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Article

The relationship between organizational structure and market orientation: An empirical approach

The International Journal of Management Science and Information Technology (IJMSIT)

Provided in Cooperation with:

North American Institute of Science and Information Technology (NAISIT), Toronto

Suggested Citation: Cabello Cabello, Tomás; Revilla Camacho, María Ángeles; Vega Vázquez, Manuela (2014) : The relationship between organizational structure and market orientation: An empirical approach, The International Journal of Management Science and Information Technology (IJMSIT), ISSN 1923-0273, NAISIT Publishers, Toronto, Iss. 12, pp. 50-77

This Version is available at:

<https://hdl.handle.net/10419/178773>

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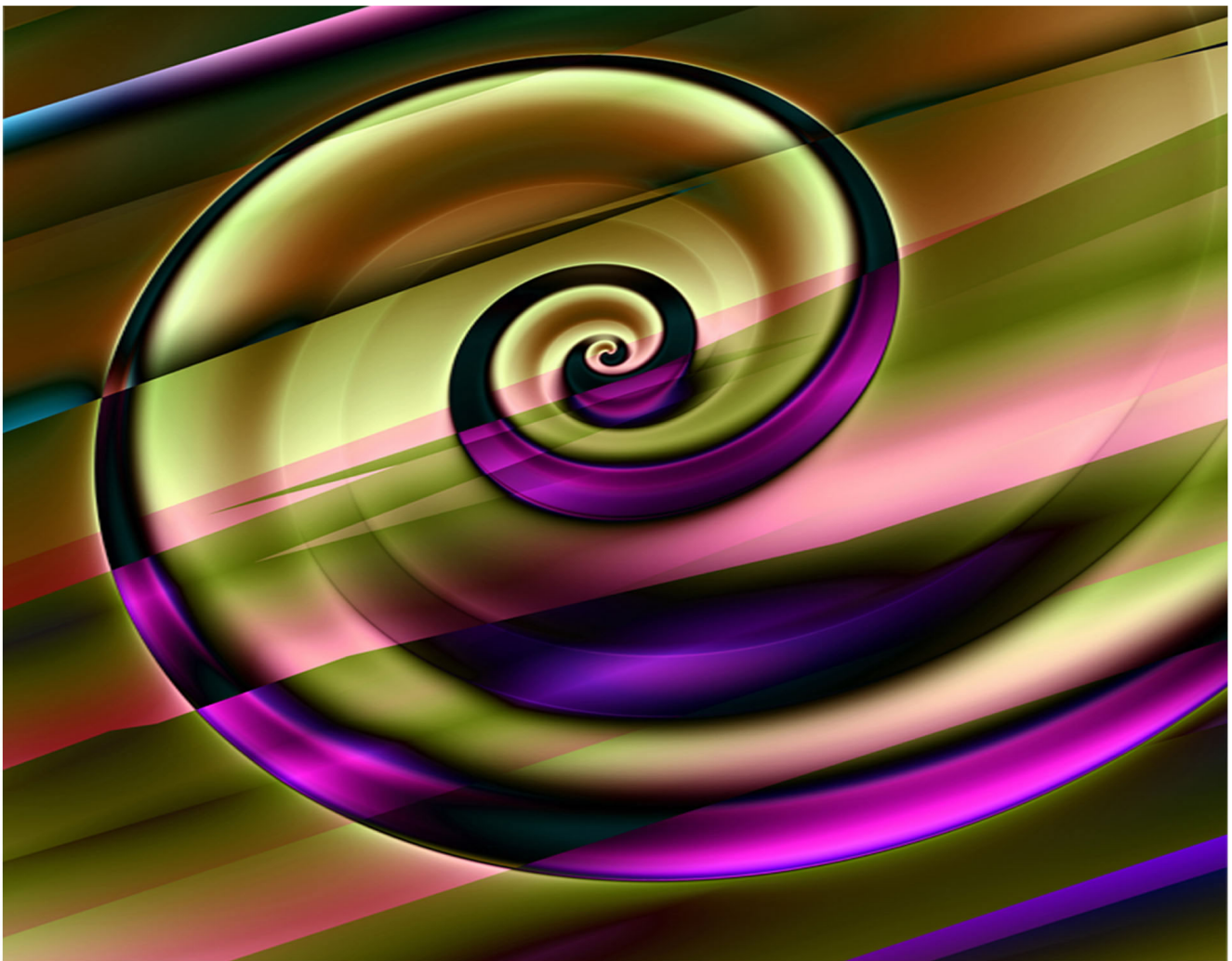
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An official publication of The North American
Institute of Science and Information Technology

ISSN:1923-0265

INTERNATIONAL JOURNAL OF

Management Science and Information Technology



NAISIT
PUBLISHERS **III**

www.naisit.org

The International Journal of Management Science and Information Technology (IJMSIT)

NAISIT Publishers

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This is one paper of
The International Journal of Management Science and
Information Technology (IJMSIT)
Special Issue: 2012 AEDEM Annual Meeting

The relationship between organizational structure and market orientation. An empirical approach

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ABSTRACT:

This study analyzes different antecedents of market orientation and goes deeply into the analysis of the relationship between organizational structure and market orientation. The data for the empirical research comes from a sample of small firms belonging to the industrial sector in the geographical area of an economy of the south of Europe - the Andalusian economy. The study includes 85 correctly-completed questionnaires. The results confirm the effect of formalization, integration and centralization on the firms' marketing orientation, but they do not allow it to be stated that there is a relationship between firms' marketing orientation and complexity. The implication for management is the need to check the organizational structures in order for them not to slow down the introduction of market orientation.

