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The influence of quality management on orientation to innovation in service firms

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This article demonstrates that a context characterized by cohesion, recognition, some degree of formalization, and decentralization can create a work climate that fosters innovation, enabling service firms to adapt better to their environment. The implementation of total quality management (TQM) also influences the variables in the model. The results show that cohesion, recognition, decentralization, and formalization have a positive and significant influence on greater orientation to innovation in service firms and that this influence is greater in firms that have implemented TQM systems.

Key words: Total quality management (TQM), orientation to innovation, cohesion, recognition, formalization, decentralization.

INTRODUCTION

The entrepreneurial context of organizations today is characterized by growth of international competition, rapid technological evolution, and more demanding customers with changing and mature expectations, in short, a dynamic environment with unpredictable changes (Hashim et al., 2010). Firms have different strategies and courses of action that enable them to respond to such changes in the environment (Hitt et al., 2000). One of the main strategies is the creation of new products, services, or processes or the modification of existing ones (Brown and Eisenhardt, 1995; Dougherty, 1992). Innovation enables organizations to change as their environment changes. They have two alternatives: to innovate or to die (Storey, 2000; Hussain and Ilyas, 2011). Innovation can also improve organizations to make them more competitive, helping them to obtain competitive advantages in both global and international markets (Hitt et al., 1997; Tidd, 2001; Wang et al., 2008). Innovation increases competitiveness because it enables the organization to

offer the market new and unique products/services and to make it difficult for others to learn about the resources needed, creating entry barriers and shaping the competitive game rules, thereby creating new values.

The implementation of a total quality management (TQM) system is another strategy that firms can use to respond to the demands of an increasingly turbulent and unpredictable environment (Khan et al., 2011). Quality is a crucial way to improve the firm's profits and ensure competitiveness. It generates improved products and services, decreases costs, increases firms' financial profitability, improves the image of products and services, and increases customer satisfaction. Quality is also a factor that motivates and integrates workers.

Our first research question asks whether applying quality and innovation together is a good strategy for obtaining competitive advantage in dynamic and changing environments. Many authors view quality and innovation as two separate disciplines. Although this separation may be accurate in some respects, the two fields share quite a few philosophies and methodologies. To develop further knowledge of the relation between quality and innovation, we propose to analyze whether organizations can implement quality programs to improve their adaptation to the environment by innovating and adjusting the firm's internal context.

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Abbreviation: TQM, Total quality management.

Our second question involves the factors determining orientation to innovation. Authors such as Craig (1995), Hurley and Hult (1998), Martins and Terblanche (2003), and Wan et al. (2003) propose that one increases innovation capacity the organization by analyzing not only the systems, structures, and organizational agreements in the area of the organization directly related to innovation but also the attitudes and behaviors of the organization as a whole. One key attitudinal/behavioral variable is orientation to innovation, which is considered an antecedent or determining factor of innovation (Damanpour, 1991; Hurley et al., 2005; King, 1989). We thus propose the need to analyze the factors that determine greater orientation to innovation among the organization's members within a quality context. We define orientation to innovation as the perception by members of the organization that the organization supports changes and creativity, as well as risk-taking, in areas in which the members have little experience.

Our main research goal is to analyze how a series of factors influence orientation to organizational innovation and how this relationship is moderated by the implementation of TQM programs. This article contributes significantly to the study of the literature and of management in proposing a model to foster orientation to innovation in organizations through the implementation of TQM programs. Our study provides new empirical evidence for this line of research in two ways. First, we examine explicitly how specific structural and contextual factors at work influence orientation to innovation. Second, we analyze the relationship between orientation to innovation and TQM. We do this by analyzing the relationship between orientation to innovation and TQM and then performing an empirical study to determine how these variables interact to explain greater orientation to innovation in the organizations that have implemented quality programs. Finally, we present our conclusions and the contributions of the research.

