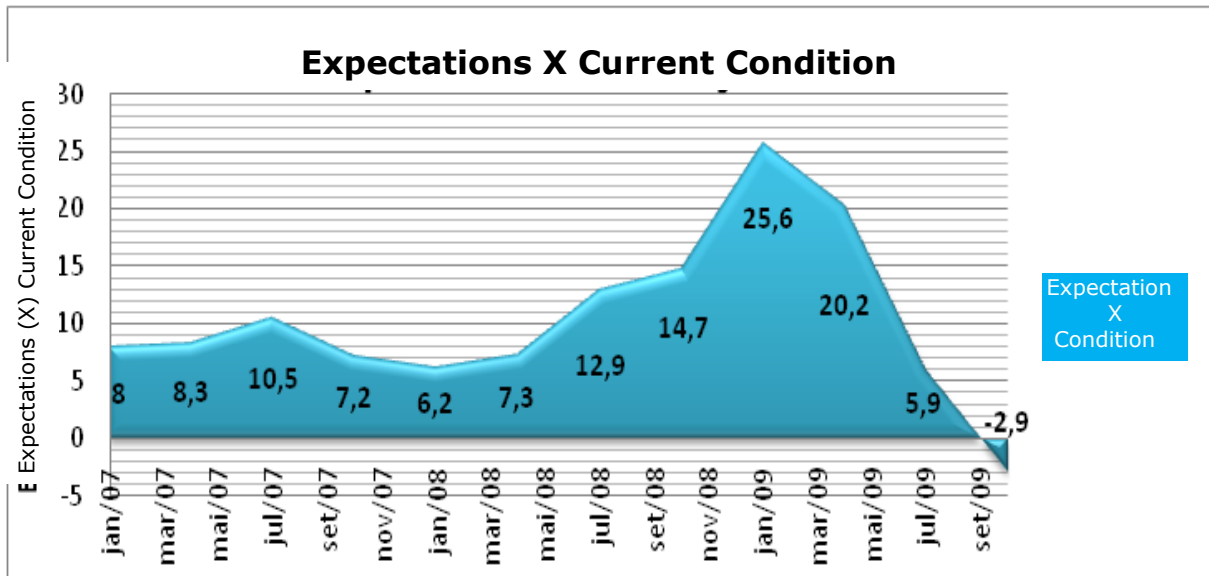


**Graph 2: Comparison of Industrial Production X Trust Index (ICEI) X Employment and Salaries**

Source: IBGE, CNI, 2009

The correlation between indexes using Excel 2007 software was determined and results demonstrated that the correlation coefficient between the trust index (ICEI) and Industrial Production is 0,6917, confirming the positive connection between both; on the other hand, the correlation coefficient between Industrial Production and Employment and Salary is, naturally, higher: 0,8816.

The mortgage crisis observed in mid 2008 makes one notice greater dissonance, during the January/2009 to May/2009 period – as evidenced by Graph 3 – when expectations and current trust index (ICEI) conditions are compared.