KEY WORDS: Market Orientation, organizational structure, industrial business, intangible resources

1. INTRODUCTION

Market orientation has been thoroughly investigated since the early 90s of the last century. The works of Kohli and Jaworski (1990) and Narver and Slater (1990), formed the starting point for research on market orientation.

The traditional theory of marketing maintains that market-oriented firms obtain better results. Likewise, there are organizational factors that affect the market orientation of firms and are facilitators or barriers to introducing this orientation. Parasuraman et al (1983) have already pointed out that if firms differ in their degree of market orientation, it is necessary to ascertain the key organizational characteristics associated with their adoption level of this orientation. Day (1994a), on the other hand, suggests that market orientation requires the support of changes in the organization's structure.

Considering market orientation as an intangible resource, the structure and the organizational systems play a fundamental role in gaining a competitive advantage (Fernández, 1993, 1995). From this perspective, the organizational architecture and its routines, as well as the management culture and systems, are decisive (Cuervo, 1995). In response to the environment's changes, the organizational designs become more flexible with the aim of achieving a competitive advantage around its central competences (Prahalad and Hamel, 1990). In this sense, a market-oriented business, which is therefore committed to the continuous creation of superior customer value, is related to horizontal structures focused on value creation. It also has small multifunctional teams that increase the speed of the business (Slater and Narver, 1994b). Revising the structure and, where necessary, modifying it to contribute to the introduction of the market orientation (Barroso and Martín, 1999a) starts from the reasoning that

certain of its characteristics can act as barriers for an organization to adopt this management philosophy (Lear, 1963; Kohli and Jaworski, 1990).

With this approach, the development of a strategy aimed at the market requires the development of new organizational forms (Achrol, 1991). The most traditional concept of organization, characterized by a vertical and specialized structure, is being substituted by new forms of organization in those businesses that have adopted a market orientation. The hierarchical organization, in which the market department is a separate function, is “obsolete” according to these new approaches. The marketing responsibility must be dispersed throughout the organization in such a way that customer satisfaction is the fundamental goal of each of its members (Webster, 1994, p. 206). As a consequence, the structures become flatter, specialization is substituted by multifunctional processes, activities that do not turn out to be critical are externalized and work networks with other organizations are fostered (Cravens et al., 1998). “A great marketing department can be the antithesis of a market-oriented company, especially if it is part of a bureaucratic hierarchical structure dominated by rules, policies and procedures” (Webster, 1994, p. 271). For a large and bureaucratic organization, to respond rapidly to the changes caused by technological developments and the modifications of their customers' preferences will turn out to be problematic (Cravens et al., 1994).

To conclude, companies are creating new flexible organizational forms that respond to their customers' needs and the market's requirements. “The key feature is the understanding of their customers' needs and the value offer to their customers” (Cravens et al., 1994, p. 19). As Achrol pointed out (1991, p. 80), “the firm of the future will need to be very permeable between its departments. Its departments and hierarchy will be confusingly defined, the hierarchy will be minimum and indirect and individuals will have much more autonomy”. In this context, what emerges is a new form of organization based on a flexible network of independent organizations through vertical links with suppliers and users and horizontal links with competitors (Cravens et al., 1994). The consequences of these new designs can be difficult to understand and may even turn out to be contradictory. Hence, it has been noted that these networks may represent a problem to attain and maintain a market orientation and a customer focus. This is because the complexity associated with the networks can mean an obstacle for the employees to identify the end customers, as well as their requirements. Moreover, it can limit organizational learning (Cravens et al., 1996).

The organizational structure can be described on the basis of different variables, though the literature (Aiken and Hage, 1966; Hall et al., 1967; Zaltman et al., 1973; Champion, 1975; Evers et al., 1976; Van de Ven, 1976; Dewar and Hage, 1978; Robbins, 1987a; Hall, 1996) indicate formalization, centralization and complexity as its fundamental and commonly-studied dimensions. A fourth component – integration –tends to be added to these factors (Lawrence and Lorsch, 1967; Galbraith, 1973; Mintzberg, 1998).

In our context, the importance of this precedent fundamentally stems from its possible impact on information processing¹ (Daft and Lengel, 1986). The literature indeed suggests that the organization's structural characteristics have an important influence on knowledge flow (Levitt, 1969; Lundstrom, 1976; Hall, 1977; Miller, 1987), as well as on the context and nature of human interactions (Miller, 1987). In this sense, it is recommendable for the structure to facilitate the coordinated actions of independent elements (Thompson, 1967), in order for the said “anatomy” not to be an obstacle for communication and, thus, market information dissemination (Jaworski and Kohli, 1993). The influence on the information use has also been considered to be strong (Zaltman et al., 1973; Corwin and Louis, 1982). Indeed, Homburg et al. (2000) established a “customer-focused organizational structure”² as a precedent of market orientation.

