

# THE STANDARD NBR ISO 9001:2000 AND THE BRAZILIAN QUALITY AWARD: A COMPARATIVE ANALYSIS

Rodrigo Lopes Silva, [l\\_opes@yahoo.com.br](mailto:l_opes@yahoo.com.br)

Alvaro Azevedo Cardoso, PhD, [azevedo@unitau.br](mailto:azevedo@unitau.br)

Program of Master in Mechanical Engineering, concentration area: Production, of Taubaté University, Taubaté – SP, Brazil

**Abstract.** *This paper aims to compare the pathways of management systems ruled by standard NBR ISO 9001:2000 to the ones ruled by the Brazilian Quality Award (PNQ), so as to figure out their similarities and differences. Such comparison has been carried out from a theoretical investigation on the NBR ISO 9000 series and the excellence model of PNQ. The results show the applicability of both models in organizations of any given size or sort. Also, it shows that PNQ emphasizes pro-activity, innovation, vision of the future, social responsibility and orientation for results, being, therefore, wider than the principles of the ISO. Further, that the ISO has requirements which are closely related to the following criteria of the PNQ: 1-Leadership, 3- Customers, 6- People and 7- Processes; and barely related to the criteria 2-Strategies and plans, 4-Society and 5- Information and knowledge; and no relation with the criterion 8-Results. The conclusions of the work are: the PNQ model has a wider reach and carries out a stronger focus on external matters than the ISO; that organizations must reach out beyond the ISO certification pattern, taking the model PNQ as a more mature level of management system.*

**Keywords:** NBR ISO 9001:2000, Brazilian Quality Award, Comparative analysis.

## 1. INTRODUCTION

The past few decades of the 20<sup>th</sup> Century saw the advent of a new organizational management paradigm focused on quality. Originated within the industrial sector, it has expanded to all of the sectors of economy. (Iñaki, Landín and Casadésus, 2006).

From the initial activities related to product inspection to the statistic control of the process, this new paradigm evolves to quality warranty systems and afterwards to quality management systems such as the normative model NBR ISO 9001:2000 and the other excellence models of the national quality prizes (Martins, 2003)

Many companies certified by the ISO 9001:2000 are being encouraged to follow the path towards the excellence of the quality prizes so as to achieve higher levels of maturity regarding the application of the total quality management philosophy (Van Der Wiele, Williams and Dale, 2000; Iñaki, Landín and Casadésus, 2006; Vouzas and Gotzamani, 2005).

One of the objectives of the excellence management models, provided by the quality awards, is to help the organizations to improve continually, assuring their competitiveness and survival (FNQ, 2006; Cardoso, 2003).

### 1.1 Standard NBR ISO 9000:2000

Taking the growth of the international trade into account, it was necessary to standardize quality management systems among the countries, so that customers and suppliers could use a vocabulary and standards that would lead to a mutual understanding. (Mello, Turrioni and Costa Neto, 2000). In 1987, the International Organization for Standardization (ISO) legalized ISO 9000 as standards for quality warranty systems. In 1990, the Brazilian Association for Technical Standards (ABNT) legalized the ISO 9000 family of standards through ABNT NBR ISO 9000 (Leite, 2005).

With its second review, released in 2000, the ABNT NBR ISO 9000 family of standards is formed as follows (ABNT, 2005):

ABNT NBR ISO 9000: it describes the vocabulary and basis of quality management systems. This standard was reviewed in 2005;

ABNT NBR ISO 9001: it specifies the requirements of a quality management system;

ABNT NBR ISO 9004: it provides guidelines aiming at improving the performance of the organization;

ABNT NBR ISO 19011: it provides guidelines for audits of quality and environmental management systems.

The standard must be understood and applied through a process approach in order to assure the effectiveness and efficiency of the management system, the continuous improvement of the whole system, meeting the demands of the interested parts and the satisfactions of these parts. Figure 1 presents how the requirements of the standard are integrated in the process approach.