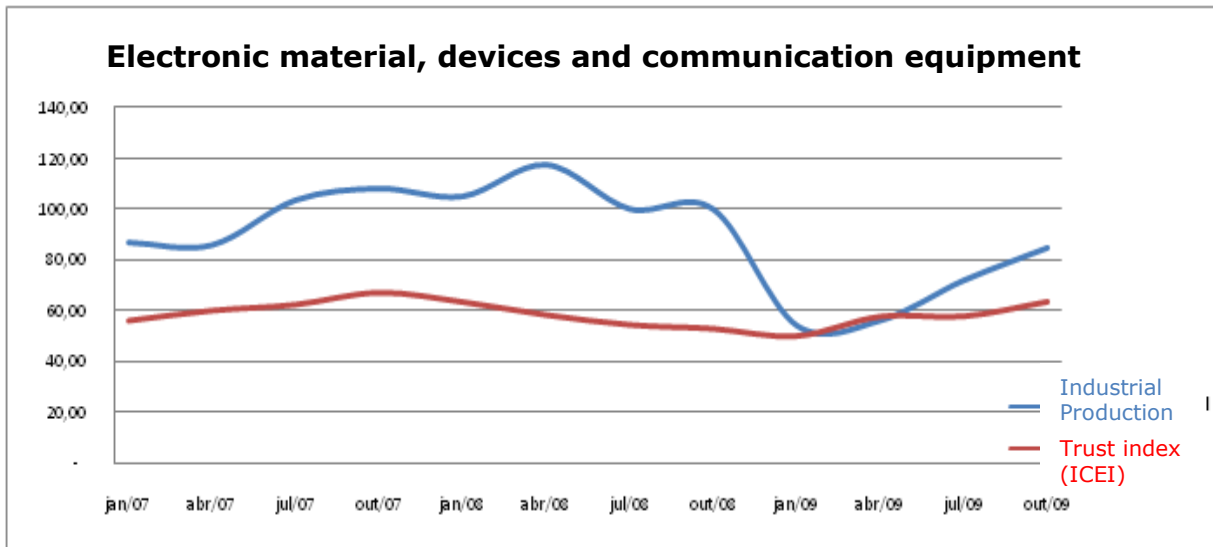
**Graph 3: Comparison of Expectations X Current Condition**

Source: CNI, 2009

The area emphasized in graph 3 pictures the difference between expected and actual trust – according to the opinion of entrepreneurs, when questioned at that moment. In the research conducted in January 2008 the difference represented 6,2 points whilst in January 2009 the difference between these two indicators was 25,6, (313% of increase). Additionally, this demonstrates less trust (at that moment in relation to one year earlier). Entrepreneurs were caught by surprise by the crisis and had difficulty in foreseeing such a pessimistic scenario. On the other hand, in September/2009 there is a tendency towards a scenario that is the inverse of the previous one, whereby the current level of trust is 2,9 higher than expectations six months earlier.

Given this industrial panorama in the period, to better understand facts, a segment that presented great variation between entrepreneur trust and industrial production was selected, which would thus be the sector most susceptible to greater oscillations and possibly that with greater level of uncertainty for the manager. One of the segments that most experienced

changes was that of electronic material, devices and communication equipment, rubber parts and accessories for the electrical and electronic industry companies; manufacturing of plastic material items; reinforced or not, and for the electric and electronic material industry (CNAE 3.23) pictured in Graph 4.