In line with what has been discussed, we can conclude that the analysis of the structural characteristics is fundamental to the aim of detecting any inhibiting effect with respect to the information use (Deshpandé and Zaltman, 1982).

Though Kohli and Jaworski (1990) consider structure and organizational systems together, we opt for tackling the study of them independently, given the different nature of the aforementioned precedents. As well as the three

¹ Information processing “is conceptually more than the simple obtaining of data to reduce uncertainty; it also involves the interpreting of ambiguous situations” (Daft and Lengel, 1986, p. 559).

²Organizational structure focused on the customer is understood to be a structure that uses groups of customers connected by some similar non-geographical characteristic as a basis for structuring the organization.

variables considered by these authors – formalization, centralization and departmentalization – we include integration in the analysis, following the most recent literature on the structure of organizations.

2. THEORETICAL RESEARCH FRAMEWORK

2.1. Definition of the variables

Market orientation (MO)

Tuominen and Möller (1996) consider the market orientation construct to be made up of both cognitive and behavioural aspects of organizational learning. In this approach, the business philosophy dominant in the organization, and the distinctive skills and capacities³ take shape as cognitive precedents of market orientation and as behavioural consequences. This approach considers market orientation as a resource that is the basis of the organizational learning process which allows the firm to attain a position of sustainable competitive advantage and a greater performance. In this sense, market orientation allows the development of skills that make it possible for the organization to acquire knowledge about its customers and market participants, to share this knowledge throughout the organization and to carry out the actions necessary to give superior customer value (Day, 1994a; Slater and Narver, 1995; Narver et al., 2000). It is the superior resources' understanding and satisfying of the customers which allows the achievement of a competitive advantage. In accordance with this perspective, "market orientation is not an end in itself but rather a means of developing a sustainable competitive advantage and thus the gaining of a greater performance" (Barroso and Martín, 1999c, p. 12).

The study by Cadogan, Diamantopoulos and Sigauw (2002), set to conclude the strong positive relationship between market orientation and organizational success. That is, the levels of satisfaction of businesses with their sales, entering new markets and market share achieved, are positively relate to market orientation. In addition, we verified the existence of a significant and positive relationship between market orientation and business success.

It is argued that the way in which information is used is a function of the existence of organizational processes, as well of individual management activities (Daft and Weick, 1984). Organizational learning means a process of improving actions via a greater knowledge and understanding and is made up of both cognitive aspects (learning) and behavioural aspects (change) (Tuominen and Möller, 1996). In this sense, it is to be pointed out that though individual learning contributes to organizational learning, it is not in itself a sufficient condition for the latter (Sinkula, 1994; Moorman, 1995; Tuominen and Möller, 1996). As Nonaka (1991) indicates, new knowledge always begins in the individual and is changed into organizational learning that turns out to be valuable for the organization as a whole. A better and more effective use of information is considered to be fundamental for adopting market orientation and being successful in an intensely-competitive environment (Menon and Varadarajan, 1992). Sinkula (1994), from an integrating approach, introduces the market-based organizational learning concept. This learning differs from others in five fundamental aspects. Firstly, it is an externally-centred capacity and less visible than the majority of the internally-focused ones. It also differs from other types of organizational learning in that it is a fundamental basis of competitive advantage. Thirdly, the observing of the experiences of others (competitors, customers and other channel members) is an essential element. The market information that lies in the organization's memory turns out to be difficult to access. Lastly, the information is more equivocal⁴.

In the same line, Slater and Narver (1994b) uphold that "market-oriented learning can be the unique basis to create superior value for the customer as, unlike products or technologies that can be obvious for competitors, it is a deeply-embedded organizational process that is difficult for those outside to perceive and almost impossible to imitate" (Slater and Narver, 1994b, p. 27). We see how market orientation and organizational learning are indeed closely-related concepts (Day, 1994a; Slater and Narver, 1995; Cravens et al. 1997; Cravens, 1998; Farrell, 2000). In this respect, Slater and Narver (1995) point out that market orientation is a fundamental element of superior organizational learning, and a superior learning capacity greatly contributes toward achieving a competitive advantage (Day, 1992, 1994a; Sinkula, 1994). Indeed, the business skill of processing market information evolves over time and is shown in processes of information acquisition, dissemination and use. These processes are considered to be "knowledge assets" that allow the achievement of a competitive advantage (Moorman, 1995) and the organization which has such assets at its disposal is qualified as a "knowledge-creating company" (Nonaka, 1991).

³ The distinctive capacities are those in which the organization has an advantage (Cravens et al., 1998).

⁴ This concept refers to the existence of multiple and conflictive interpretations of information; "the misunderstandings are indeterminate, inscrutable, ambivalent, questionable and allow for multiple meanings" (Weick, 1979, p. 174).

