



Managerial Practices as Determinant of the Knowledge Management: A Comparative Study of Certified Companies for ISO 9001:2015

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Abstract This study investigates if an association exists among the level of the knowledge management organization, manifested by the managerial practices adopted by the studied companies, and the consolidation of the programs of total quality. Growing competitiveness and the need of maintenance of the strategic positions makes the modern company constantly seek the application of models, techniques and managerial practices that look for get better and to monitor the acting that companies. Among these, the programs of administration of the quality became an important tool for the improvement of processes and transfer interns of the knowledge organization. This study identifies and compares managerial practices used in different areas that organizations of companies certified and not certified by International Organization for Standardization (ISO). The sample is composed of fifty six (56) companies, being twenty-seven (27) certified and twenty-nine (29) not certified. In general, the results suggest that the group of certified companies presents a larger index of adoption of the investigated managerial practices, as well as a larger perception of the usefulness of these you practice. However, some differences arise when the comparison is made at the level of the organization area, suggesting that certain areas are more important than other in a context of quality control and certification. The results also demonstrate that the difference in adoption terms and usefulness of the practice managerial is sensitive to the size of the companies and the industrial section. For instance, the difference is larger and more significant among companies certified and not certified of small and medium size, as well as within companies of the section of services, as in the case of companies of the engineering section and building site (construction).

Keywords Knowledge management, managerial practices, quality programs

1. Introduction

The program of total quality control is a management system that evolved from the ideas of William Edwards Deming. Introduced in Japan after the World War II, it became globally known as Total Quality Control - TQC. According to Maranhão (2001), in an organizational context, the word quality started to represent the set of characteristics and differentiating properties of the product (or service) offered by the firm, and it is inherent to the objectives of the firm in face of the market [1].

The acquisition of quality meant that the organization had the basic prerequisites to assist the expectations of the business. In principle, these prerequisites are identified with managerial practices that make possible the control of operational processes [2]. From this point of view having a program of quality management means to acquire practices that facilitate the identification of the needs involved in the operational processes and in the business activities. From this perspective, the success of the implementation of a program of TQC depends mainly on the understanding of the causality relations of the business administration, since the use of a series of mechanisms for managerial control, although it is aimed at reducing the agents' conflict of interest, allows the monitoring of several organizational processes, with the help of the acting indicators.



Macedo-Soares and Lucas (1996, p.9), claim that to "implement with success a new quality practice it is almost impossible without certain managerial practices in the area of human resources". These authors suggest that the implementation, the development and successful adoption of certain managerial practices depend on the level of organizational knowledge. In turn, the latter will determine the form through which the company uses, absorbs, and generates its existing knowledge [3]. These considerations, besides leading to a discussion of the role of the organizational knowledge in the process of certification of quality of the companies, endorse the description of Senge (1998, p. 167) that the organizations only learn through individuals that learn and that although individual learning is not warranty of organizational learning, the possibility of organizational learning doesn't exist without individual learning [4].

The need to expose a group of rules and managerial practices that induce the promotion of the quality and efficiency of the organizations, and also lead to their partners' and customers' (stakeholders) satisfaction is at the root of creation of the International Organization Standardization (ISO) which, with the norms known as ISO 9001:2015 seek to guide the implementation and maintenance of a System of Administration of the Quality (SGQ) in the organizations.

In Brazil, the National Plan of Quality - PNQ, of the National Foundation for Quality (2015) uses an scheme of evaluation of the operational processes called "First Steps for the PNQ", composed of eight (08) dimensions: Leadership, Strategy and Plans, Customers, Society, Information and Knowledge, Human Resources, Processes, and Results of Acting of the company, that are used as decisive factors for the concession of the Certification ISO 9001:2015. These dimensions are evaluated in agreement with the used managerial practices in an unbiased way, and this monitoring process results in the creation of the diagnosis report that will approve or not the certification of the company. This neutrality in the recommendation of practices implies that the practices or existent managerial controls vary significantly among companies, even the certified ones for ISO 9001:2015.