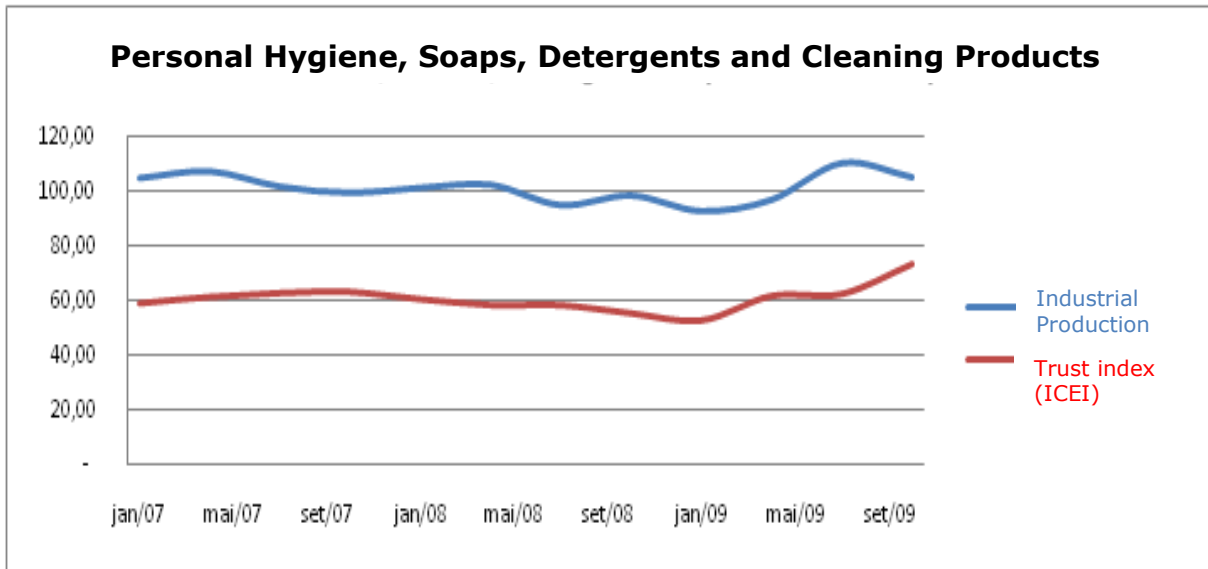


**Graph 4: Comparison of Industrial Production x Trust Index (ICEI)**

Source: IBGE, CNI, 2009

For this segment, some articles were selected from electronic sites on the segment. In this case specifically, there was a significant reduction in production; news articles, such as that of February 2009, state that “The electro-electronic production decreased 48,8% in December” (UOL, 2009); according to the source, this fall occurred given the crisis that generated a credit retraction, reducing investments and retaining expenditures, leading to a reduction in production. However, the sector’s trust index (ICEI) was far smaller than the fall in production and maybe, management’s trust portrayed a low perception of uncertainty, which might have motivated the recovery of production in September and October/2009.

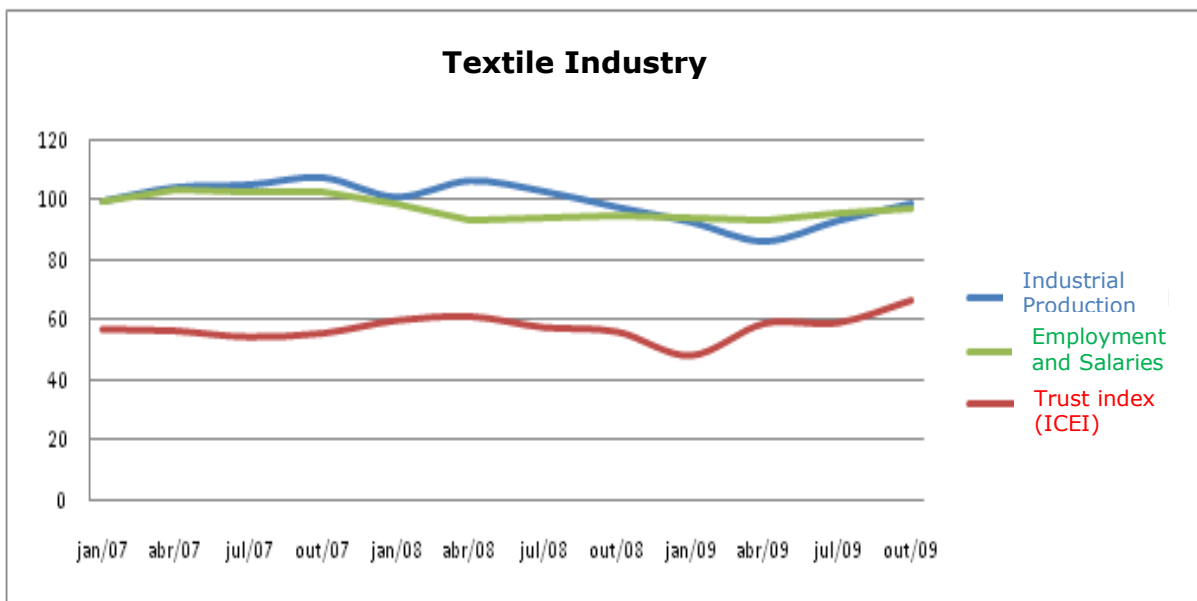
On the other hand, the personal hygiene, soaps, detergents and cleaning materials segment (CNAE 3.14) did not suffer major oscillations as can be observed in Graph 5. “The personal hygiene, perfume and cosmetics industry expands 18% in the 1<sup>st</sup>. semester”, quotes the article published in the electronic portal “Época” Online Businesses. Further, according to the article, the sector did not reduce investments despite the unfavourable economic context.