Figure 1 also shows that the top management leads the organization towards the customer by defining guidelines and objectives, assuring the understanding of the customers' needs, providing resources for making the products or rendering the services, measuring and assessing customers' satisfaction and promoting the improvement of the whole system. (ABNT, 2000a).

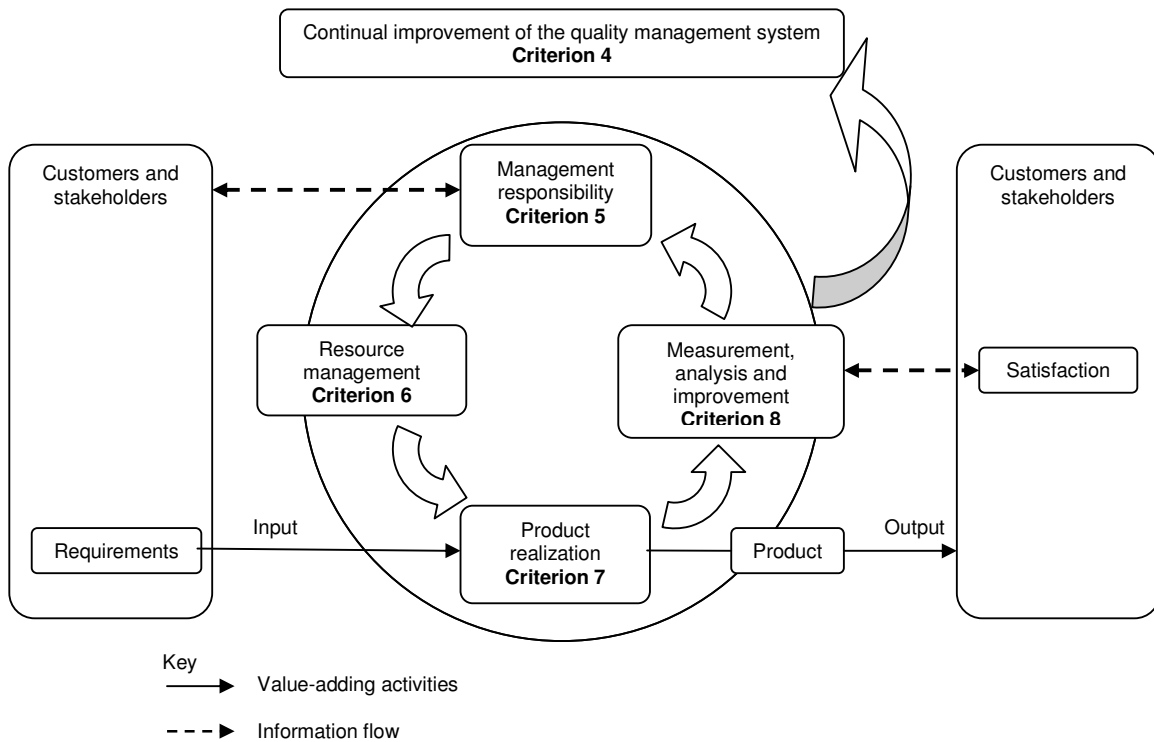


Figure 1. Quality management based on the process approach (Adapted from ABNT, 2005).

Having the NBR ISO 9001:2000 certification, an organization shows that it is able to supply the products that meet the customers requirements and other applicable requirements (ABNT, 2000a). It is important to highlight that this standard does not specify requirements regarding the product, but regarding the quality management systems (ABNT, 2005), e.g., the products manufactured by a certified system have the same characteristics and the same quality standard. It also means that the customer requirements were met (Sartorelli, 2003). According to Cardoso, Cardoso e Chaves (2006) the NBR ISO 9001:2000 standard does not guarantee that the organization has quality, given that the managers are facing the certification as mere formality.

The NBR ISO 9004:2000 standard approaches the continuous improvement in the efficiency of the quality management system, allowing the organization to increase the level of satisfaction of the stakeholders and its overall performance (ABNT, 2000b). However, Wilcock *et al.* (2006) suggests that although ISO 9004:2000 may potentially become a guide to improvement of the performance, it is being perceived as unable to provide useful guidelines for the organizations to achieve excellence.