According to Macedo-Soares and Lucas (1996), this study considers that the knowledge management in the organizations manifests itself through the set of developed managerial practices and the adoption level, which eventually determines the level of excellence of the organization. Give this, the study accomplished here identifies and compares the managerial practices adopted by certified and non-certified companies by ISO 9001, with the objective of investigating the association between the levels of administration of the organizational knowledge, implied by the managerial practices of the company, with the Total Quality Programs [3].

This article proceeds as follows. First, we present a review of the literature. We then formulate our hypothesis, discuss the method for data collection and proceed with the data analysis. Finally, we promote a discussion of the results as well as the limitations and opportunities for future research.

2. Revision of the Literature

Although the theory of knowledge has her origins with the philosophers of Old Greece, the knowledge management, as intentional practice is, according to Hansen et. al. (2001), a modern movement whose origin is associated with the executives' need to verify the practical best in the organizational environment [5]. Muñoz-Seca and Riverola (2004, p.18) declares that "the observable resulting from the existence of a knowledge is the results obtained in the resolution of problems" [6]. The basic idea is that all and any problem requests, for his solution, a certain knowledge type. For example, the level of knowledge management in an organizational context can be analyzed through the adopted managerial practices.

Provided that, to justify an association among management of the organizational knowledge, manifested by the managerial practices and the quality programs, is necessary to make a brief analysis of the subjects related with the man's learning.

2.1 The Formalization of the Organizational Knowledge

Several studies were made with the objective of obtaining explanations on the form through which the man acquires knowledge. The development of the discussion concerning the origins of knowledge strengthens the vision of Hessen (1999) that it has as its origin and problem the relationship between subject and object. From this perspective, the origins of the human knowledge assume both a logical and a psychological sense, whose aspects will be themes for the schools that will defend the formation of the knowledge as a logical or experimental process, or of the relationship among those two processes [5].



Considering the knowledge as an established relationship among the subject that knows and the known object, Almeida (2002) and Ruiz (2002) recognize, in the theory of the knowledge, four types of knowledge that translate this relationship between subject and object. The authors describe the empiric knowledge (obtained from the insertion of the subject on both the internal and the external environment, and from his interactions with the other subjects in these environments); the scientific knowledge (that tries to understand the causes and the laws that are applied on certain phenomenon); the philosophical knowledge (that constantly looks for the meaning, the possible justification regarding all that involves the man and on the own man in concrete existence) and the theological knowledge (identified in function of the existence of something occult or of a mystery that somebody wants to know, and that could be associated the data of the nature, the future life or even the existence of the absolute), as being the theoretical base of the whole foundation used in the theory of the knowledge and that it will make possible a discussion concerning the knowledge management [7].

The conversion of the empiric knowledge into scientific knowledge as a way to improve industrial processes gained force throughout the companies with the work of Taylor (1990), "Principles of Scientific Management". Taylor identified that the main cause of the workers' inefficiencies was the absence of scientific methods for the execution of the tasks. He then proposes the conversion of all empirical knowledge within the firm into scientific knowledge [5].

Nonaka (2000) believes that the knowledge creation in the organization is associated to a dynamic interaction among the tacit and explicit knowledge, that give origin to the socialization, articulation, combination and the internalization of the human relationships in the organization. In fact the management knowledge has the task of organizing the activities that will develop, control and adapt the knowledge to the objectives of the company [8]. Beginning with the discussion by Nonaka, De Long et al. (1997) declare that the knowledge could be defined as the combination between the information and the human context, an interaction that leads to an increase on the capacity of acting. These authors understand that the managers need to pay attention to two dimensions of the knowledge. First, while a mean for organizational improvement, the knowledge is the individual's property, of the group or of the organization. Second, the knowledge can come in an explicit way or structured, and can be shared through formal methods, such as reports, documents, databases, products and processes [8-9].

As a matter of fact, the success of the implementation and maintenance of a quality program will be subject to the "mix" of their participants' knowledge noticeable by the organizational sense (originated in the common sense). This visualization is also shared by the Model of Excellency of the National Premium of Quality – PNQ, which guides the Brazilian companies that aim for excellence and competitiveness.

