

INFORMATION AND KNOWLEDGE MANAGEMENT CONTRIBUTIONS TO ORGANIZATIONAL RESULTS IN A CONTEXT OF MANAGEMENT MATURITY

Santos, M. B.

Marcio Bambirra Santos, Dr., CEFET-MG

E-mail: mb@mbambirra.com.br

Camilo, R. D.

Ronaldo Darwich Camilo, Dr., FUMEC University

E-mail: ronaldo.camilo@fumec.br

Muylder, C.F.

Cristiana Fernandes de Muylder, Dra., FUMEC University

E-mail: cristiana.muylder@fumec.br

Parreiras, F. S.

Fernando Silva Parreiras, Dr., FUMEC University

E-mail: fernando.parreiras@fumec.br

ABSTRACT

This study evaluates the informational and knowledge perspectives of organizational management processes considering an organizational management maturity model. It evaluates essential management process maturity to deepen the understanding of the enabler role of information and knowledge management on operational processes that are periodically redesigned and implemented in the value chain, as a backbone that promotes organizational performance results. These processes as well as all the other organizational processes have to deal with information, convert knowledge and conduct resource transformations, within a stressed managerial context. Therefore this research studies the validity of this conceptual framework applying a structural equation modeling to test the logic and the strength of this chaining. Its data was composed of 52 companies in a multi-organization level and they were assessed from 2008 to 2012. We used the model version regarding a reference criteria applied to the management excellence, by the Quality Institute of Minas Gerais state (PMQ), in Brazil. The results showed direct contributions of central management processes for the performance which is sensitive to context. Also the power of information and knowledge management used to obtain results, is moderated by the maturity of management practices in the processes of an extended value chain.

Keywords: Knowledge management performance. Information system performance. Maturity models. Process-result management models. Approach, application, learning and integration management. Quality management excellence. Dynamic capability. Resource dependence.

1 INTRODUCTION

The most effective design and implementation forms of sustainable organizations have been acknowledged by their different levels and quality of organizational knowledge, their skill development and their relationships with processes and management. Competing organizations in networks of the knowledge economy seek to strengthen the strategic importance of their processes, based on a more accurate perceptive of information processing and knowledge management in a quality management based-context (McCormack & Rauseo 2005, Ford *et al.*, 2014). Therefore there has been is a need for deepening and ground microfoundations approaches, focusing on various organizational processes, incorporating the identification, creation and integration of management of activities and routines (Langley, Smallman, Tsoukas, Ven, 2013, Felin, Foss, Heimeriks, Koen, Madsen, 2012). These processes are regarded as basic units of analysis and management actions which are necessary for generating value within organizations.

Processes are structured arrangements of activities, transforming inputs into outputs (Garvin, 1995). Technically, a process is a set of predetermined activities that, if regularly and sequentially performed, will lead to an expected result, meeting the needs and expectations of customers and other stakeholders. Macro level business processes include those ones related to acquiring supplies, production of goods or services, delivering products to customers, and after-sales services (Porter, 1985, Deming, 1993). Other features of this approach suggest that processes are considered receptors, modulators, transformers and transmitters of information flow. They promote absorption, conversion and use of knowledge.

Information processing, creation, sharing and knowledge retention (Schroeder, 1994, Duchek, 2013, Nonaka, Krogh, Rechsteiner, 2012) provide information and guidance entries, enabling the decision-making and changes in the processes of an extended value chain, considering both the supply and the financial processes (Moori & Zilber, 2003, FNQ, 2013). Primarily, processes can be understood as the information selection places that generate organizational knowledge as well as best performance if they are systematically determined and applied in an organization. Process management involves implementing objectively decision-making tools and problem solving management, based on information about facts and data (Santos, 2011). They also include techniques and infrastructure to enhance the process projects, their control and their improvement (Silver, 2004, Ford *et al.*, 2014).

Organizations' performance depends mainly on the degree of structured allocation of resources, creating dynamic capabilities (Todorova & Durisin, 2007 Zahra & George, 2002) when they are regularly and increasingly appropriated in their processes through organizational learning (Teece, Pisano, Shuen, 1997 Winter & Zollo, 2002). The best or the worst performance, recorded in a period of the organization's strategy, is the result of variations that happen in their allocated capacities into each process, observing the degree of maturity in its set of management practices.