## 1.2 Brazilian Quality Award (PNQ)

The origin of the quality awards goes back to 1951, in Japan, with the creation of the Deming Application Prize. Afterwards, two other outstanding prizes were created: the Malcolm Baldrige National Quality Award (MBNQA) in the USA in 1987 and the European Quality Award (EQA), created by the European Foundation for Quality Management (EFQM) in 1992 (Pranic, 2002).

In 1991, the Brazilian National Quality Award Foundation was created and it, in turn, institutionalized the PNQ in 1992. The prize was inspired by the MBNQA and with the passing of time it incorporated topics from other prizes. In 1995 the PNQ was updated by incorporating new management trends and improvements that had been incorporated to the MBNQA. In addition, a closer contact with the Canadian National Quality Institute (NQI) was also maintained (FNQ, 2006).

Until 2003 the Foundation tried to develop and consolidate the PNQ as an excellence reference regarding management in the country; after 2004 it started to search for the awareness and the dissemination of the basis of the excellence in management; and in 2005 it became the National Quality Foundation (FNQ) (FNQ, 2006).

The Management Excellence Model<sup>®</sup> established by the FNQ is constituted by eight criteria elaborated from a 12-principle basis, it does not prescribe tools or specific management practices and it can be applied by any sort of organizations (FNQ, 2006). Figure 2 represents the Excellence Model.

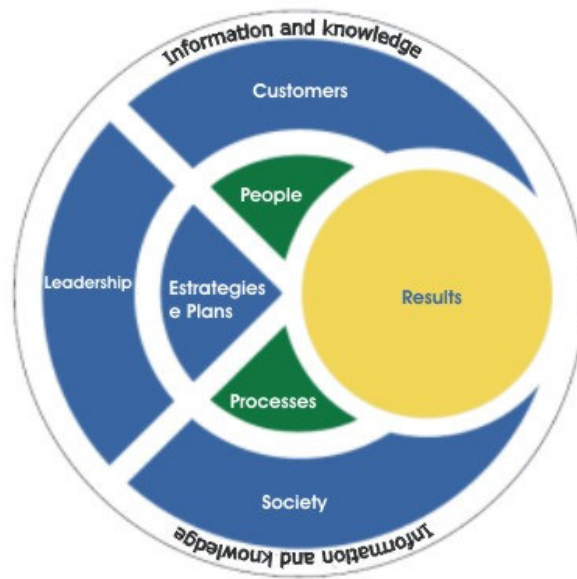


Figure 2. Management Excellence Model® (FNQ, 2006).

Figure 2 represents the leadership of the organization, identifying the needs and expectations of the customers and of the society, aiming at setting strategies and actions plans that guide the individuals through the execution of the processes that will generate the products that will meet the customers' and the society's demands. The results are measured and compared with the goals of the organization. Then, they return as information and knowledge that will enable the organization to learn and reinforce its actions or correct them. (FNQ, 2006).

The PNQ excellence criteria are updated by their comparison with the criteria of other reference models, among them ISO 9000 family of standards. After 2002 the FNQ started to integrate a subcommittee of ISO/TC 176, aiming at debating the influence of excellence models on the ISO 9004:2000 (FNQ, 2006).

### 1.3 Comparisons between ISO 9000 family of standards and other excellence models

Van Der Wiele, Williams and Dale (2000) compared the excellence model of the European quality prize to the ISO 9001:1994 standard by analyzing the criteria of the prize that are considered by the ISO in order to reach a conclusion regarding the differences between the two models. The authors concluded that the excellence models represent a higher level of maturity in management systems in relation to ISO 9000, suggesting that the organizations start by implementing ISO 9000 and heads gradually to an excellence model.