2.2. Knowledge Management and Managerial Practices

The science of the administration offers a group of practices, methods and theories with the objective of providing a minimum of control and predictability to the operation of the organization given that the production factors (earth, work and capital) don't translate into evolution process except through the human knowledge. This observation is based in the idea defended by Marshall (1985, p.135) that "the capital consists partly in knowledge and organization [...], and the knowledge is the most powerful production machine, because it enables the man to submit the nature to satisfy our needs". Marshall's idea strengthens the perspective that the management process of the human knowledge manifests itself in the productive processes starting from a group of deliberate actions with the objective of reaching the proposed goals [10].

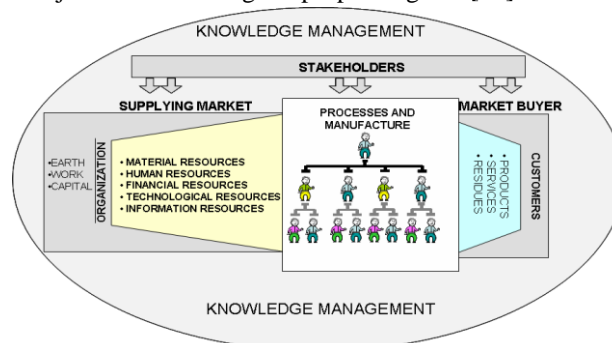


Figure 1: Context of the Knowledge Management [11]



Figure 1 demonstrates the form through which the knowledge management disseminates to the whole organizational environment where the managerial practices sustain all of the activities of the company.

Figure 1 shows the spread out of the knowledge in the business activities, which strengthens the idea of Daher and Salles (2002) that the organizational knowledge management can be represented by the managerial practices, because only the knowledge will allow the maintenance and maximization of the management system of the quality (SGQ), reverting the entropy of the processes [11].

The ability of the knowledge dissemination throughout the organization as a vital factor of success is also explicit in the protected model for the National Foundation for Quality, as it is shown in figure 2.

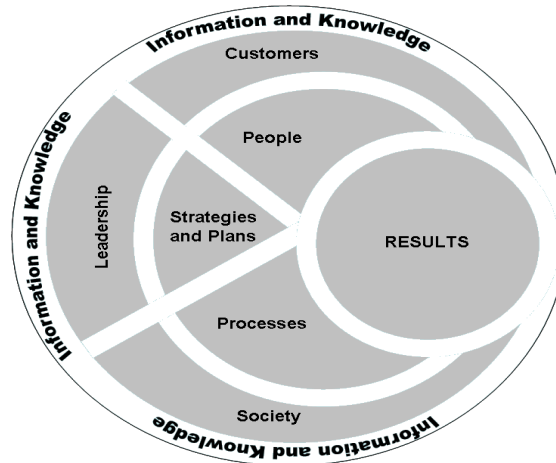


Figure 2: Variables of Verification of the Criteria of Excellency of the Quality ® [12]

Figure 2 demonstrates that the key criterion - Leadership, Strategies and Plans, Customers, Society, Information and Knowledge, People, Processes and Results - of the organizational performing, are involved by an atmosphere of information and knowledge transfer, give the idea that the operational excellence is related to the organizational knowledge management.

Once again the idea that the total quality is directly related with the organizational knowledge management is endorsed by Mukherjee; Lapre and Van Wassenhove (1998) when they affirm that the organizational knowledge is related to the people, products and processes of the organization. This view also converges to the approach proposed by Nonaka (2000) since both studies defend that the group of managerial practices can be used as a measure parameter for the evaluation of the process of knowledge management in the organizations [8, 13].

Lin and Wu (2005), wanted to verify whether managerial practices are relevant in the knowledge management. They identified that the training activities, the organization of the base of data, the technology of the information, the organizational drawing, the culture of the organization and the human resources lead the ranking of the main responsible variables for the knowledge management in the organizations.