Relation between climate of innovation and TQM

The impact of implementation of TQM on customer satisfaction in costs, improvement in profitability, and productivity has been analyzed extensively in the literature. However, the repercussions of TQM for orientation to innovation have hardly been analyzed. Our review of the literature (McAdam, 2001; Prajogo and Sohal, 2001, 2003; Zairi, 1994, 1999) shows that some research considers TQM a necessary strategy to create a climate of support for innovation. TQM helps to identify which processes must be renewed or replaced by new, more efficient ways of doing work in the organization. Thus, quality supports the creation of a climate of innovation. Among TQM principles and practices that help to create a climate of support for innovation, we emphasize the

the following: (1) continuous improvement, which makes employees more willing to accept new ideas; (2) orientation to the customer, which introduces changes in organizations in order to satisfy customers' needs, stimulating innovation; (3) training programs, which develop employees' basic knowledge and abilities so that they are better prepared to understand and accept new systems to perform their tasks; (4) empowerment and teamwork, which help employees to generate ideas for improvement, encouraging innovation; and finally, (5) benchmarking, a thoroughly innovative practice whose goal is to discover whether other organizations do things better, to copy these methods, adapt them, and achieve the levels of efficiency of organizations that develop best practices (Alam et al., 2010).

For authors such as McAdam (2001) and Detert et al. (2000), the principle of orientation to the customer and continuous improvement of TQM involve identification of customers' needs as a foundation for generating ideas for innovation and the constant search for ways to improve the organization. Both actions are necessary to construct a climate of support for innovation. Likewise, Zairi (1994; 1999) argues that TQM provides the impetus and commitment required to establish a continuous climate of innovation. Quality stimulates creativity and the generation of new ideas among employees.

Theoretical research model: Hypotheses

As mentioned earlier, creating and sustaining an orientation to innovation is necessary to foster innovation (O'Reilly, 1989; Russell, 1990; Russell and Russell, 1992; Craig, 1995; Schneider et al., 1994; Judge et al., 1997; Filipczak, 1997; Hurley and Hult, 1998; Martins and Terblanche, 2003; Wan et al., 2003). It is not enough to talk about innovation and believe in it. One must take it seriously and ensure that it happens by developing an orientation to innovation in which management's values become employees' practices (Hofstede, 1994).

From a theoretical point of view, we identify various arguments to explain the connection between innovation and orientation to innovation. The first focuses on the way individuals are socialized in the organization. The socialization process involves how individuals learn what behaviors are acceptable and how activities should be performed. Individuals' sense of shared norms in the organization helps them to identify whether innovative behavior is part of the organization's way of acting.

The second argument is that organizations disseminate orientation to innovation by establishing forms of behavior and activities reflected in structures, politics, practices, procedures, etc. For example, if the organization provides resources for the support of new ideas (Teslut et al., 1997), individuals will perceive that the organization values innovation and will act accordingly in the workplace