Tummala and Tang (1996) compared Quality Strategic Management, the MBNQA, the EQA and the ISO 9000:1994 by using their essential concepts. The authors suggested that the organizations start by the implementation of the ISO 9000, given that it demands fewer resources, less time and effort when compared to the quality prizes, and then expand to a quality strategic management or one of the models of the quality prizes that were analyzed. They also concluded that the models of the quality prizes have a wider range if they are compared to the ISO 9000.

Tonk (2000) states that it is possible to compare the MBNQA and the ISO 9000:2000 because both are strongly oriented towards customers, processes and continuous improvements, and they also accept similar quality methodologies and tools. The comparison was carried out based on the criteria and requirements of both models. The main difference is that ISO 9000 focus on the internal aspects of the organization and the MBNQA focus on their external aspects. The author mentions to weak aspects of the ISO 9000, which, in turn, are strong aspects of the MBNQA: the need to measure the impact of the model on the results of the organization and, also, on the strategic planning. A hybrid model called MB-9000 is proposed, and it completed the gaps of the MBNQA using requirements from the ISO. The aspect that does not have a definition is how the scoring of the new hybrid model is carried out: points according to the criteria of the prize or whether there is conformance / nonconformance system of the standard.

## 2. OBJECTIVE

This study intends to compare the management systems proposed by ABNT NBR ISO 9001:2000 standard and by the Management Excellence Model® of the Brazilian Quality Award in order to understand their similarities and differences.

### 3. METHODOLOGY

Initially, a bibliographic research was used for reviewing the concepts of the ABNT NBR ISO 9000 family of standards and of the Management Excellence Model®. Also, comparative approaches of this standard with other excellence models of other quality prizes were carried out.

The comparison between the NBR ISO 9001:2000 standard and the Management Excellence Model® of the PNQ was carried out by comparing the following variables: quality management principles and excellence principles, requirements and criteria, interpretation of the internal logic of both models. This comparison considered both ABNT NBR ISO 9001:2000 and the ABNT NBR ISO 9004:2000 standards, given that although only the first one has a certification purpose, both standards were designed to complement each other and lead the organization to a continuous improvement (ABNT, 2000b), which we believe is the objective of the excellence models. This way it is possible to assure better comparison conditions.

### 4. RESULTS AND DISCUSSION

The data of the comparing variables were distributed into auxiliary tables in order to facilitate the visualization of the points where there is congruence between the standard ABNT NBR ISO 9000 and the Management Excellence Model® and where approximations were not observed.

The first comparison is between the principles which served as the basis for the formulation of both models.

In Table 1, the symbol ⇔ indicates that an equality was observed between principles.

The principles of number 1 to 7 are similar, mainly considering a greater approach of quality management supplied for the ABNT NBR ISO 9004:2000. In relation to the other principles no equivalence was observed.

Table 1. Comparison of the principles

Quality management principles ABNT NBR ISO 9000 family of standards	Comparison	Excellence principles Management Excellence Model®
1. System approach to management	⇔	1. Systemic view
2. Continual improvement	⇔	2. Organizacional learning
3. Leadership	⇔	3. Leadership and constancy of intentions
4. Customer focus	⇔	4. Customer and market focus
5. Factual approach to decision making	⇔	5. Management based on facts
6. Involvement of people	⇔	6. People appreciation
7. Process approach	⇔	7. Process approach
8. Mutually beneficial supplier relationships		8. Pro-activity
		9. Innovation
		10. Vision of the future
		11. Social responsibility
		12. Orientation towards results

By using this comparison it is possible to see that the Management Excellence Model® intends the organization that adopts is to be ahead of other organizations within the market, for it focuses on pro-activity, innovation and vision of the future as its principles. The social responsibility indicates the value given to the integration of the organization with the society, aiming at sustainable development. Finally, the orientation towards results allows the verification of the efficiency of the management practices to meet the demands of the stakeholders. The fact that the standard ABNT NBR ISO 9000 considers “mutually beneficial supplier relationships” as a principle shows a greater focus on the execution of the product.