Another discussion concerning the identification of the managerial practices in the organizations with certification ISO 9001:2015 was made by Macedo-Soares and Lucas (1996). The authors investigated the top companies in quality managerial practice in Brazil. The study identified six managerial areas considered as keys: Managerial leadership in the Development of a Culture of Quality, Participative Management, Control and Quality Warranty Management, Management for businesses processes, Customers Care Management and Human Management. Starting from these results, Macedo-Soares and Lucas (1996) then suggested a group of activities that display the state of the art of the managerial practices of the companies considered "excellent" in the Brazilian market in that period [3].

In the same direction, Cunha and Santos (2004), studied the managerial practices related to the business innovation in companies recognized as leaders in innovation such as: Microsoft, IBM, 3M, EMBRAER, Dell Corporation, HP, Healthy, Bradesco, Mac Donald's, Ford Motor, AOL, ATandT and other. The research contemplates six (06) practice control areas that took care of the Strategy, Structures and Processes, People, Innovation and Technology, Strategic Alliances and the Environment, that were unfolded in forty nine (49) other managerial practices [14].



Generally, these studies looked for associations between the success of the organizations and the level of use of managerial practices. As a result, the present study adopts the perspective that the level of organizational knowledge management can be measured starting from the group of managerial practices used by the organizations.

Figure 3 illustrates the dynamics of the Knowledge Management in the organizations according to proposition of this article.

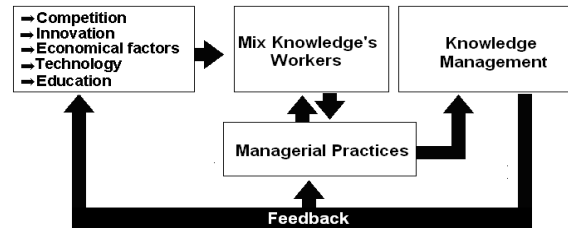


Figure 3: Cycle of the Knowledge Management

The model presented in Figure 3 assumes that external variables such as competition, innovation, economical factors, technology, and education, affect the individuals within a wide range of distinct sources of knowledge, i.e., scientific, empiric, philosophical or theological. Together, these individuals will form a knowledge mix that will determine the organizational knowledge, responsible for the managerial practices adopted in the execution of the organizational purposes.

It is precisely in these managerial practices that reside the managerial knowledge conception that this study intends to investigate, verifying, among certified companies for ISO and the no-certified ones, whether the use and perception of usefulness of the managerial practices, is a critical factor in obtaining the quality certification. Such proposition leads to the following question:

Does a relationship exist among the level of management knowledge, measured through the managerial practices adopted in the company, and the likelihood of obtaining certificates of managerial quality?

In order to make this investigation possible, the research subject described above was transformed in two hypotheses:

- H1.* Certified companies present a larger level of adoption of managerial practices than those no-certified ones.
- H2.* Certified companies present a larger perception of usefulness of the managerial practices than those no-certified companies.

Consistently with the proposition and hypotheses in this study subject, the following paragraphs describe the methods used in the development of this research.

3. Methods of Research

This section describes the research methods used to test the propositions presented in the previous section, on the relationship between managerial practices and management knowledge in certified and no-certified companies.

3.1. Sample of the Research

The sample of this study is composed of fifty six (56) companies, being twenty-seven (27) with certification and, twenty-nine (29) no-certified with activities and similar sizes. Both groups are constituted of companies located in the state of Espírito Santo, Brazil.

Table 1 presents the distribution of the companies in terms of quality certification, conditional on the size.

Company's Size	Companies				Total
	Certified		No Certified		
	n	56	n	56	
2 Small	6	10,71%	7	12,50%	23,2%
3 Medium	15	26,79%	18	32,14%	58,9%
4 Big	6	10,71%	4	7,14%	17,9%
Total	27	48,21%	29	51,79%	100,0%



Table 2 presents a concentration in the sample of construction companies. This phenomenon is associated to the local real estate growth governed under the influence of the petroleum industry and to the regulation's demands of the section on the part of the fiscalization organs, what impelled the companies to work in order to acquire the quality certifications.