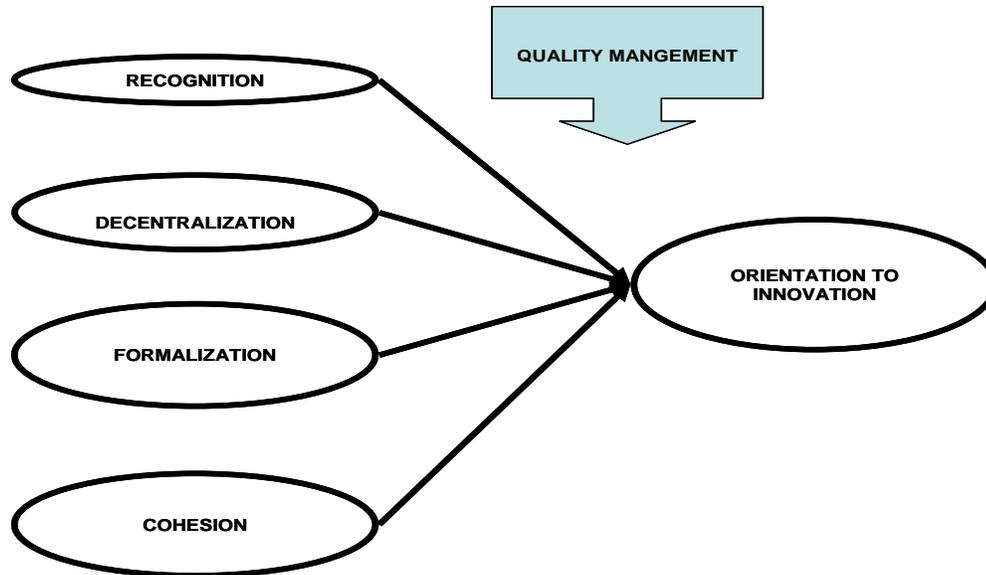


Figure 1. Theoretical model.

by innovating.

The third and last argument is that successful innovation requires solving a series of problems related to the ambiguity and uncertainty involved in implementing innovation (for example, low motivation to initiate and to support innovation among the organization's members). Having a set of norms for innovation (clear expression of the organization's values and behaviors regarding innovation) can, however, generate the motivation and commitment necessary for sustaining successful innovation. Because such norms guide the organization's members toward the right behavior, they constitute an effective way of implementing innovation (Zaltman et al., 1973).

Results from various research studies show that the perception that the organization values innovation affects innovation positively. Organizations should therefore develop and sustain a climate of support to achieve greater innovation capacity. Based on the literature review, we will establish four essential strategic and structural factors to determine the factors that influence orientation to innovation: cohesion, recognition, decentralization, and formalization. Cohesion and recognition are related to the organization's members and are crucial to stimulating innovation. The structural factors, decentralization and formalization, have received the most attention in the literature, as they are considered to be the main determiners of innovation.

Figure 1 shows the theoretical model for our study. It attempts to verify how a work context characterized by cohesion, recognition, some degree of formalization, and decentralization can create orientation to innovation and thus foster innovation accompanied by greater innovation capacity (Germain and Spear, 1999; Hartmann and

Patrichison, 1998; Shani and Rogberg, 1994). The implementation of TQM also influences the different variables in the model, encouraging greater orientation to innovation (Prajogo and Sohal, 2006, 2003; Woodside, 2005; Singh and Smith, 2004).

Influence of the structural variables on orientation to innovation in a context of TQM

Studies that analyze the relationship from the perspective of one-dimensional theory stress a positive relation between decentralization and innovation and, conversely, a negative relation between centralization and innovation (Hage and Aiken, 1973; Daft and Becker, 1978; Damanpour, 1991; Russell and Russell, 1992; Troy et al., 2001). This relationship is formulated explicitly in the preliminary and influential study by Burns and Stalker (1961), who suggest that an organic structure with a shorter chain of command and wider participation in decision-making is more effective under the rapidly changing conditions that often accompany attempts at innovation. Most studies take the view that the context provided by decentralized structures generates more new ideas than do centralized structures (Burns and Stalker, 1961; Thompson, 1994). One of the arguments grounding the positive relationship between decentralization and innovation stresses greater participation in decision-making, which provides new sources of information and new perceptions fundamental to effective decision making (Kim, 1980). Greater managerial autonomy and control of resources enables the initiation and implementation of more creative ideas, ultimately giving rise to more innovations (Kanter, 1983; Sciulli, 1998).

In centralized structures, in contrast, new ideas must pass through a long chain of command before they receive approval or are granted resources to support them, increasing the possibility that ideas remain unrecognized or are denied the necessary resources and thus reducing the number of innovations implemented successfully (Pierce and Delbecq, 1977). Centralization also stresses the hierarchy of authority, leading the members of an organization to use specific communication channels and give selective feedback, relating only positive information on their positions when negative feedback would help the organization to recognize the need for innovation (Kim, 1980).