From this perspective it is upheld that knowledge is “the main production factor that determines long-term economic growth” (Sánchez et al., 2000, p. 43). The only source of lasting competitive advantage is knowledge, so that when the environment is uncertain, successful companies are those which create new knowledge, disseminate it throughout the organization and quickly incorporate it in new products or technologies that allow a response to customer needs. These are activities that define a continuously-innovative organization (Nonaka, 1991). Knowledge is characterized by not deteriorating with use. On the contrary, it is enriched, favouring its dissemination. Moreover, it is a factor with an increasing performance, which implies that as it accumulates its possibilities of use increases (Sánchez et al., 2000).

Slater and Narver (1994b) suggest two approaches to develop market orientation. The first strategy, called *programmatically*, hinges on the attitudes and activities of individuals and maintains that organizational change is the consequence of modifications in individual beliefs and behaviours. It is an a priori approach in which educational and organizational change programmes are used with the aim of introducing the sought-after norms that allow the continuous providing of a superior customer value. It is moreover a basis for learning (Narver et al., 1998). In the *adaptive*⁵ approach, both managers and employees learn from their efforts with the aim of creating customer value. This strategy is based on the fact that individual behaviour is more effectively changed by confronting individuals with new roles or functions that are going to allow them to develop new capacities in response to the market changes. The emphasis is on continuous improvement for learning (Narver et al., 1998). Though both perspectives contribute to increasing market orientation, when the former is focused on learning, the joint effect of both strategies is greater (Narver et al., 1998). For Baker and Sinkula (1999a), both market orientation and learning orientation⁶ influence the activities of marketing information processing (MIP). These authors conceive both constructs to be characteristics of the organization. The former gives priority to the aforementioned MIP activities and is a mechanism that can favour *adaptive* learning (Slater and Narver, 1994b; Baker and Sinkula, 1999a). That is, that which does not imply a change in the norms that guide the firm's behaviour (Sinkula, 1994). The latter affects the tendency to value *generative* learning (Sinkula, 1994; Baker and Sinkula, 1999a). This type of learning does mean a change in the organization's norms and is the result of a proactive behavior on the part of the firm and not in response to the environment's changes (Sinkula, 1994).

In accordance with this, market orientation “stresses the firm's skill to learn about customers and competitors in order to be continuously aware and act on events and tendencies in current and future markets” (Tuominen and Möller, 1996, p. 1178). That is, market orientation fosters the development of processes to learn about changes that have a profound impact on the organization's environment, over the competitors (Cravens et al. 1998). As Dickson (1996) points out, "market orientation describes a series of (...) processes that allow the firm to learn (...)" (Dickson, 1996, p. 104).

In this work, setting out from the resources approach and the theory of organizational learning, and following the line of other researchers (Day, 1994a; Moorman, 1995; Hurley and Hult, 1998; Álvarez, 2000; Cossío, 2000; Tuominen et al., 2001), we uphold that market orientation is an intangible knowledge-based resource that allows a superior customer value to be provided. This resource differentiates the firm from its competitors and generates a competitive time-sustainable advantage that allows the organization to obtain a superior performance. The intangible resources are based on individuals, groups and the very firm having information and this makes identifying and reproducing it difficult (Fernández, 1993). In this sense, market orientation is based on the generation, dissemination and use of market intelligence about customers and competitors (Kohli and Jaworski, 1990), on a series of beliefs shared by all the organization's members that give preference to the customer's interest (Deshpandé et al., 1993), and on the coordinated application of interfunctional resources for creating superior value (Shapiro, 1988; Narver and Slater, 1990). This strategic advantage based on the value given to the customer is far from being easily duplicated by the competitors (Forbis and Mehta, 1981). Moreover, in so far as market orientation means complex information processing, involves different units of the organization and requires knowledge dispersed between many individuals, it resists imitation. To duplicate models of internal coordination and learning is not easy (Prahalad and Hamel, 1990). The difficulty of imitation by competitors lies in the complexity of the learning process due to market orientation, as well as the great amount of resources required, given that knowledge generation is a costly process (Sánchez et al., 2000).

⁵ In a later work, this approach is given the name *market-back* (Narver et al., 1998).

⁶ The authors define, from the literature, learning orientation as a series of values that influence the degree to which an organization is satisfied with its theories in use, mental models and dominant logics, which can be market-based or not (Baker and Sinkula, 1999a).

As a consequence, market orientation could “potentially” allow the firm to produce a more efficient and effective offer than its competitors. That is to say, market orientation can be considered as an intangible resource of organizational learning that will lead to a sustainable comparative advantage only if it is scarce among competitors (Barney, 1991; Hunt and Morgan, 1995).