Table 2: Distribution of the Industrial Groups

Company's Activity	n	Certified	n	No Certified	n	Total
Car Dealers	1	1,8%	2	3,6%	3	5,4%
Systems and Automation	2	3,6%	2	3,6%	4	7,1%
Production of Products of Latex	1	1,8%	1	1,8%	2	3,6%
Administration of Trips	1	1,8%	1	1,8%	2	3,6%
Consultancy	2	3,6%	2	3,6%	4	7,1%
Communication and Telecommunication	1	1,8%	1	1,8%	2	3,6%
Import and Export	1	1,8%	0	0,0%	1	1,8%
Basic sanitation	1	1,8%	1	1,8%	2	3,6%
Transport	1	1,8%	0	0,0%	1	1,8%
Industry's Food	2	3,6%	2	3,6%	4	7,1%
Ceramic industry	1	1,8%	1	1,8%	2	3,6%
Industry's Clothing	1	1,8%	1	1,8%	2	3,6%
Construction (Building Site)	10	17,9%	13	23,2%	23	41,1%
Graphic industry	1	1,8%	1	1,8%	2	3,6%
Events	1	1,8%	1	1,8%	2	3,6%
	27	48,21%	29	51,79%	56	100,0%

3.2. Collection of the Data

This study, in order to reach its objective, adopted a questionnaire with closed questions as an instrument for gathering the data, which allowed for a quantitative analysis.

The questions were addressed to the Directors and Managers with the purpose of identifying the use and the perception of usefulness of the managerial practices adopted by the companies, covering five dimensions: organizational structure, production control, managerial control, human management, and use of systems of information whose dimensions are unfolded in thirty five managerial practices described in the table 5. It is important to say that the questions tried to capture the aspects related to the existence of managerial practices considering:

- The level of adoption of the practice or managerial method (H1) and,
- The perception of the usefulness of managerial practices (H2) for the organization.

4. Analysis of Results

The measurement of the use level and perception of the usefulness of the managerial practices among companies certified and no-certified (using the software STAT®) made it possible for a more detailed analyzes of the data, done with the descriptive statistics and with the test – T, as is shown below.

4.1. Descriptive Analysis of the Sample

The first analysis tried to identify, conditional on the size, if certified companies presented a larger adoption of the managerial practices. Table 3 presents the data.

Table 3: Level of adoption of the managerial practices for size

Companies' Size	Certified Companies			No Certified Companies		
	Use	No	Totally Use	No Use	Use	No
Small	62%	10%		29%	36%	7%
Medium	66%	11%		23%	39%	12%
Big	74%	10%		16%	75%	14%

As shown in the table 3, certified companies of small and medium size present larger adoption of investigated managerial practices if compared with the no-certified companies of the same size. However, in the companies of great size, it can be seen that the adoption of the managerial practices described in this study is not privilege of the certified companies since both certified and non-certified had a similar result.



The descriptive analysis also allowed the verification the level of perception of usefulness of the managerial practices conditional on the size, as demonstrated in table 4.

Table 4: Level of perception of the usefulness of the managerial practices for size

Company's Size	Certified Companies			No Certified Companies		
	Use's Perception	No Use's Perception	Partial Use's Perception	Use's Perception	No Use's Perception	Partial Use's Perception
Small	46%	18%	36%	19%	10%	71%
Medium	52%	15%	34%	24%	17%	59%
Big	66%	10%	24%	62%	24%	14%

It is observed in Table 4 that certified companies of small and medium size present a larger perception of usefulness of the managerial practices when compared with the no-certified companies. However, the level of perception of usefulness of the managerial practices in companies of great size, be it certified or not, were basically equivalent.

Table 5 presents the summary of a descriptive analysis of the adoption level and perception of usefulness of the managerial practices, considering the study areas.