Further, the concentration of power in the hands of a few often leads members with power to veto the innovative ideas of less influential participants, since the former wish to avoid changes in the distribution of power, privileges and compensation (Hage and Dewar, 1973). This can also reduce opportunities for the circulation of new ideas and creativity (Burns and Stalker, 1961; Hage and Aiken, 1970; Thompson, 1994). From the perspective of quality, successful implementation of TQM involves establishing a culture based on teamwork, orientation to customer satisfaction, and continuous improvement. Such a culture will increase the degree of decentralization in both directions, vertical and horizontal. Continuous improvement in the organization's processes and services requires some autonomy and authority to act. Teamwork encourages such autonomy by structuring the organization around different teams, which are entrusted with different activities and thus assigned resources and delegated autonomy and responsibility for decisions. Implementing orientation to the customer makes workers active participants in decision-making, since they use their knowledge of customers and of the processes of the individuals directly responsible. The literature provides various references that demonstrate implicitly or explicitly positive impact of TQM on decentralization (Dean and Evans, 1994; Schonberger, 1994; Wruck and Jensen, 1994; Zeitz et al., 1997). Based on the foregoing, we formulate the following hypothesis:

H₁: The positive relationship between orientation to innovation and decentralization is moderated by TQM in service firms.

In general, studies show that formalization impedes the generation of ideas, since inflexibility limits creativity and hinders its dissemination and communication (Burns and Stalker, 1961; Hage, 1965; Hage and Aiken, 1970; Kanter, 1992; Thompson, 1994; Troy et al., 2001). Members of a group that follows rules and procedures strictly are more likely to solve problems with routine solutions instead of new ideas, especially when the members are criticized for deviating from the work rules (Aiken and Hage, 1971).

Empirical and theoretical evidence supports this perspective (Burns and Stalker, 1961; Hage and Dewar, 1973; Pierce and Delbecq, 1977; Thompson, 1980). A study by Shepard (1967) indicates that low formalization enables the organization to open up, a necessary precondition for innovation. Because formalization, in contrast, involves expected behavior for the holder of a position, there is a high probability that predetermined modes of behavior will become inflexible (Pierce and Delbecq, 1977) unless innovation is recognized as an expected behavior (that is, unless there is a mandate to innovate and to attempt experimental behavior).

A subsequent study by Rousseau (1978) of departments of electronics firms verifies that formalization is positively related to absenteeism, tendency to resign, and stress; and negatively related to innovation and satisfaction at work. Formalization reduces employee commitment and produces low satisfaction, which limits innovation. Employees in a formalized context have little motivation to participate in complex, nonroutine tasks that require innovation.

Likewise, for Thompson (1980), general flexibility and less emphasis on the definition of duties and responsibilities facilitate innovation. Because the individual needs some self-direction to be innovative, formalization's control over the individual (Hall, 1996) can stifle innovation. For Knight (1967), routine activities do not produce creative solutions to problems, since the problems and solutions are directly formalized by prescriptions and specifications for behavior.

Although the studies mentioned above argue for the influence of formalization on innovation, some more recent studies do not obtain significant correlations between the two variables (Russell, 1990; Damanpour, 1991; Russell and Russell, 1992). Others confirm that procedures and rules facilitate innovation (Evan and Black, 1967; Zmud, 1982; Etlie et al., 1984; Craig, 1995). In a meta-analysis, Damanpour (1991) finds a nonsignificant relationship between innovation and formalization. Other researchers have stressed the need to establish an explicitly defined purpose and clearly specified work rules for successful introduction of organizational innovation (Evan and Black, 1967; Etlie et al., 1984).

Along the same lines, a study by Zmud (1982) analyzes the influence of formalization on the dissemination of modern software practices, focusing on the compatibility of the kind of innovation with the interests of the organization's members. The results suggest that formalization is negatively associated with the initiation of incompatible technical innovations and positively associated with their implementation. In contrast, formalization is positively related to the initiation and implementation of administrative innovations, independently of incompatibility.