From the maturity management perspective, the allocation capacities in processes happen when they are designed, standardized, controlled and continuously improved. This is frequently performed from a regular diagnostic level of such maturity, followed by a redesign of the prioritized processes. The results of these processes, received by each stakeholder, determine the specific and general levels of the organization performance. The managerial maturity of an organization is a concept involving the systematic way in which progress is attained and best results are achieved. The maturity is based on the structuring of actuator factors, such as those ones observed at stages of capabilities of their processes (Crosby, 1979, Nist, 2011). Rapidly changing environments require organizations to change agilely their management orientation between control and learning (Schroeder, 1994) and process and practices integration (Tang & Bauer, 1995).

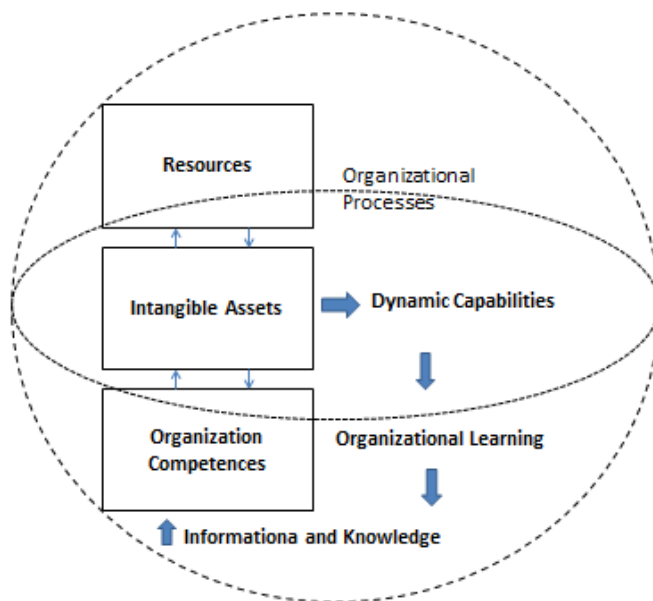
The information environment has been improving the process of knowledge management, making it faster, more accurate, cost-effective, better controlled, operational efficiency and effectiveness of the organizations' deliberated strategies. Information technology tools have provided greater security and better reliability to the systematic knowledge management (Chadha & Ritika, 2014). Internal and external activities, routines and business processes, may be seen as organizational performance units, through which intangible assets, resources and capabilities of an organization contribute a certain level of performance and they are evaluated by measuring their achieved results. Processes, when kept themselves in state of control, within low uncertainty contexts or in a high learning state, within high uncertainty context, may ensure the production of goods and services and their delivery in optimum productivity conditions. The main proposition is that essential management processes and the best management practices, within an assessed and progressive environment of maturity management, are required mediators for the role of information and knowledge to organizational performance results. They conduct to a performance improvement and promote balanced and satisfactory results for organization's stakeholders. This trajectory of potentiality and agility in the changes should reflect directly in the value chain processes. Thus, the value chain has as its antecedents, the maturity of the information and knowledge management practices, and as consequences, the performance of the results, which is the organizational purpose.

2 CONCEPTUAL DEVELOPMENT

Recently an important aspect of researches and practices of the development of organizations' management, is in the conception, construction and provision of a reference framework for modeling and management performance (Cardoso, 2010). The construction, use and updating of such models enable management to be more disseminated and effective with an emphasis on organizational learning, including forms to evaluate its management development. Particularly, by offering an approach based on maturity evaluation, the set of the management practices encouraging the processes of an organization, which is MBQA excellence criteria, in the USA, and MEG, in Brazil, have had a growing acceptance at the organizations among managers and scholars.

This approach has had some of its aspects tested. It proved the hypotheses of a systemic organizational environment, composed of broad categories of management features which act as criteria for implementing management and evaluate their strengths. They rely on interdependencies among organizational processes acting as informational processing centralities, and leading to different levels of performance. This happens considering the concentration of competences (Sugano, Ottoboni, 2009), knowledge conversion, organizational learning (Vera, Crossan, Apaydin, 2011), and dynamic capabilities allocation, according to Teece, Pisano and Shuen (1997). This is shown in Picture 1.