Table 5: Adoption and perception of usefulness of the managerial practices for organizational area

Area	Managerial Practices	Certified Companies		No Certified Companies		Abstract About Organization Area			
		Use	Use's Perception	Use	Use's Perception	Managerial practices usefulness		Use's Perception	
		%	%	%	%	Cer t	No Cert	Cer t	No Cert
Structure and Organizations	Organization chart	96%	59%	69%	31%				
	Study of Layout	81%	74%	59%	38%				
	Environmental norms	63%	48%	66%	41%	80%	64%	60%	37%
Production Control	Study of Times and Movements'	63%	56%	59%	38%				
	Planning and Control Production	59%	44%	45%	21%				
	Evaluation of Supplier	93%	81%	24%	41%				
	Just in Time	33%	33%	28%	28%				
	Control of Processes	89%	85%	59%	34%				
	Development of Products	56%	44%	34%	21%				
	System of Storage	63%	70%	48%	38%				
	Point of Operational Balance	70%	48%	55%	28%	66%	44%	58%	31%
Managerial Control	Managerial accounting	81%	59%	59%	34%				
	Indicators of Administration	85%	63%	17%	10%				



	Budget administration	74%	59%	41%	24%				
	System of Costing	59%	37%	34%	10%				
	Systems of Goals	89%	70%	52%	41%				
	Administration Working capital	59%	22%	66%	31%	75%	45%	52%	25%
Management People	Positions and Remuneration	37%	33%	21%	7%				
	Recruitment and Selection	74%	48%	38%	28%				
	Programs of Training	81%	81%	45%	55%				
	Programs of Qualification	70%	41%	14%	14%				
	Systems of Evaluation of Acting	67%	56%	31%	24%	66%	30%	52%	26%
Market Control	Researches with Customer	100%	89%	31%	28%				
	Performance Area Definition	63%	59%	66%	41%				
	Representative's Area Definition	26%	26%	24%	21%				
	Participation In Events	78%	74%	59%	45%				
	Use the medias Instruments	59%	52%	38%	34%	65%	43%	60%	34%
formation System	Accounting system	52%	44%	38%	28%				
	Financial system	96%	59%	72%	38%				
	Marketing System	41%	11%	24%	3%				
	Production System	63%	44%	45%	7%				
	Integrated system - ERP	52%	41%	31%	14%				
	Access the Internet	33%		38%					
	Communication for Intranet	85%		52%					
	Training in informatics	44%		34%		58%	42%	40%	18%
TOTAL (mean)		67%	54%	43%	28%				

Observing Table 5, it can be verified that certified companies not just present a larger adoption, but also a larger perception of the usefulness of the managerial practices. Only in four researched areas - Environmental Norms, Administration of the Working capital, definition of the Area of Performance and Access of the Employees to



the Internet - it is the case that the no-certified companies overcome the certified ones in what refers to a larger adoption of the managerial practices. However, due to the margins of difference being not significant, one cannot translate this into a better performance of the no-certified companies.

Given the proposals of this study, the following discussion verifies the above results using the test of verification of the averages (Test - T) to confirm or not of the mentioned hypotheses.

4.2. Tests of Differences

The use of the Test-T allowed verifying the existence of significant statistical differences among the two groups of the sample. Hence, the two hypotheses described in this study were investigated comparing the adoption level (H1) and the perception of usefulness (H2) of the managerial practices in the researched companies.

4.2.1. Level of Adoption of the Managerial Practices

Table 6 presents the summary for the verification of the hypothesis (H1).

Table 6: Level of Adoption of the Managerial Practices - General

Hypothesis 1: Certified companies present a larger level of adoption of managerial practices those no-certified companies.	Certified	No Certified	Results		
	Mean	Mean	Diff.	T - test	Signif
1 All of the organizational areas - General	0,54285	0,7703	(0,2275)	(4,4378)	0,0000
2 Organizational area					
2.1 .Structures and Organization	0,6551	0,8024	(0,1472)	(1,9832)	0,0262
2.2 Production control	0,5732	0,7222	(0,1489)	(2,2398)	0,0146
2.3 Managerial controls	0,5229	0,8209	(0,2979)	(3,8926)	0,0001
2.4 Human resources Administration	0,4758	0,8000	(0,3241)	(4,5257)	0,0000
2.5 Market control	0,5310	0,7851	(0,2541)	(4,1036)	0,0001
2.6 Information systems	0,5344	0,7407	(0,2062)	(3,6111)	0,0003

The result of the test, presented in Table 6, present a level of significance smaller than 10%, demonstrating that certified companies present a larger level of adoption of the managerial practices as compared to the no-certified companies. Given these results, the hypothesis (H1) considered in this article can be considered as correct.