A subsequent study by Craig (1995) argues that bureaucratic structure does not necessarily block innovation and change but can be used to promote it. The study's

results show that one of the most outstanding characteristics of Japanese beer companies is their use of bureaucratic methods such as formal systems and work procedures to achieve innovation and change. These beer firms use rules and guides to direct new product development and the steps and procedures to carry out the process. These results directly oppose the literature's focus on management to promote and increase innovation and creativity: "take away restrictions and let people do things freely" (Craig, 1995).

If we turn to quality, one of the elements necessary for the implementation of TQM is the management of processes. Systematic management of all of the organization's processes increases formalization of the different tasks in the organization, although TQM is not based as widely on formalization and standardization of processes and products as is quality assurance. This difference arises first because TQM orients the performance of TQM tasks to the customer's needs. It thus produces a higher degree of variation in the different activities and processes, since the number of contingencies that can arise is greater. The second difference stems from TQM's often participatory process of developing norms to standardize tasks. Some authors indicate that this process avoids the feeling of alignment that results from the process of formalization. Third, TQM reverts to formalization to guarantee the conformity of products and services to the design, but the degree of formalization will depend on the extent to which the organization makes this rigorous conformity its goal.

TQM thus fosters delegation of responsibility based on the response capability of the organization's members given their levels of training, involvement, and commitment, while also establishing the formalization of processes (Shea and Howell, 1998). These results are due to the fact that decentralization and formalization are not mutually exclusive but rather complementary. Formalization is necessary once the processes are already established, whereas worker involvement and delegation of responsibility should be encouraged during the implementation period for new processes and improvement of existing ones (Shea and Howell, 1998). The implementation of a TQM system involves formalization as a way of clarifying processes and objectives that aid and motivate participation and commitment. Based on the foregoing, we can formulate the following hypothesis:

H₂: The positive relationship between orientation to innovation and formalization is moderated by TQM in service firms.

Influence of organizational climate on orientation to innovation in a TQM context

In our analysis of the literature, we find that the different components of organizational climate influence orientation, receptivity to new ideas, and innovation

(orientation to innovation). Thus, managers should foster a climate of strong cohesion among the members of the organization and provide sufficient material resources, information, and time to perform the tasks assigned (Brett et al., 1998; Hurley and Hult, 1998; DeDreu et al., 1999, 2000; Chandler et al., 2000; Lovelace et al., 2001; Shu-Jen and Cheng Lin, 2011).

The principles and elements necessary for successful implementation of TQM change the organizational climate (Dean and Evan, 1994; Stetzer and Morgeson, 1997; Nelson et al., 1999; Detert et al., 2000). As mentioned earlier, the internal-external cooperation and the principle of teamwork present in a TQM context generate an organizational climate characterized by cohesion, cooperation, and collegiality (Dean and Evan, 1994; Stetzer and Morgeson, 1997; Nelson et al., 1999; Detert et al., 2000). Managers' collaboration with and support of the members of the organization, as well as the emphasis on identifying and measuring weaknesses more than strengths, means that employees perform their tasks without pressure and provide information on errors and personal mistakes (Wruck and Jensen, 1994).

This study will analyze two variables of organizational climate: cohesion and recognition. Lack of cohesion interferes in individuals' ability to find innovative solutions together (Lovelace et al., 2001). Lack of agreement among the members of an organization means that the individuals are more committed to their individual positions, making consensus more difficult (Dougherty, 1992). The ability of the organization's members to innovate will thus depend on how disagreement is managed, and good management of disagreement requires an organizational climate characterized by strong cohesion, open communication, and freedom to express ideas. Managers should foster a climate of strong cohesion among the members of the organization with sufficient material resources, information, and time to perform the tasks assigned (Hurley and Hult, 1998; Chandler et al., 2000; Lovelace et al., 2001; Dedreu et al., 2000).