**Graph 5: Comparison of Industrial Production X Trust Index (ICEI)**

Source: IBGE, CNI, 2009

Finally, as a last item of analysis, Graph 6 presents the relation between Industrial Production, Employment and Salaries and the textile segment's (a subdivision of the transformation industry) trust index (ICEI). One notices the fall in the entrepreneur's trust in January 2009 and shortly afterwards, in April 2009, the largest fall in industrial production; however, recovery seems to have been quick since the employment and salaries index was not altered.



**Graph 6: Comparison of Industrial Production X Employment and Salaries X Trust Index (ICEI)**

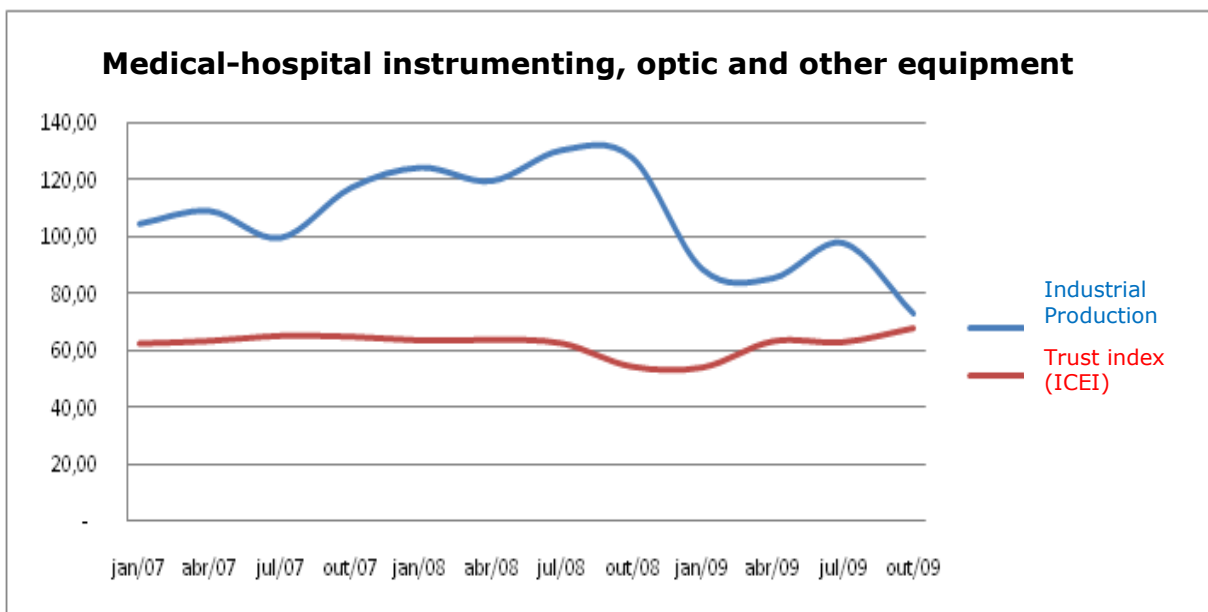
Source: IBGE, CNI, 2009

The correlation between indicators of this segment is high when comparing Industrial Production and Employment and Salaries with a 0,55 coefficient and a standard deviation of 5,22; on the other hand the correlation between Industrial Production and the Trust Index (ICEI) is low, but positive, with a 0,07 coefficient and a standard deviation of 22,13. It is important to emphasize that the trust index (ICEI) is calculated considering entrepreneurs of various segments and that an analysis of this kind is an exploration which serves as inspiration for further in-depth studies so one may become acquainted with specific sectors.

#### 4.2 RESEARCH QUALITATIVE STAGE: PRIMARY DATA

So as to analyse in depth the identified panorama, the medical-hospital instrumenting, optic and other equipment segment (CNAE 3.24) was selected. The choice of segment derives from the fact that managers of this segment could easily be contacted.

With views to investigating the decision making process of managers during the period – whose economic and corporate scenario presented the highest uncertainty – two interviews were conducted with entrepreneurs of the segment.