4.2.2 Level of Perception of Usefulness of the Managerial Practices

At this stage, the test was used to check for the hypothesis (H2), i.e., that the certified companies present larger perception of usefulness of the managerial practices. This is a worthwhile analysis in the sense that the adoption of the practice doesn't translate necessarily in the perception of its usefulness. The results are presented in Table 7.

Table 7: Level of Perception of the Usefulness of the Managerial Practices

Hypothesis 2: Certified companies present a larger level of perception of the usefulness of the managerial practices those no-certified companies.	Certified	No Certified	Results		
	Mean	Mean	Diff.	T - test	Signif
1 All of the organizational areas - General	0,2801	0,53588	(0,2557)	(4,9825)	0,0000
2 Organizational area					
2.1 .Structures and Organization	0,36781	0,60493	(0,2371)	(2,6414)	0,0054
2.2 Production control	0,31034	0,57870	(0,2683)	(4,3309)	0,0000
2.3 Managerial controls	0,25287	0,51851	(0,2656)	(4,2161)	0,0000
2.4 Human resources Administration	0,25517	0,51851	(0,2633)	(3,3548)	0,0007
2.5 Market control	0,33793	0,60000	(0,2620)	(3,4298)	0,0006
2.6 Information systems	0,17931	0,40000	(0,2206)	(3,5563)	0,0004

The summary of the tests presented in table 7 confirms the second hypothesis (H2) of this study since the levels of significance of the tests are below 10%, which indicates that both in general terms as well as in the



organizational area, certified companies present a larger level of perception of the usefulness of the managerial practices.

4.2.3. Tests of Sensibility of the Data

Considering the basic assumption of this study, i.e., that the administration of the organizational knowledge manifests itself through the group of adopted managerial practices, and that certified companies for ISO can present a larger adoption level and perception of usefulness of the managerial practices, is necessary to verify to what extent dimensions such as the activity and size of the companies affect the results presented so far. Therefore, the following tests will verify the sensibility of the sample as for the size and the business activity, given that the sample presents a larger incidence of companies of medium size and of the construction sector.

4.2.3.1. Sensibility of the Data to the Business Activity

Table 8 presents the results of the tests, noting that in this stage, the companies of Engineering and Construction were excluded.

Table 8: Sensibility of the Data to the Business Activity

Hypothesis 1: Certified companies present a larger level of adoption of the managerial practices those no-certified companies of similar size.		Certified	No Certified	Results		
		Mean	Mean	Diff.	T - test	Signif
1	All of the organizational areas - General	0,62857	0,76134	(0,1327)	(1,9054)	0,0330
2	Organizational area					
	2.1 .Structures and Organization	0,66666	0,76470	(0,0980)	(0,9305)	0,1797
	2.2 Production control	0,61718	0,69117	(0,0739)	(0,8525)	0,2020
	2.3 Managerial controls	0,62500	0,80392	(0,1789)	(1,7749)	0,0429
	2.4 Human resources Administration	0,51250	0,77647	(0,2639)	(2,8790)	0,0036
	2.5 Market control	0,63750	0,80000	(0,1625)	(2,0949)	0,0222
	2.6 Information systems	0,60937	0,76470	(0,1553)	(2,0325)	0,0254

The results of Table 8 indicate that, although certified companies have larger adoption of the managerial practices than no-certified companies, when the analysis is made by organizational area, the results appear in the requirements Structure and Organization and Control of Production to have a level of significance superior to 10%. This means that in these requirements, the hypothesis that the certified companies possess a larger level of adoption of the managerial practices than the no-certified companies is not correct.

In synthesis, the results of the tests in Tables 6 and 7, when it refers to the requirements Structure, Organization and Control of Production, are sensitive to the strong concentration of companies of Engineering and Building site in the sample. As for the other requirements, or organizational areas, the results are not sensitive to the industrial activity and support the results presented previously.

4.2.3.2. Sensibility of the Data to the Company's Size

Continuing with the verification of sensibility of the sample, the results presented below excluded of the sample the companies of medium size (Size 3), since they represent 59% of the sample (Table 1). In this way, these results only consider the small and big companies.