As to quality, internal-external cooperation and the principle of teamwork present in TQM generate an organizational climate characterized by cohesion and collegiality among the different members of the organization (Dean and Evans, 1994; Stetzer and Morgeson, 1997; Detert et al., 2000, Imran et al., 2010). Taking the foregoing into account, we formulate the following hypothesis:

H₃: The positive relationship between orientation to innovation and cohesion is moderated by TQM in service firms.

Another key organizational element stimulating orientation to innovation is a system of compensation and recognition that supports innovation activity (Chandler et al., 2000; Balkin and Logan, 1988; Kanter, 1985; Saleh and Wang, 1993). Compensation systems are effective

tools for reinforcing the behavior necessary to developing a desired climate.

One of the main areas that must change to create organizations oriented to quality is individuals' orientation. Quality produces a profound transformation, since employees are the most valuable resources of the organization and should receive priority attention. Many aspects of improvement in quality are closely related to management of human resources, although this close relationship may not exist in the practices necessary for their implementation. We can, however, identify some consensus on the need to stimulate individual and team decision-making on questions that affect quality and customer satisfaction. Such decision-making can create continuous improvement in key personnel management processes such as training and promoting contribution of personnel through both individual and group participation, thus providing the most appropriate systems of compensation and recognition (Hill and Wilkinson, 1995). According to the foregoing, we formulate the following hypothesis:

H₄: The positive relation between orientation to innovation and recognition is moderated by TQM in service firms.

METHODOLOGY

Sample

As recommended by Alam (2011), the frame of reference for our study population is the electronic version of the database of the largest Spanish firms for the year 2000, prepared by Actualidad Económica. Because the database lists usually omit information on firms of the population and to make the potentially surveyable population as similar as possible to the real population, we complemented this database with Duns and Bradstreet Spain, 2000. The questionnaires were sent to managers, since managers receive more information on all departments in the organization and are thus a valuable source for evaluating the organization's different variables. Managers also play a key role in the training and management of variables that determine the kind of behavior expected and supported in the organization (Baer and Frese, 2003). 207 managers answered the questionnaire, providing 202 valid surveys. We include the 127 responses from managers in the service sector in this investigation. We performed Chi-square and T-tests to verify that there were no significant differences between the characteristics of responding and nonresponding firms or between the firms that answered first and those answered last.

Measurement scales

Decentralization

The scale on decentralization used in this study is adapted from the scale proposed by Hage and Aiken (1970) and used in subsequent studies, such as those by Russell (1990), Dastmalchian and Blyton (1992), Russell and Russell (1992), and Ferris et al. (1996). We measure the degree of decentralization in terms of frequency of participation in decision-making and degree of influence in decisions. Thus, managers first had to indicate the frequency with

which they participated in innovation decisions to adopt new programs or policies, new products or services, new processes or technologies or new organizational structures or decisions to open new markets. They recorded their responses on a 7-point Likert scale (1 = "never"; 7 = "always"). Second, managers were asked to indicate the degree of influence of the firm's members in decision-making related to the innovation indicated previously, using a 7-point Likert scale (1 = "very little influence"; 7 = "a lot of influence"). We verified the scale's validity through a confirmatory factor analysis and calculated the Alpha Cronbach, which was higher than 0.7 ($\alpha = 0.918$).

Formalization

After reviewing the literature that measures formalization (Hage and Aiken, 1967; Dewar and Dutton, 1986; Oldham and Hackman, 1981; Van de Ven and Ferry, 1980), we decided to use a 7-point Likert scale to measure formalization from a global perspective. Thus, managers were asked to evaluate seven items related to whether the firm had a large number of written rules and policies, whether there were rule manuals and procedures and whether these were available in the firm, whether there was a full written description of most jobs in the firm, whether the firm kept a written register of most work tasks, whether there were formal orientation programs for new employees, whether employees followed standard operating procedures and practices in performing the main tasks, and whether the different situations that emerged in executing their work were directed by written procedures. We performed a confirmatory factor analysis and found that $\alpha = 0.915$, obtaining a reliable and valid scale to verify the hypotheses.