Formalization

In general terms, formalization refers to the establishing of rules and procedures to handle the eventualities an organization is confronted with (Pugh et al., 1963; Hall, 1996). Pugh et al. (1963) use this concept to refer to the degree to which these communications and procedures are written. Aiken and Hage (1966) define formalization as the degree of standardization of the work and the amount of deviation allowed. They measure it from the proportion of work codified and the degree of observing the rules. Thus, the work codification index reflects the degree to which the person in charge of the work must consult the rules when carrying out work (the number of rules that specify “what to do, when, where and why” Aiken and Hage, 1968, p. 925) and, on the other hand, the observation of the rules index refers to the extent to which the employees are observed violating the rules (“the diligence with which the rules are reinforced” –Aiken and Hage, 1968, p. 926). With this approach, a greater proportion of codified works and a lesser range of variation allowed are associated with a greater formalization. The authors later added the specificity of the work to the two previous aspects. That is, the degree to which the procedures that define a work are explained in detail (Aiken and Hage, 1968). On the other hand, Pugh et al. (1963) note that formalization includes, firstly, the establishing of procedures, rules and roles, and, secondly, the applying of procedures related to decision-making, the transmission of decisions and instructions and, finally, the transmission of information including feedback. In this line, Hall et al. (1967) measure formalization from a series of indicators concerning the roles, the relationships of authority, communications, norms and sanctions. Different indicators, associated with more specific definitions, have been used to measure this variable. The most classic ones correspond to Aiken and Hage (1966) and Hall et al. (1967).

In spite of the differences in the measurements of formalization, there seems to be a similarity as far as the meaning of formalization is concerned (Hall, 1977) and in considering it to be a “key” structural variable. This is because working out how, where and by whom tasks are carried out decisively influences the behaviour of the organization's members (Hall, 1996, p. 69). Likewise, it must be pointed out that formalization can be conceived as a continuum, from the maximum formalization to the extreme to which the organization's members use their own discretion for the development of situations for which procedures have not been developed. Most organizations are, however, at an intermediate point (Hall, 1996).

It has been suggested that formalization can affect information processing (Moorman, 1995). Nevertheless, the literature is contradictory about its impact. Some researchers uphold that formalization is associated with a higher level of certain types of processing (Galbraith, 1973) and information use⁷ (Daft and Lengel, 1986), thus favouring information generation (Pelham and Wilson, 1996). In this line, the work of John and Martin (1984) suggests that the utilization of formal rules and procedures reinforces the instrumental use of the marketing plan. On the other hand, it has been noted that this structural characteristic reduces information use (Deshpandé, 1982⁸; Deshpandé and Zaltman, 1982).

At the same time, it appears that formalization increases the probability of decision-making processes caused by reactive behaviours, so that it could discourage the pursuit of opportunities (Fredrickson, 1986). This approach is coherent with the view of Kelley et al. (1996), who uphold that formalization has a negative impact on creativity in the process of rendering services. From this perspective, the existence of formal rules can hinder an organization's adaptation to the environment's changes (Ruekert et al., 1985; Jaworski and Kohli, 1993). Taking into account that a market orientation involves doing new things and can be interpreted as an innovative behaviour (Jaworski and Kohli, 1993), it could be suggested that it inhibits the adopting of this culture. The model put forward by Hartline et al. (2000) considers that the selecting of customer orientation by employees requires less trust in rigid rules and procedures. They argue that in service firms, the employees who are in contact with customers must be able to adapt and quickly respond to their changing needs. With this approach, formalization is not coherent with the adopting of a customer-oriented strategy. From an empirical point of view, the authors confirm that doing so is associated with less trust in formalization.

⁷ Rules and procedures reduce uncertainty (Daft and Lengel, 1986).

⁸ The empirical results establish a significant effect of the work codification index and specificity on market information use but not for the observing of rules index.

Having reached this point, the difference that Zaltman et al. (1973) establish will perhaps explain matters. They suggest that formalization can inhibit innovation during the start-up stage in that it favours its introduction by reducing the ambiguity related to how individual work will be seen to be affected by this innovation. In the same sense, Moorman (1995) upholds that an informal culture should support information acquisition, its transmission and conceptual use⁹, while reducing its instrumental use¹⁰. In this line, it has been supposed that a greater formalization negatively influences information generation, dissemination and response design and positively influences its introduction (Kohli and Jaworski, 1990). Nevertheless, the data do not appear to confirm the hypothesis. This circumstance leads us to think that more than the mere presence of rules, the decisive factor can be their content (Jaworski and Kohli, 1993).

The work of Pleshko (1993) supports the existence of a positive and significant relationship between formalization and market orientation. In the same sense, Pelham and Wilson (1996) maintain that in small firms it is possible to improve the introduction of consumer-satisfaction oriented activities via systems of greater formalization. The empirical results produce mixed results, as even when the increases in this variable have a significant influence on market-oriented behaviour, the level of the previous year is not significantly associated with this. Based on this work, Rivera and Molero (2000) also uphold that the quantity of activities aimed at the market that are formalized is positively related to the market orientation level. This extreme is borne out empirically, clearly showing that it is a question of a mechanism that firms can use with the aim of reducing the labour uncertainty associated with introducing an innovating behavior as a market-oriented strategy.

The conclusions of the PhD of Álvarez (2000) suggest that this variable is made up of two aspects: on the one hand, the formalization of posts or tasks; on the other hand, the formalization of procedures. The results obtained in a sample made up of private foundations do not allow the conclusion of any significant effect of the first type of formalization on Market Orientation in its operative dimension. The second type appears to positively but weakly influence the degree of market orientation.