The second comparison is between the criteria and requirements that compose the two models.

Table 2. Comparison between criteria and requirements

Criteria of Management Excellence Model®	Comparison	Requirements of the NBR ISO 9001:2000 and ABNT NBR ISO 9004:2000
Introduction	⇔	1.2 Application
1. Leadership	⇔	5 Management responsibility

1.1 Leadership system	↔	<b>5.2 Stakeholders necessities and expectations</b> 5.5.2 Management representative
1.2 Excellence culture	↔	4.2 Documentation requirements 4.2.1 General 4.2.2 Quality manual 4.2.3 Control of documents 4.2.4 Control of records <b>4.3 Use of the quality management principles</b> 5.1 Management commitment 5.3 Quality policy <b>5.5.3 Internal communication</b> <b>6.2.1 Involvement of people</b> <b>7.1.2 Aspects to be considered</b> <b>7.1.3.1 General</b> 8.1 General 8.5.1 Continual improvement <b>8.5.4 Continual improvement of the organization</b>
1.3 Organization performance analysis	↔	<b>5.5.3 Internal communication</b> 5.6 Management review 5.6.1 General 5.6.2 Review input 5.6.3 Review output 8.4 Analysis of data 8.5.1 Continual improvement
2. Strategies and plans	✖	
2.1 Strategies elaboration	↔	<b>5.6.2 Review input</b> <b>5.6.3 Review output</b> <b>6.7 Natural resources</b>
2.2 Strategies implementation	↔	5.4 Planning 5.4.1 Quality objectives 5.4.2 Quality management system planning 6.1 Provision of resources <b>6.1.1 Introduction</b>
3. Customers	↔	5.2 Customer focus
3.1 Image and market knowledge	↔	5.2 Customer focus 7.2.1 Determination of requirements related to the product 7.2.2 Review of requirements related to the product
3.2 Relation with customers	↔	7.2.3 Customer communication 8.2.1 Customer satisfaction
4. Society	✖	
4.1 Socio-environmental responsibility	↔	<b>5.2.2 Necessities and expectations</b> <b>5.2.3 Statutory and prescribed requirements</b> <b>8.2.4 Monitoring and measurement of stakeholders satisfaction</b>
4.2 Ethics and social development	↔	<b>5.2.2 Necessities and expectations</b> <b>5.2.3 Statutory and prescribed requirements</b> <b>8.2.4 Monitoring and measurement of stakeholders satisfaction</b>
5. Information and knowledge	✖	
5.1 Organization information management	↔	<b>6.5 Information</b>
5.2 Comparative information management	✖	
5.3 Intangible assets management	↔	7.5.4 Customer property
6. People	↔	5.5 Responsibility, authority and communication 6.2 Human resources
6.1 Working system	↔	5.5.1 Responsibility and authority 6.2.1 General 6.2.2 Competence, awareness and training <b>8.2.4 Monitoring and measurement of stakeholders satisfaction</b>
6.2 Capacitation and development	↔	6.2.1 General 6.2.2 Competence, awareness and training