Cohesion

Based on the literature review, we used the scale developed by Koys and DeCotiis (1991). This scale is composed of three items that measure perception of collegiality in the organization's environment, team spirit among employees, and extent of employees' concern for their colleagues. We also performed a confirmatory factor analysis that verified the scale's validity and reliability ($\alpha = 0.931$).

Recognition

Based on the literature review, we decided to use the scale developed by Koys and DeCotiis (1991). This scale is composed of four items that asks managers to evaluate whether they recognize work well done through prizes and social compensation, whether they are quick to recognize a worker when things are done well, and whether the program of incentives is explained in depth. The scale used is valid and reliable ($\alpha = 0.790$).

Orientation to innovation

Based on previous scales (Hurley and Hult, 1998, 2005; Chandler et al., 2000; Russell and Russell, 1992; Russell, 1990; Koys and DeCotiis, 1991), we developed a scale composed of five items to measure the organization's orientation to innovation. This scale evaluated whether the firm is willing to attempt new ways of doing work, is eager to improve work methods and to seek new solutions to problems, and is willing to develop new ideas, as well as whether the members discuss new ways of doing things. We also verified the validity and reliability of this scale ($\alpha = 0.942$).

Table 1. Correlations.

Variable	1	2	3	4	5
Decentralization	1	0.377**	0.064	0.449**	0.585***
Cohesion	0.216 [†]	1	0.242 [†]	0.513***	0.583***
Formalization	0.397***	0.250*	1	0.301*	0.389**
Recognition	0.356**	0.251*	0.428***	1	0.693***
Orientation Innovation	0.440***	0.359**	0.463***	0.529**	1

Above the diagonal, correlation of organizations with TQM is shown, while below the diagonal, correlation of organizations without TQM is shown. [†] <0.1; *p<0.05; **p<0.01; ***p<0.001.

Table 2. Results of the regression for orientation to innovation.

Independent variable	Firms with TQM: 49	Firms w/o TQM: 78	Total
Decentralization	0.317** (3.025)	0.223* (2.167)	0.276*** (3.809)
Cohesion	0.240* (2.203)	0.178 [†] (1.867)	0.175* (2.517)
Formalization	0.197* (2.045)	0.187 [†] (1.759)	0.177* (2.474)
Recognition	0.368** (3.197)	0.325** (3.122)	0.366*** (4.769)
R	0.810	0.650	0.717
R2	0.657	0.423	0.515
Adjusted R2	0.623	0.390	0.498
F	19.622***	12.807***	30.745***

RESULTS

Table 1 shows the correlation matrix to evaluate the level of significance of the relationships. We include the correlation for the firms that had implemented TQM systems and for those that had not. In both cases, we find significant correlations of decentralization, cohesion, formalization, and recognition with orientation to innovation. As the table shows, none of the correlations has a value very close to 1. This result shows that there is discriminant validity between the different concepts used in the research.

We then performed a regression analysis of the firms with and without quality and orientation to innovation. The results are shown in Table 2. Orientation to innovation is the dependent variable, and the independent variables are decentralization, cohesion, formalization, and recognition. For the firms with TQM, the coefficient of determination R^2 was 0.65 ($F=19.622$, $p<0.001$), with a significant t-student value for the variables of decentralization, cohesion, formalization, and recognition. For the

group of firms that had not implemented TQM systems, the coefficient of determination R^2 was 0.39 ($F=12.807$, $p<0.0001$), with significant t-student values for all of the variables. From these results, we can deduce that the model with the best fit and the greatest influence on the variables for orientation to innovation is the model of firms that have implemented TQM systems (adjusted R^2 with TQM =0.623> adjusted R^2 without TQM =0.390).