Centralization

This variable reflects the hierarchical nature of organizations (John and Martin, 1984) and refers to the way in which power is distributed (Hage and Aiken, 1970; Hall, 1977; Mintzberg, 1998). According to Pugh et al. (1963), centralization is related to the localizing of authority for decision-making. Regarding this, it is necessary to point out that authority appears in the literature in two conceptions. One is a formal or institutional authority exerted by the person who has the property. Another is a real or personal authority which lies in knowledge and experience. According to this approach, two aspects of centralization can be identified. On the one hand, the formal authority can be more or less delegated. On the other hand, the real authority can be taken on by experts, the number and authority of these experts being another dimension of this variable.

For Aiken and Hage (1966, p. 497), centralization is conceptualized as “the degree to which members take part in decision-making”. From this definition it is clearly shown that though a high level of centralization is the most evident form of coordinating the decision-making process, it requires the managers with authority having information (Fredrickson, 1986). In this sense, it is necessary to take into account that an individual may not have the information necessary to be able to adopt decisions in a complex organization (Mintzberg, 1998).

It is necessary to consider two important aspects. On the one hand, organizations differ in the extent to which they assign tasks to their members and provide them with the freedom necessary to implement them without the interference of any superior. On the other hand, they also vary in the degree to which the staff takes part in the setting up of the organization's aims and policies. In this way, centralization can be understood as the delegating of authority in decision-making throughout the organization and the magnitude of the participation of the organization's members in the decision-making (Aiken and Hage, 1968). It is clearly shown that organizations differ in the degree of “authority hierarchy” and of “taking part in decision-making”, respectively. The hierarchy index reflects the degree of dependence of supervisors in decision-making about individually-assigned tasks. On the other hand, the rate of taking part in decision-making represents the relative degree of participation in decisions that affect the organization as a whole, such as adopting new programmes and policies and contracting and promoting staff, in such a way that both measures of centralization are inversely related (Aiken and Hage, 1966).

⁹ The processes of conceptual use refer to the indirect use of information in strategy-related actions (Moorman, 1995).

¹⁰ The processes of instrumental use refer to the degree to which an organization directly applies marketing information to influence actions concerning marketing strategy. It includes three subprocesses: the use of information in decision-making, in the introduction and in the assessment of decisions (Moorman, 1995).

Centralization is one of the variables that most affect information use (Deshpandé and Zaltman, 1982). In this sense, much research suggests that a decentralized structure fosters knowledge use. Nevertheless, the contributions of some authors note the contrary.

On the one hand, the literature upholds that more decentralized organizations allow their lower managers to take part in information generation and thus favour their commitment to its use. With this approach, centralization seems to inhibit the generation, dissemination (Avlonitis and Gounaris, 1999) and the use of information (Deshpandé, 1982; Deshpandé and Zaltman, 1982; John and Martin, 1984). In the same line, it has been suggested that centralized firms tend to reduce their market response. The reasoning could stem from the fact that an organization's members are exposed to stimuli (for example, opportunities) that have strategic implications for the firm. Nevertheless, in a centralized organization it is likely for these implications to not be recognized due to the concentration of authority. Centralization does appear to favour the seeking of opportunities by proactive upper managers (Fredrickson, 1986), as well as the creative discretion of the employees in the carrying out of daily tasks related to providing services (Kelley et al., 1996).

On the other hand, the work of Corwin and Louis (1982) maintains that the limited use of a research programme can be to a great extent due to specific characteristics of the organization, such as decentralization. According to their approach, decentralization in the decision-making process can lead to an isolation that causes findings to be inaccessible to other departments which could benefit from the use of this information. As the authors themselves point out, it is clearly shown that, paradoxically, "the conditions that foster new ideas do not necessarily guarantee their being used" (Corwin and Louis, 1982, p. 236).

A positive relation between decentralization and market orientation has been suggested. "Decentralization, especially in small firms, must, via the functions and levels, provide a greater involvement in activities designed to improve customer satisfaction. The decentralization of decision-making in small businesses must increase market-oriented behaviours, such as lower levels at which managers learn to appreciate the value of market information and spread this information" (Pelham and Wilson, 1986, p. 30). The research of Jaworski and Kohli (1993) assumes that a greater centralization is associated with a lesser generation of market intelligence, its dissemination and the design of the market response, but at the same time supposes a positive relation to the introduction of this response. It has been empirically confirmed that centralization is a barrier to market orientation¹¹, suggesting that it can be positive for employees in the organization's lower levels to adopt decisions, instead of these being concentrated in the higher echelons. Álvarez (2000) reaches similar conclusions in the non-profit area, by noting a negative effect of centralization on market orientation.

The findings of Pleshko (1993) suggest that there is not a significant relationship between this variable and market orientation. According to the author, it is possible that centralization positively affects some aspects of the construct, such as the introduction of the response, while it negatively affects others, for example, intelligence generation. The joint effect can be a null influence. He also suggests the possibility of this structural precedent not being as important as others. Nor does one of the pioneering works in Spain (Varela et al. 1996b) find a significant relation between centralization and market orientation, understood to be a cultural dimension, though it does confirm a negative relationship between this structural precedent and market-oriented behaviour.