Table 9: Sensibility of the Data to the Company's Size

Hypothesis 1: Certified companies of Small and Big size present a larger level of adoption of the managerial practices those no-certified companies of similar size.		Certified	No Certified	Results		
		Mean	Mean	Diff.	T - test	Signif
1	All of the organizational areas - General	0,605	0,783	(0,178)	(2,052)	0,026
2	Organizational area					
	2.1 .Structures and Organization	0,667	0,778	(0,111)	(0,805)	0,215
	2.2 Production control	0,614	0,698	(0,084)	(0,748)	0,231
	2.3 Managerial controls	0,561	0,819	(0,259)	(2,140)	0,022



2.4 Human resources Administration	0,545	0,867	(0,321)	(2,905)	0,004
2.5 Market control	0,636	0,783	(0,147)	(1,455)	0,080
2.6 Information systems	0,591	0,760	(0,170)	(1,905)	0,035

The results, presented in Table 9, indicate a level of significance superior to 10% in requirements Structures and Organization and Control of Production in what refers to the level of adoption of the managerial practices. This means that in these requirements, the hypothesis that certified companies possess a larger level of adoption of the managerial practices than the no-certified ones, should not be considered as correct. As for the other requirements, or organizational areas, the test is consistent with the results discussed previously.

Concluding the tests, it is verified if the general result in tables 6 and 7 suffers influence of the companies of size 3 in function of the large incidence of these companies in the sample.

Table 10: Sensibility of the Data to the Companies of Medium Size (size 3)

Hypothesis 1: Certified companies of Size 3 present a larger level of adoption of the managerial practices as compared to no-certified companies.	Certified	No Certified	Results		
	Mean	Mean	Diff.	T - test	Signif
1 All of the organizational areas - General	0,505	0,760	(0,255)	(4,057)	0,000
2 Organizational area					
2.1 .Structures and Organization	0,648	0,822	(0,174)	(2,037)	0,025
2.2 Production control	0,549	0,742	(0,193)	(2,312)	0,014
2.3 Managerial controls	0,500	0,822	(0,322)	(3,160)	0,002
2.4 Human resources Administration	0,433	0,747	(0,313)	(3,351)	0,001
2.5 Market control	0,467	0,787	(0,320)	(4,193)	0,000
2.6 Information systems	0,500	0,725	(0,225)	(2,982)	0,003

According to the results exposed in the Table 10, certified companies of size 3 present a larger intensity of adoption of the managerial practices than no-certified companies, meaning that the general analysis done in the tables 6 and 7 suffer influence of the companies of the size 3, which are the majority of the sample. However, in general the results presented support the hypotheses of the study and lead to questions for more specific future analyses.

5. Conclusions

The comparative analysis among the managerial practices of the researched companies suggests that the managerial practices precede the effort of the organization in implanting a program of administration of the quality based on the Norms ISO. The relationship among the managerial practices with the certification level ISO of the companies can allow the organizations to identify or select the group of managerial practices to be implemented to assist the demands of a program of administration of the quality. Besides this, the identification of an association among the managerial practices, administration of the organizational knowledge and the quality certification, will make possible the revaluation of the existing managerial practices, in way that generates a knowledge management capable to promote a better development of the organizations.

The evidences documented in this study lead to the conclusion that the certified companies, in general, present a better knowledge management, since besides presenting a larger group of managerial practices, they also possess a larger perception of the usefulness of the managerial practices. Such evidences induce us to believe on the possibility of measuring the administration of the organizational knowledge form the group of developed managerial practices.

Considering that this study simply concentrated on a sample of certified and no-certified companies, and given the sensibility of the sample to the activity and to the business size, the main limitation of this study lies in the generalization of the results, given that in companies of great size and in more complex productive processes, the certification ISO doesn't seem to be a differential in relation to the level of the managerial practices. As proposition for future works we suggest the verification of a correlation between the managerial practices of the



organizations and their financial results in order to verify whether the companies with the best set of managerial practices possesses better returns on their assets.

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