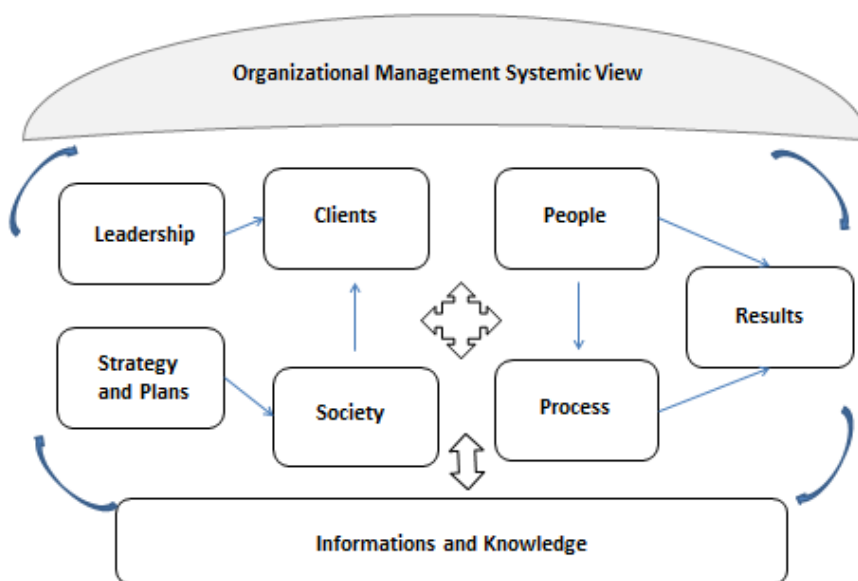
FIGURE 1
 Organizational process centralities



Source: the authors

Resource-Based View (RBV) emphasizes the development and continued reconfiguration of heterogeneous resources of companies as their basis for competitive advantages. Evolutionary economists, have linked Schumpeterian competition ideas with tacit processes and routines, and expanded the thinking of static equilibrium models of classical microeconomics (Nelson & Winter, 1982). The reference structure models, such as MEG, which consider the evolutionary trajectory of quality and strategy in organizations and the best practices of process-result perspective, are shown in Figure 2. The indicated areas, from 1 to 7, form a cognitive map of domains of the managerial attention categories implemented by management processes and management practices (Camilo & Gonçalves, 2005).

FIGURE 2
 Organizational Management Cognitive Map



Source: Adapted from Gonçalves, C. A. Camilo, R. D. e Braz, D. M. 2005. The management in educational organizations: undertaking the learning to make progress. Education on Focus, Belo Horizonte City: Education Foundation for the Labor in Minas Gerais State (Fundação de Educação para o Trabalho de Minas Gerais - UTRAMIG), 2005.

2.1 Maturity condition of management and processes

The maturity of business processes and associated managerial practices are defined as the extent in which processes are effective, consistently checked, controlled, enhanced by learning and integrated. In this study, maturity constructs are used as indicators and they are formed by the following factors: consistent approaches, effective applications, innovative learning and synchronic integrations (Gomes, Gonçalves, Camilo, 2009, FNQ, 2011, Nist, 2011). Mature processes are more reliable and stable through their routines based on both rigorous and flexible standards, making them more efficient in providing superior performance in a variety of contexts (Van Looy, De Backer, Poels, 2011). A higher level of performance resulting from set of managerial processes, certificated by the organizational results, was associated with a higher level management processes maturity. Noticeably, those ones related to the extended value chain which guide the operational business processes. Maturity is the result of a more developed process management practices dealing with related management contents which it verification has four indicators.

These four indicators are interconnected in a cycle, considering the approach of systematic standards and methods, comprehensive application, organizational learning and practice integrations. Particularly the management processes responsible for the informational flow strongly influence the extended chain value management and operational processes that generate the set of performance results. Associated maturity with the capacity of management processes is not static. It could either degrade or improve itself. Maturity reflecting the ability of management processes is fluid, because the development of management, in which the focus is on management practices (eg, IT support, customer relationships, etc.), has to be agile, meeting the market forces and regulatory forces. As a result, it has been always changing its threshold. For instance, the use of IT is a primary and central planning of the informational nature of management processes (Renaud, Narkier, Bot, 2013). A maturity model helps the evaluation of capacities through management practices encouraging business processes. Thus, the process maturity, considering the combined capacity of the resources they employ, is a central argument of reference models and the evaluation of excellence in the organization management as a whole (FNQ, 2013, Cardoso, 2010).

2.2 Informational processes, performance and results

Theory of information processing (Tushman, Nadler, 1978) suggests the management processes as a mechanism to deal with uncertainty and error condition (Daft, Lengel, 1986), by establishing coordination and controlling mechanisms that help organizations to manage the processing requirements of information. Researchers of information systems have been using the perspective of RBV to expand and deepen the understanding of information technology contribution to business value. This research line provides a solid basis from which selected constructs for our integrative model have emerged (Melville, Kraemer, Gurbaxani, 2004, Mithas, Ramasubbu, Sambamurth, 2011). The organizational performance can be defined as the degree to which organizations achieve their business objectives. It may also be related to the corresponding factor productivity. In a competitive environment, productivity can be a way to assess organizational performance (Mithas et al., 2011).