Complexity¹²

From a broader point of view, a complex organization is that which is made up of many parts that are normally interconnected (Fredrickson, 1986), and that require coordination and control (Hall, 1996). According to this definition, a complex organization has many differentiated units, each with its own relevant environment, that functionally contribute to the organization as a whole (Van de Ven and Ferry, 1980). In this line, an indicator is the number of specific work areas (Evers et al., 1976). Nevertheless, the different approaches to this structural characteristic appear to suggest that it has different components. Indeed, the organization's occupational types and the training required have been stressed, although this approach means a limited vision, centred on specialization (Hall et al., 1967). Specialization refers to the work division within the organization. Two aspects can be distinguished: the *number of specializations*, which means counting the functions that are carried out by the

¹¹ Nevertheless, the conclusions reached in the two samples considered in the study are different, as the first of them bears out the inverse relationship between centralization and information dissemination and response, and the second between the aforementioned variable and information generation.

¹² The differences between the concepts of complexity and specialization are not clear in the literature (Evers et al., 1976). Moreover, we consider the term complexity as a synonym of the differentiation of Blau (1974), despite opinions such as those of Dewar and Hage (1978), who uphold that they are not the same concept. They understand complexity to be the number of specialities and differentiation the number of levels and departments. The discussion about the specific scope of the term is beyond the aims of our research.

specialists; and the *degree of the role specialization*, which indicates the differentiation of activities within each function, that is, the specific and the limited aspects of the tasks that are assigned to a role (Pugh et al., 1963). In a broader sense, the vertical and horizontal control extensions (the concept of “configuration” of Pugh et al., 1963) have been considered as components of this variable. Hall et al. (1967, p. 906) understand complexity as “the degree of internal division – the number of the organization's separate parts reflected in the work division, the organization's number of hierarchical levels and spatial dispersion”. In this latter line, the literature notes three potential sources of complexity: vertical or hierarchical differentiation, horizontal differentiation and spatial dispersion (Hall, 1996).

- Horizontal differentiation is related to the way in which the tasks developed by the organization are subdivided. In this sense, it is possible to divide the tasks in such a way that a wide range of activities can be performed by very qualified specialists or else these tasks can be divided so that they can be carried out by non-specialists. Complexity means highly professionalized structures and a more diverse occupational structure, so that two fundamental aspects can be defined: the degree to which there is a high number of different types of occupational activities in the organization; and, on the other hand, the degree to which these occupations are in the hands of professionals (Aiken and Hage, 1968; Hage and Aiken, 1970).
- Vertical differentiation refers to the depth of the hierarchy, so that the more levels there are between the upper management and the operators, the more complex the organization is.
- Lastly, spatial dispersion is no more than a modality of either of these two types, in which the activities or the staff is dispersed in space.

Lawrence and Lorsch (1986) refer to this structural variable with the term “differentiation”. When organizations increase their size, they are differentiated into parts, each of which carries out particular attributes in relation to the requirements of its relevant environment. Such a differentiation is a characteristic of all complex systems. To guarantee the correct functioning of the system as a whole, it is necessary for the different subsystems to be integrated. By differentiation they mean “differences in attitude and behaviour, not only the simple fact of segmentation and specialized knowledge” (Lawrence and Lorsch, 1986, p. 9). According to this definition, differentiation includes the attitudes and behaviours of the members of the different departments. In so far as each department carries out its own functional specialization, time horizon, aims and reference scheme, the need to overcome the differences that exists between them arises. It has been suggested that this problem is one of reducing ambiguity (Daft and Lengel, 1986). Indeed, the difference as far as experience, knowledge, goals, values and priorities are concerned determines that the interdepartmental connections can turn out to be complex, ambiguous and difficult to interpret. From this point of view, when the differentiation is high, ambiguity is also high, so that structural devices are needed to allow the members of the different departments to settle their differences (Daft and Lengel, 1986).

According to what has been said, specialization represents as many advantages as inconveniences. On the one hand, to reduce a complex task to others that are simpler and more standardized fosters efficiency and scale economies. Moreover, via the assigning of difficult tasks to experts the quality and the success of them is favoured (Blau, 1974). However, specialization requires a greater interdependence between units, given that each of the parts collaborates in the achievement of the task as a whole. The internal homogeneity of the unit is also fostered, though the difference with respect to others increases, so that the values, orientations and subgoals between units can differ appreciably (Van de Ven and Ferry, 1980). In general, a high level of complexity is related to a greater difficulty in coordination, control (Lawrence and Lorsch, 1967; Fredrickson, 1986) and communication (Blau and Schoenherr, 1971; Hall, 1977). Hence, specialization is associated with standardized routines, a greater documentation and support hierarchy (Pugh et al., 1968; Child, 1972a).

In the market orientation area, reducing the number of hierarchical levels is considered to be a way of reinforcing this orientation. The reasoning lies in the fact that by reducing the number of hierarchical levels within the organization, the upper management can be obliged to contact customers more often and in a closer way, increasing their knowledge about customer preferences and the offers of competitors. On the other hand, the response time will be less, due to the reduction in the number of people involved in the decision processes (Becker and Homburg, 1999).

Starting out from the basis that the complexity of the environment requires a specialization of tasks and functions, Rivera and Molero (2000) check the positive influence between an organization's level of specialization and its market orientation.