**Graph 7: Comparison of Industrial Production X Trust Index (ICEI)**

Source: IBGE; CNI. 2009

Graph 7 pictures a sector with intense variation in the production curve, however one notices that the market was undergoing expansion in the period between January/2007 and October/2008. However, given the world economic crisis, impact on production was immediate with a significant fall in production at the end of 2008 and early 2009. Instability in this sector is marked and one verifies that in the second trimester of 2009 there is a recovery in production. However, in the last period there is yet again a fall, following an entirely opposite direction of the market which during these months, expanded.

If one takes the Trust Index (ICEI) into account, it becomes apparent that there is a curve with few variations that follow, in a poorly intense manner, the production curve. Thus, despite oscillations in production, one verifies that the entrepreneurs interviewed are truly mature and fully acquainted with the segment in which they operate. "I've been working for 26 years but have 22 worth of experience in this sector", claims one of the interviewees; "I've been engaged in the segment for 25 years", completes the other.

This sector is characterized by few companies; mostly mid and large sized and giant foreign corporations. Most of the market share is concentrated amongst the major local companies. It's a restricted and specific market. The firms that operate within the industry are largely quite ancient – over twenty years of existence – and few new companies are set up.

Consumers are, in general, from the local market and can either be distributors or end users; in the case studied, these were comprised by dentists, prosthetics and laboratories. Although the demand is higher than competition, purchases are concentrated on large clients. There are few suppliers for this sector; raw material is produced for national companies (except some specific imported materials).

The interviews were conducted in November 2009 with views to verifying the manager's profile; and how, according to their perspective, the perception of uncertainty influenced the company's performance. Both have market experience – 22 and 25 years respectively – therefore are knowledgeable in the characteristics of the segment and in the oscillations that occur in the varied scenarios. However, different personal characteristics between the interviewees were identified and this, probably, impacted the performance of their respective companies.

Interviewee 1 considers uncertainty as something that makes the market, suppliers and customers, more fearful of doing business, largely influenced by news and international crisis; for interviewee 2, the perception of uncertainty occurs when the vision concerning the market is very different from what is said in the media. "And suddenly, such as now, in this exact moment, you feel that there is something wrong because information comes your way claiming that the market is hot". "Then, you look around, look at your clients and no one is experiencing such vigour", is the comment. Therefore, differences in manager profiles become apparent when asked about their reactions upon noticing an increase in the level of uncertainty. Interviewee 1 has a more reactive posture, reviewing his plans and actions as soon as the market begins to move.

The idea is to maintain current profits. For interviewee 2, on the other hand, the increase in uncertainty can be understood as a possible opportunity. The intention is to target markets where, in his perspective, there is a smaller level of uncertainty. Thus, impacts perceived in their respective organizations, imply in revising plans at shorter time intervals, in goals and actions to be taken; and, according to interviewee 1, there is a major relationship between the level of uncertainty in the market and the result of the company – observed in 2009.

Upon analysing data in this first stage of methodological procedures, it is observed that the industrial production and the trust index decreased as of July 2008. For this reason, interviewees were questioned as to the perception of uncertainty, at two major periods: (1) January 2007 to July 2008 and (2) August 2008 to July 2009. For both, the first period was of strong growth and stability of decisions and the second, one of lots of insecurity and uncertainty, having altered their plans.

Given this panorama, once questioned on what was done to improve corporate performance during the second timeframe, considering that the perception of uncertainty was greater and that results would tend to decrease, interviewee 1 chose to seek other buying markets of his products, inclusively mentioning the possibility of seeking the foreign market to counter balance the fall in the domestic demand. Interviewee 2's initiative was to go for a different kind of market, with a different target public profile, believed to be less susceptible to change – that of elderly people.