Performance has been used meaning two-level measures of intermediate processes and the organizational measures. Thus, we can consider the existence of two performance formulations: one associated with efficiency to efficacy and another one related to effectiveness (Melville *et al.*, 2004). The first one emphasizes an internal perspective, using metrics such as cost savings and productivity increasing, when assessing a particular business process, or, doing right and "doing the right things" (Drucker, 1964). By contrast, effectiveness denotes the every time organizational goals achievement regarding the external environment of a business and it may manifest itself by enhancing competitive advantage. In other words, building a unique value and creating strategy concerning its competitors (Barney, 1991).

The generation of value of any business happens when the observed performance leads to measurable improvements in the calculated organizational results through processed data by its information systems. The methods to measure organizational performance, considering, for instance, that knowledge management can be classified into four groups: financial measures (Bierly & Chakrabarti, 1996), intellectual capital, tangible and intangible benefits (Simon, 1997), and lastly balanced scorecard and its variations for specific measurements, as developed for the corporate culture, customer orientation and innovation (Kaplan & Norton, 2000, Deshpande, Farley, Webster, 1993). Balanced scorecard keeps the result indicators derived from financial performance and it supplements them in a cause and effect chaining, including measures of other outcome indicators, that drivers the future economic potential.

2.3 Knowledge management and dynamic capabilities

Most studies have separately examined the relations of enablers of knowledge management, processes or performance. For instance, some researches have focused on the relationship between enablers and processes (Appleyard, 1996, Hansen, 1999, Szuianski, 1996, Zander & Kogut, 1999). These studies recognize the knowledge enablers as a precondition of the performance and knowledge processes (Chadha & Ritika, 2014). Other researches emphasize the relations between enablers and organizational performance (Bierly & Chakrabarti, 1996, Simonin, 1997, Becerra-Fernandez, 2001, Gold, Malhotra, Segars, 2001). They recognize enablers and knowledge processes as antecedents of organizational performance.

Studies have highlighted three main factors concerning knowledge management: knowledge enablers, knowledge management processes of and organizational performance (Mciver, Lengnick-Hall, Lengnick-Hall, Ramachandran, 2013, Lee & Choi, 2003, O'dell & Grayson, 1999). Enablers in the knowledge treatment (or in the impacting factors) are organizational mechanisms for a consistent promotion of knowledge, according to Ichijo, Krogh e Nonaka (1998) and Stonehouse e Pemberton (1999): they may stimulate the knowledge creation, knowledge protection and knowledge sharing within an organization. Broadly, building organizational knowledge integrates context, knowledge assets and knowledge creation processes throughout an organization Nonaka et al. (2012). It is also noticed that very few empirical studies adopt a targeted approach to organizational knowledge process.

In this study, "resources" and "capabilities" are used interchangeably and they refer to tangible and intangible assets in organizational management, including information flows and knowledge capabilities to develop and implement business processes. Capabilities originated from learning and knowledge, in any enterprise, are part of the main organization's principles, according to which the individual knowledge and functional are structured, coordinated and communicated. Companies are social communities using their relational structure and sharing codified schemes to improve the transfer and communication of new skills and abilities. The sharing determinants happen when knowledge of operational processes, become internal and externally ordinary, (competitors). It also depends on the degree of continuous recombination of capabilities, leading to a product improvement or operational process improvements cited by Kogut & Zender (1995). Many researchers, such as Lee & Choi (2003), Demarest (1997) and O'Dell (1999), have emphasized three main factors for knowledge management: enablers, processes and organizational performances. Enablers present in the knowledge treatment (or factors that influence) are organizational mechanisms for consistent promotion of knowledge, as said by Ichijo et al. (1998). They may stimulate the creation of knowledge, the protection of knowledge and the knowledge sharing at an organization (Stonehouse, 1999).