If we analyze the variables in the model, we see that decentralization affects the presence of orientation to innovation positively and that this influence is much greater in organizations that have implemented a TQM system ($\beta = 0.317$, $p< 0.01$) than in those that have not ($\beta = 0.223$, $P < 0.05$). This result enables us to verify Hypothesis 1. Cohesion is also important for creating orientation to innovation, since it is higher in organizations with TQM systems ($\beta = 0.240$, $P < 0.05$) than in those without ($\beta = 0.178$, $p< 0.10$), verifying Hypothesis 3. Another structural variable that affects orientation to innovation is the degree of formalization. As earlier justified, greater formalization exists in organizations with TQM systems

Table 3. T-Test of independent samples.

Variables	Mean		Levene's test for equality of variances		T-Test for equality of means	
Decentralization	4.0817	3.100	0.237	0.628	2.223*	0.028
Cohesion	5.1905	4.2083	0.306	0.581	1.684 [†]	0.094
Formalization	5.1933	4.1964	0.286	0.594	2.022*	0.045
Recognition	4.3427	2.5313	0.305	0.582	4.095***	0.000
Orientation Innovation	5.4067	4.400	1.008	0.317	2.470*	0.015

($\beta = 0.197$, $p < 0.05$) than in those without these systems ($\beta = 0.252$, $p < 0.10$). This result emphasizes the need to establish a clearly defined purpose and clearly specified work rules for successful introduction of the organizational innovation, as indicated in Hypothesis 2. Finally, we also confirm that a system of compensation and recognition that supports innovation activity is an effective tool for reinforcing the behaviors needed to develop the desired climate. As Hypothesis 4 affirmed, this result is greater in organizations with TQM ($\beta = 0.368$, $p < 0.01$) than in those without it ($\beta = 0.325$, $p < 0.01$).

Finally, we performed the T-test for equality of means between both kinds of organization to analyze whether there are significant differences in the TQM practices related to decentralization, cohesion, formalization, and recognition and the orientation to innovation. The results of these tests are included in Table 3. For each variable, we calculated the mean, Levene's test for equality of variance and the T-test for equality of means. The results show significant differences for all of the variables based on the presence or absence of a TQM system in the organization. Quality thus influences these factors, and the value representing this influence is greater in firms with TQM, as proposed in Hypotheses 1, 2, 3, and 4.

DISCUSSION

This article contributes significantly to the study of the literature and of management practice. We have verified a model for fostering orientation to innovation in service firms by implementing TQM Programs. Our study adds empirical evidence to the specialized literature in two ways. First, we verify empirically that the structural factors (decentralization and formalization) and work-contextual factors (cohesion and recognition) influence orientation to innovation of service firms. Second, we verify that the relationship of the structural and contextual factors to orientation to innovation in service firms is moderated by the implementation of TQM programs.

The analysis of the empirical results enables us to verify that decentralization, formalization, cohesion, and recognition have a positive influence on greater orientation to organizational innovation in both kinds of organization. However, this influence is greater in organizations

that have implemented a quality system. Such organizations possess a culture based on teamwork and oriented to customer satisfaction and continuous improvement, which increases the degree of both vertical and horizontal decentralization. Teamwork and the need for greater internal-external cooperation translate into greater cohesion, cooperation, and collegiality among the different members of the organization. The need to manage processes also increases formalization of the different organizational tasks. Quality produces a series of changes in people's orientation, among them, in the systems of compensation and recognition of employees. Finally, TQM develops an environment that is advantageous and necessary for developing greater orientation to innovation.

The managers of service firms with TQM programs should implement a climate of support for innovation by developing a work climate of cooperation between the members of the organization, recognition of work well done through prizes and social compensation, participation in decision-making, and formalization - that is, more cohesion, recognition, formalization, and decentralization. This climate of support for innovation is a fundamental element in forming a work environment that supports and encourages innovation.

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