6.3 Life quality	⇔	6.4 Work environment <b>8.2.4 Monitoring and measurement of stakeholders satisfaction</b>
7. Processes	⇔	0.2 Process approach 4.1 General requirements <b>7.1.3 Process management</b>
7.1 Main business processes and support processes management	⇔	0.2 Process approach 4.1 General requirements 7.1 Planning of product realization <b>7.1.3.2 Input, output and review of process</b> 7.2.1 Determination of requirements related to the product 7.2.2 Review of requirements related to the product 7.3 Design and development 7.3.1 Design and development planning 7.3.2 Design and development inputs 7.3.3 Design and development outputs 7.3.4 Design and development review 7.3.5 Design and development verification 7.3.6 Design and development validation 7.3.7 Control of design and development changes 7.5 Production and service provision 7.5.1 Control of production and service provision 7.5.2 Validation of processes for production and service provision 8.2.3 Monitoring and measurement of processes 8.2.4 Monitoring and measurement of product 8.3 Control of nonconforming product 8.5.2 Corrective action 8.5.3 Preventive action
7.2 Customer relation management	⇔	<b>6.6 Suppliers and partners</b> 7.4 Purchasing 7.4.1 Purchasing process 7.4.2 Purchasing information 7.4.3 Verification of purchased product 8.2.3 Monitoring and measurement of processes
7.3 Economic and financial management	⇔	6.1 Provision of resources <b>6.8 Financial resources</b> 8.2.3 Monitoring and measurement of processes
8. Results	✖	
8.1 Economic and financial results	✖	
8.2 Customer and market results	✖	
8.3 Society results	✖	
8.4 People results	✖	
8.5 Main business processes and support processes results	✖	
8.6 Suppliers results	✖	
	✖	0.1 General
	✖	0.3 Relationship with NBR ISO 9004
	✖	0.4 Compatibility with other management systems
	✖	1 Scope
	✖	2 Normative reference
	✖	3 Terms and definitions
	✖	6.3 Infrastructure
	✖	7.5.3 Identification and traceability
	✖	7.5.5 Preservation of product
	✖	7.6 Control of monitoring and measuring devices
	✖	8.2.2 Internal audit

In Table 2 the symbol ⇔ indicates that a relation between the criterion and the requirement was observed, whereas the symbol ✖ indicates that this relation was not observed. In the right column the requirements written in bold fonts relate to the NBR ISO 9004:2000 standard. Only the requirements that are not in NBR ISO 9001:2000 or appear in a

different way were listed. The criteria of the Management Excellence Model® were the basis for this comparison and then, it was possible to observe where the ISO requirements fit. Some requirements join different approaches in their texts, and all of them were considered or the comparison. However they only appear in the table, in front of the criterion they have a 'greater' relation with.

During the comparison between the introduction of the PNQ (FNQ, 2006) publication and the requirement 1.2 of the NBR ISO 9001:2000 standard, it was observed that both models intend to be applicable to organizations of any sort, sector or size.

It was also verified that regarding the criteria (1) Leadership, (3) Customers, (6) People and (7) Processes there are requirements presenting a strong relation. Among them it is possible to highlight the Culture of excellence (in criterion 1), Relationship with customers (criterion 3), Working systems (criterion 6) and Management of the business main processes and support processes, as well as Relationship management with the suppliers (both in criterion 7).

However, criteria (2) Strategies and plans, (4) Society and (5) Information and knowledge present a weak relation, mainly regarding the themes Strategic planning (criterion 2), Socio-environmental responsibility and ethics and social development (criterion 4), Management of comparative information and Management of intangible assets (criterion 5).

Regarding criterion (8) Results, no correspondence with the requirement was observed. Also, correspondences in the PNQ for the following requirements were not observed: 0.1 Generalities, 0.3 Relation with NBR ISO 9004, 0.4 Compatibility with other management systems, 1 Objective and application field, 2 Normative reference, 3 Terms and definitions, 6.3 Infra-structure, 7.5.3 Identification and traceability, 7.5.5 Product preservation, 7.6 Measuring and monitoring control devices and 8.2.2 Internal audit.

Additionally, in order to help the comparison between the criteria and the requirements, a valorization analysis of the criteria of the Management Excellence Model® to highlight the importance the Model gives to each criterion.

Table 3. Valorization of the PNQ criteria (Adapted from FNQ, 2006)

Critérios	Value (points)	%
1. Leadership	110	11
2. Strategies and plans	60	6
3. Customers	60	6
4. Society	60	6
5. Information and knowledge	60	6
6. People	90	9
7. Processes	110	11
8. Results	450	45
Total	1000	100

It is possible to notice that the Model is highly result oriented (45%), the role of leadership is 11%, the process orientation is 11% and the valorization of the individual is 9%.

The third comparison regards the interpretation of the internal logic of both models, which is based on the continuous improvement of the organization through the application of the PDCA methodology to the original models displayed in Figure 1 and 2.