2.4 Management of intangible assets

Intangible assets have been identified among the main features and drivers of the organizational performance and value creation in organizations (Nahapiet & Ghoshal, 1998). The original concept includes the intangible assets such as technology, information to the accumulated consumer, brand, reputation and corporate culture as critical features of companies and sources of competitiveness (Marr, Roos, Pike, 2005). The internal resource development, mainly intangible, it is vital to understand the allocation of the organization's capabilities. This relationship between intangible assets and, particularly, financial performance of a company, has been proven and empirical results have led to the validation of this condition. Regression models, as a measurement of intangible assets, have allowed the confirmation of a positive contribution of intangible assets to improve performance. Moreover, these resources have a meaningful and significant effect on the existence and persistence of differences in performance among companies (Ben & Ben, 2011).

2.5 Operational processes in the value chain

Business processes are structured activities, performed with a certain level of maturity, through management practices. Business processes provide a systematic framework of accomplishing competitive potential of resources and capabilities at a company (Chajtman & Zyzik, 2008). This approach acknowledges that resources and capabilities, which were not translated into activities, routines or business processes, do not demonstrate positive impact on a company performance. On the other hand the ability of organizations to string together certain activities, routines or business processes may be limited by their resources and capabilities. In other words, companies are not "empty screens" on which any activity, routine or business process may be designed on it. In fact the efficiency differential of these processes would essentially depend on the resources and capabilities that a company has (Ray, Barney, Muhanna, 2004).

Processes are organization units and they are useful activities to promote the allocation people into their labor, to produce effects from modulation of causes; (Ishikawa, 1992, Barua *et al.*, 1995); and to explore resources to

generate value and coordinating activities (Ray *et al.* 2004). Barua *et al.* (1995) argue that the combination of IT investments and performance is mitigated insofar as the distance between cause and effect increases.

Interactions among individuals and processes within an organization shape their routines and capabilities particularly. Several studies have found that both formal coordination modes (such as: rules, standard operating procedures) and informal modes (such as: experience, norms, values) influence sequences of interdependent events or actions (Felin *et al.*, 2012).

The extended value chain in this study consists of processes that directly transform inputs into outputs, paying careful attention to supply and finance. They will permeate and incorporate management action, modeling them in an increasing degree of maturity (Porter, 1985 Moor & Zilber, 2003). This happens because of the systematized informational support and the formal communication channels, through organizational management. Therefore issues such as the definition of requirements for processes, design of processes and controlled implementation of these processes become relevant to the improvement and redesign of processes.

3 METHODOLOGY

As an applied premise to assess the validity of the conceptual translation into a nomological model for the operational version of MEG constructs, a classic approach of building tests (TCT) was used and rating scales, because they are helpful to understand the processes as stated by Rodrigues (2006). This was done at an intermediate maturity level of the reference model, used in Brazil, specifically in Minas Gerais State of Quality Award (PMQ), this is the assessment of relations between management and operational processes and the organizational performance results.

Observation units are thematic categories in figure 1 undergoing the management action, at a certain level of maturity, and they are structured on the measurement results of associated areas, arising from application of the methodology of PMQ recognition cycles. These evaluations are conducted by examiner and judge teams regarding MEG criteria of the participating organizations.

This research method is a mix, characterized as conclusive quantitative research (having both descriptive and explanatory features, and considering the unique characteristic of the nomological model originality, which is also exploratory) and using the support of the hypothetical-deductive method. This research seeks to test this logic concept strength, exploring data of 52 evaluated companies according to the reference model criteria, concerning their management and, the ones that actually are present, through the scope in which management processes have presented and produced the expected organization results.

The Structural Equation Modeling (SEM) parameterized from nomological network in Figure 2, and characterized into construct levels. Figure 3 shows the stratifications of each managerial requirements of the excellence criteria of the analyzes which were performed by examiners in various cycles. SEM was used, because this procedure allows us to study complex models, having simultaneous dependence relations. It also supports the use of unobservable variables (constructs) to the measurement of complex concepts, while considering the measurement error of the measures as well. Thus, we understand this was the most appropriate method to meet these research expectations, since it enabled the implementation of complex concepts - through structuring the constructs – and it allowed us to analyze several relationships of hypothesized dependences.

It is also important to consider that, generally, two models are tested in the SEM: measurement model and structural model. According to Santos (2013), in PLS-SEM, they are called *Outer Model and Inner Path Model*. Our database consisted of medium and large organizations. They participated in 5 annual PMQ cycles, from 2008 to 2012, at an intermediate level of maturity. It was assessed according to the operational management constructs, based on four items: Focus, Application, Learning and Integration. They were considered as evaluation factors. On one hand, the outcome constructs have three factors: Relevance, Trend and Current Level. Therefore, the indicators of the first-order constructs correspond to the evaluation of the examiners (varying from 0 to 10) concerning four criteria processes and three results. Concerning, the second-order constructs applied in the models, they have included the primary factors and had their concepts detailed, in accordance to MEG (FNQ, 2011) 500 point rule. They were schematically summarized in Table 1.