These positions generated, for each company, a different outcome during the period, namely: Interviewee 1's firm decreased in production and profit and had to reduce the labour force. "We had a reduction in the number of employees. We had at least 4 months worth of loss to an extent of not being able to cover up for expenses". For interviewee 2, the change in market operation ended up improving the results of the company. "It is very important for one to consider the following: I don't know how one can, in business administration, say the kind of thing I'm telling you because this is how it goes: I took a risk and it worked, but I could just as well have been wrong. Do you understand? That's the simple truth. I saw that the business was not doing well and had to do something", confides the interviewee. Profits increased and production was greater than during the first period studied.

## **5 FINAL CONSIDERATIONS**

Interviewed entrepreneurs reveal that information concerning the crisis faced by the market in 2008 was bountiful, however they didn't know how this would impact their line of business. During the period, there was much worldwide voicing concerning stagnation and retraction of the globe's major economies; and consequently, the countries undergoing development. Soon, market movements so as to ward off from catastrophic results that were due to shape, could be seen. In addition to regional beliefs and cultures, Knight (2002) emphasized the relevance of the entrepreneur's feeling. Each person trusts their own principles and, as remembered by Brooke (2007), tends to overestimate their perspectives. This can be illustrated by interviewee 2's affirmation: "Because I trust certain things a lot and I think that in a certain manner one has to create their future".

Interviewee 1 was aware of the market limitations in the period (October 2008 onwards) during which, as emphasized, he'd face a reduction in sales because of seasonal aspects. His position was to seek new buyers to maintain his sales performance, taking into consideration forthcoming reductions.

Therefore he claimed that the crisis was looked upon as a moment of fall in sales. According to Hicks (1931), uncertain events are not fundamental elements for the obtaining of profit, but rather just another factor. For the



author, uncertain events tend to, in the long term, to a certain extent, annul each other. Given that they are unique, they can be either financially positive or negative. In the example mentioned, the uncertainty of the moment was somewhat of a profit driver; however, the manager's position in believing in the development of new customers was fundamental to the maintenance of his performance. For interviewee 2, the perception of uncertainty impacts his day to day when there isn't much information regarding his field of business. "Instead of establishing a very well defined project in terms of time, we end up stretching time and picking up information at smaller intervals before going ahead and making any kind of modification", he states.

The manager's limited rationality (Simon, 1997) under such circumstances, shapes decision making – which will impact results – as mentioned by Knight (2002). That is, when action needs to be taken at shorter time intervals, of short or medium term consequences, the manager looks for more careful, predictable decisions or those he perceives as being better (Simon, 1997; Knight, 2002). According to Simon (1997) people have knowledge limitations concerning situations; as observed in this case, the manager finds it difficult to take decisions in the absence of long term information. Amongst the mentioned limitations, experience – likewise defended by Knight (2002) – also influences decision making.

Given information obtained from the secondary data and interviews conducted in this study, it became apparent that the decisions taken by managers are largely influenced by opinions (Knight, 2002); these are limited of information and experiences which comprise the entire situation (Simon, 1997), as mentioned earlier. One must further take into consideration that companies themselves present limitations. As mentioned by Hicks (1931), organizations must seek to share risk with their supply chain, that is, with all those involved in the development of a product or service. Often there are contracts signed off between the company and suppliers which limit the scope of action of managers, and so do the very organizational principles.

Therefore, one notices that the correlation between uncertainty - through data concerning entrepreneur trust - and performance indicators industrial production, employment and salaries, is positive, confirming the relationship between uncertainty and performance. For the industry in general, for instance,

the period comprised between January 2007 to July 2008, both figures of research conducted remained stable and in expansion, whilst in the second timeframe, from August 2008 to July 2009, falls in trust and productivity are observed. However, when placed in analysis of different sectors such as that of electronic materials and of personal hygiene products, the panorama does not repeat itself in this manner. There are different patterns between this relationship in the various markets, demonstrating that it is a factor amongst others that can impact corporate outcomes. A vision that is confirmed by interviews when two managers with different behavioural standards and actions taken during the periods mentioned, are placed before each other. Both generated different results to their firms under an identical macroeconomic and market scenario.

There is a lack of studies concerning how uncertainty operates, its definition and influence in the business administration context. The limitations of this work are due to the scope of secondary data. This study conducted the interview method with two managers.

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