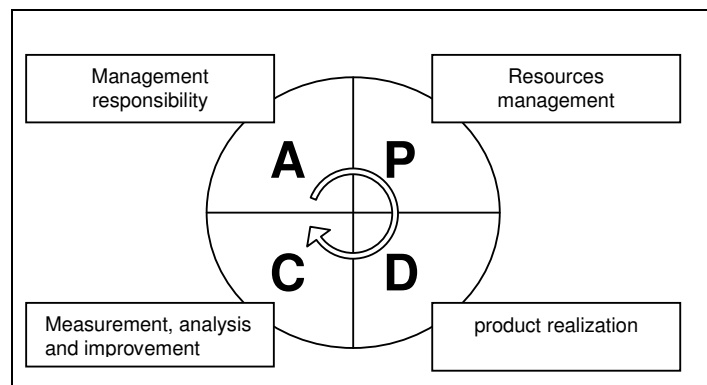


Figure 3. Continuous improvement according to ISO 9000

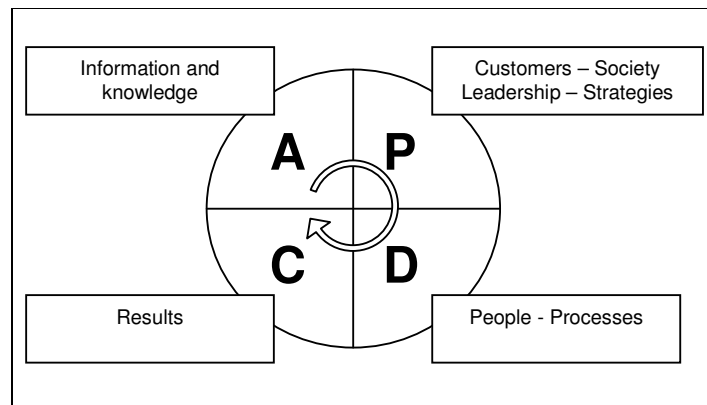


Figure 4. Continuous improvement according to the PNQ

According to the comparisons that were carried out, it is possible to observe that both models can be applied to organizations of any size or sector and they have an internal logic based on the PDCA methodology (Figures 3 and 4).

In relation to the comparisons shown in Tables 1 and 2, as well as the analysis shown in Table 3, one can notice that both models are strongly oriented towards the role of leadership, attention to the continuous improvement and to the process approach, which confirms Tonk's (2000) ideas.

According to the comparisons that were carried out, it was possible to notice that the Management Excellence Model® deals with some approaches that are not treated consistently by NBR ISO 9001:2000 such as the strong orientation towards results, the management strategic orientation, the management of intangible assets and comparative information and the strong interaction between the organization and the society. The identification of the wider reach of the Management Excellence Model® is coherent with the conclusions drawn by Tummala and Tang (1996) and Van Der Wiele, Williams and Dale (2000).

It was also noticed that the Management Excellence Model® has greater focus on external matters, which is made evident by the need of the organization to consider the market, worry about its future and about the society. On the other hand, NBR ISO 9001:2000 has greater focus on internal matters, which is shown by the emphasis on technology such as requirements 6.3, 7.5.3, 7.5.5, 7.6 and 8.2.2. This conclusion is similar to Tonk's (2000).

## 6. CONCLUSIONS

The Management Excellence Model® of the PNQ has a wider approach than NBR ISO 9001:2000, focusing on aspects such as strategic management, management of the relationship with the society and information management. It also has a greater focus on external matters.

NBR ISO 9001:2000 is more technically oriented and has greater focus on the internal matters of the organization.

Both models have similarities regarding a strong orientation towards the role of the leadership, attention to the continuous improvement and process approach.

It is, then, suggested that the organizations go past the NBR ISO 9001:2000 certification, considering, at first, the enhancement of the management system suggested by NBR ISO 9004:2000 and followed by the adoption of the Management Excellence Model® of the PNQ as a more mature level of this system.

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