Table 1
List of the first and the second order constructs

Constructs second order	Constructs first order
Lid - Leadership	Q1.1. GC - Corporate Governance
	Q1.2. EL - Leadership Practice
	Q1.3. AD - Performance Analysis
EeP - Strategy and Plans	Q2.1. FE - Formulation of Strategies
	Q2.2. IE - Implementation of Strategies
Cli - Clients	Q3.1. ICM - Image and Market Knowledge
	Q3.2. RC - Customer Relationship
Soc - Society	Q4.1. RS - Social Responsibility
	Q4.2. DS - Social Development
IeC - Information and Knowledge	Q5.1. IO - Organization Information
	Q5.2. AICO - Intangible Assets and Organizational Knowledge
Pes -People	Q6.1. ST - Work Systems
	Q6.2. CD - Training and Development
	Q6.3. QV - Quality of Life
Pro - Processes	Q7.1. PPNPA - Business Processes and Supporting Processes
	Q7.2. PRF - Processes Related to Suppliers
	Q7.3. PEF - Financial Economic Processes
Res - Results	Q8.1. REFi - Economic Financial Results
	Q8.2. RRCN - Results Related to Customers and Market
	Q8.3. RRS - Results Related to Society
	Q8.4. RRPe - Results Related to People
	Q8.5. RRPr - Results Related to Processes
	Q8.6. RRFo - Results Relating to Suppliers

Note: Source Santos, M. B. (2013). Reference Models for Organizational Performance: A Research of the Management Excellence Model (MEG-FNQ) Applied in Minas Gerais Program for Quality and Productivity (Ph.D. Thesis), FUMEC University, Belo Horizonte City, Minas Gerais, Brazil.

Concerning MEG excellence criteria in the dimension of Management Processes, there is a total of seven second-order constructs, consisting of 17 first-order constructs, revealing 68 observed variables (17 times 4 criteria). In the dimension of results, there are six first-order constructs, translated into 18 observed variables (6 constructs times 3 criteria).

Information and knowledge processes are highlighted in order to analyze the enabler relationships concerning the management of value chain processes, including supplier relationships and finance. Management processes are used for a systematic availability of updated information, having the support of the information technology, the tangible and intangible assets, the development and protection of the knowledge that support the strategies and operations which could impact in the generation of results showed in the six major areas.

It is neither intended to propose a model that outlines all management relations of the underlying information and knowledge nor generate a long list of possible enablers of knowledge or managing processes in general, affecting organizational performance. However, this research full model analyzes the context in order to access content and conduction factors that explain much of the variance in the contribution to information and knowledge management and its influence on the management processes. Processing information and knowledge sharing would act as enablers of transformation in the operational processes of the extended value chain, promoting cumulative performance results.

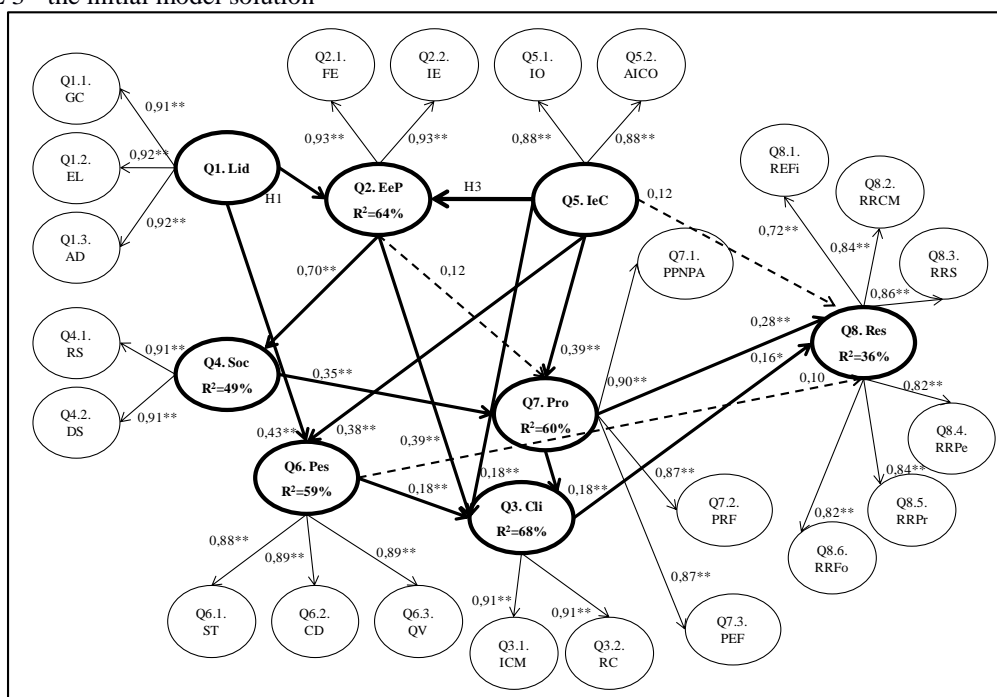
4 RESULTS AND ANALYSIS

Figure 3 shows the test of the full initial model, proposed by this research, which allows us to analyze the context. In a general analysis, Q2. Strategy and Plan construct presented an R^2 of 64% which is explained by the Q1. Leadership construct (0.53) and Q5. Information and Knowledge construct (0.31). Both showed a positive and significant load at 1% level. However, we note that Q1 has greater influence, compared to Q5 on Q2. Regarding Q3. Customer construct, it had an R^2 of 68% which was explained by the following constructs: Q2. Strategies and Plans, Q5. Information and Knowledge, Q6. People, and Q7. Processes. All of them showed a positive and significant load at 1% level.

We can notice that Q2 is the construct that has the greatest influence on Q3, load 0.39; while the other constructs had a load of 0.18. Regarding Q4. Society construct, it presented an R^2 of 49% which could be explained by Q2 Strategy and Plan construct, having a significant positive load at a level of 1% in the value 0.70. Concerning Q6. People construct, it had an R^2 of 59% and was explained by both constructs: Q1. Leadership and Q5. Information and Knowledge. They both had positive and significant loads at the level of 1%, to values of 0.43 and 0.38, respectively. Analyzing Q7. Process construct, it presented an R^2 of 60% and it was explained by the following constructs: Q2. Strategies and Plans, Q4. Society and Q5. Information and Knowledge. However, only the last two ones have statistically significant effects at 5% and positive loads of 0.35 and 0.39, respectively.

Q8. Result construct showed an R^2 of 36% and it is explained by the following constructs: Q3. Customers, Q5. Information and Knowledge, Q6. People and Q7. Processes. However, only the Q3. Customer and Q7. Process constructs had a positive and significant loads at 5% and 1%, with the respectively. Values of 0.16 and 0.28 each.

FIGURE 3 - the initial model solution

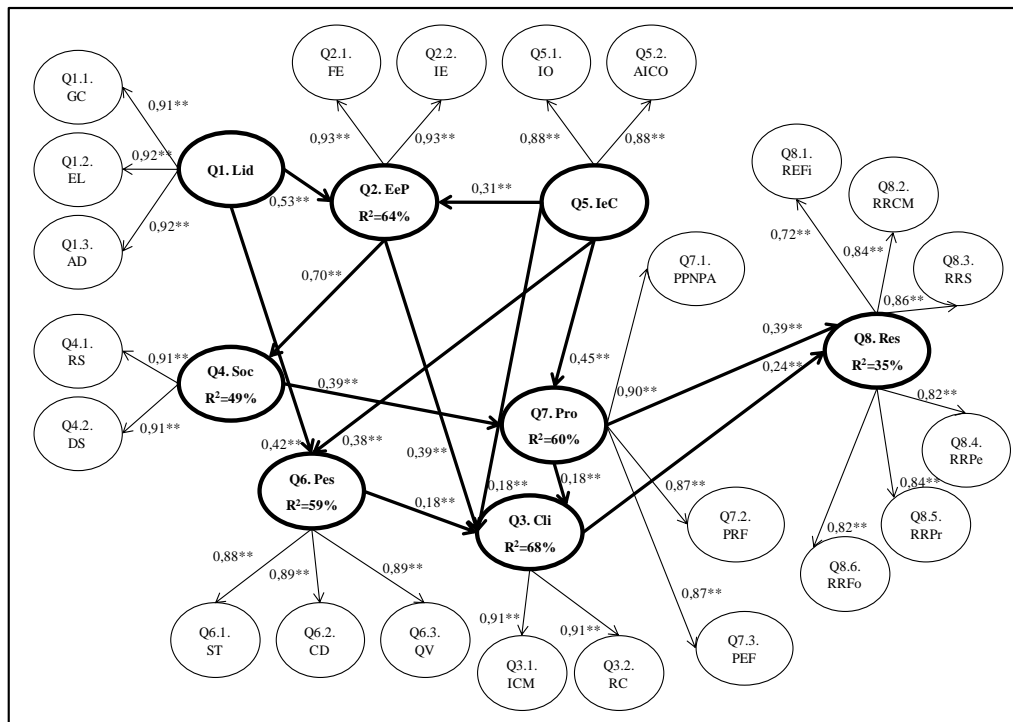


Note: ** Significant Path at 1% level * Significant Path at 5%, Constructs with stronger outlines are the second-order constructs. Constructs with weaker outlines are the first-order constructs. Thicker arrows represent the relations among second-order constructs and weaker arrows are the relations between second-order constructs with their first-order constructs. Dotted arrows indicate a no-significant relation at 5%. Relations among first-order constructs and their variables were not displayed in the model to make it easier the viewing, in the same way, the names of the first-order and second-order constructs were abbreviated to allow the model display. They are completely shown in Table 1.

From Figure 3, it is possible to perceive that some loads were not significant at 1% level and, either at the level of 5%. They are the influence of Q2 in Q7 explanation, and the impact of Q5 and Q6 in Q8 explanation. We have chosen to remove non-significant relationships and the model analysis was computed. By changing some

model relationship, eliminating the direct relations Q5 to Q8 and Q6 to Q8, also in Q2, there is a new configuration for Q6 to Q7, in Figure 4.

FIGURE 4 - Modified Model Solution



Remarks: ** Significant path to the level of 1%. Constructs with stronger outlines are the second-order constructs and constructs with weaker outlines are first-order constructs. Thicker arrows represent the relationships between constructs of second-order and thinner arrows are the relationships between first-order constructs with its second-order constructs. Relations among first-order constructs and their variables were not displayed in the model to facilitate its visualization. The names of first-order and second-order constructs were abbreviated to allow the model display and they are fully presented in Table 1.

In a general analysis, Q5 construct kept on presenting the highest number of relationship enabler. For instance, Q2. Strategy and Plan construct continued to present an R² of 64% which is explained by both constructs: Q1. Leadership and Q5. Information and Knowledge. The model converged consistently, showing no indication of relationships to be eliminated, for a new round of convergence.

5 CONCLUSIONS AND EXTENSIONS

Considering the context for all organizational management processes, this research has concluded that constructs associated by the model to the information and knowledge processes - IeC with a direct validity, did not influence the results – Res, considering the maturity environment of management, on a multi-organization scale.

It was observed that the impact of Q1 on Q6 changed from 0.43 to 0.42. On the other hand, the R² of the construct Q7, had not changed. However, Q4 construct increased its share in its explanation, since its load changed from 0.35 to 0.39, and Q5 construct also had its load increased from 0.39 to 0.45. Regarding Q8 construct, after excluding its relationships with Q5 and Q6, it had an R² of 35%, while, before those modifications, it had an R² of 36%. Furthermore, Q3 and Q7 constructs had their loads respectively increased, from 0.16 and 0.28 to 0.24 and 0.39.

The criteria developed in PMQ / MEG (FNQ), as a reference to the management model, resulted in a multifaceted view of management processes at the organizations, emphasizing the results delivered to customers and other stakeholders, allowing a context analysis for the information and knowledge management.

The criteria adoption as a reference to the management demonstrates its capacity to deal with the knowledge present in the quality and productivity issues, seeking a better performance from progressive maturity in conducting management processes. By doing this, the criteria emphasize the organizational structure and its dynamic capabilities, which are essential to maintain and improve the quality management processes,

innovation and sustaining a competitive position in the environment where organizations operate. The reference models inspired practices, which have the guideline of planning, innovation and efficient management processes, show a significant predictive capacity concerning quality and productivity performances, valuing human beings. Also, the information processing and knowledge management have shown to be very relevant to the design and implementation of a strategic planning.

The research results provide strong support to this situation, through significant relationships between the information processing and knowledge management and other constructs and particularly as enablers of the extended value chain processes. In addition, the major determinant of the organization's performance in the market (and internally) is customer focus and the management of their relationship. This second-order construct examines the actions that an organization takes to understand and anticipate customer needs, keeping a good relationship with them. The results of this analysis highlight the knowledge focus value on the client and the relationship with them, through market segmentation: Target customer, target segment, target market. This construct had the most significant effect on business results and customer satisfaction results.

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