The pioneering work of Kohli and Jaworski (1990) is focused on departmentalization and establishes a negative relationship between this variable and the generation of intelligence, its dissemination and the response design and a positive one with the introduction of the response. Nevertheless, the research does not empirically uphold this hypothesis. This circumstance led Jaworski and Kohli (1993) to note that the form in which the organization's

departments interact is more decisive than the number of departments. Supported by this work, Balabanis et al. (1997) suggest that, in the context of non-profit organizations, a greater number of departments is associated with a lesser market orientation. According to the results obtained, this variable inhibits the circulation of information (market intelligence dissemination) and the response to market changes. On the other hand, the results of the work of Pleshko (1993) do not find a significant relationship between complexity and market orientation.

Integration

The fourth dimension of the structure considered in this research is *integration*. Integration is understood to be “the process of attaining unity of effort between various subsystems in the achievement of the organization's task¹³” (Lawrence and Lorsch, 1967, p. 4). The structural design of a great part of current businesses responds to a division of the work in accordance with the different functional specialities (marketing, production, finances, R+D, etc.). Nevertheless, in spite of the efficiency that this structure generates within each area, there are occasions when coordination and interaction between departments is required (Olson et al., 1995). Concerning integration, it is interesting to know two fundamental aspects: that units must work together and how rigid the requirements of interdependence between them are (Lawrence and Lorsch, 1969).

Integration is not achieved automatically. It is attained via the use of a series of linking devices, some *basic* and others *supplementary* (Lawrence and Lorsch, 1969): direct contact between directors, linking roles, work groups, teams, integrating roles, directive interconnection roles and organization material. This forms a continuum of devices from a lesser to a greater complexity (Lawrence and Lorsch, 1967; Galbraith, 1973; Mintzberg, 1998). In recent years the literature has suggested two mechanisms more: the so-called design teams and the design centres that are the result of a particular interest in improving the speed and effectiveness of the processes of developing new products (Olson et al., 1995). The more complex that the integration mechanisms used are, the greater their capacity of information processing is, in the sense of guaranteeing the effective coordination between departments (Gupta and Govindarajan, 1991), although the costs associated with their introduction are also higher (Galbraith, 1973).

With respect to the rest of the structural variables, it is noted that a greater complexity in a situation of environmental uncertainty favours the use of the aforementioned devices (Lawrence and Lorsch, 1967; Galbraith, 1973). There is a strong inverse relationship between differentiation and integration, insofar as when units are differentiated it is more complicated to attain integration than when the individuals of these units think and act similarly (Lawrence and Lorsch, 1969). In this sense, in organizations with little differentiation, the basic organizational mechanisms to achieve integration are sufficient - the very managerial hierarchy is enough. When there is a great differentiation and need of integration, it is necessary to develop supplementary methods such as individual coordinators or departments whose function is to attain integration between groups. Mintzberg (1998) points out that these instruments tend to be used when the work is specialized in its horizontal dimension, is complex and very interdependent.

Olson et al. (1995) design a continuum of coordination mechanisms as well as the different structural characteristics and processes associated with them. In the extreme corresponding to the most complex coordination mechanisms, “increased autonomy, less centralization of authority and few rules and regulations lead to a more participatory decision-making and to processes of more consensual conflict-solving. Control and reward mechanisms also tend to be more decentralized and more focused on the consequences of a specific project. As a result, it is more likely for the members of relatively-organic structures to share information across the functional limits on a frequent and informal basis and to take on interdependent tasks more simultaneously than sequentially. In other words, individuals within such structures are more likely to adopt a customer or project focus than a functional orientation” (Olson et al. 1995, p. 51). With a similar approach, Narver et al. (2000) uphold that market orientation requires an organic organizational climate.

Among the mistakes of American companies introducing market orientation, Felton (1959) notes the lack of integration and coordination between the executives. The integration of the very marketing department and this with the rest of the functions has been considered a basic prerequisite for introducing the concept of marketing (McNamara, 1972). Given that acting with a market-oriented philosophy requires overcoming the fragmentation of the different functional areas for all of them to respond to the market demands, the use of linking devices that permit a close coordination between departments can be fundamental. Specifically, teams made up of members of multiple departments have been considered as an integration mechanism that allows the reduction of the conflict between

¹³ *Task* is understood to be “a complete input-transformation-output cycle that involves at least the design, production and distribution of goods and services” (Lawrence and Lorsch, 1967, p. 4).

different functions, as it favours the managers focusing themselves on the organization's global aims ahead of the purely functional ones (Maltz and Kohli, 2000).

From an empirical point of view, the work of Pleshko (1993) finds a positive relationship between this variable and the construct under study. They suggest that when the organization is structurally integrated, it is easier to introduce market orientation throughout the firm. The study of cases carried out by Harris (2000) reaches similar conclusions. As an alternative to its consideration as a precedent, the work of Atuahene-Gima (1996) considers this variable as a consequence of orientation. Referring to the process of developing new products, the author upholds that interfunctional teams are effective when they share common goals, and a way of attaining an effective functional integration is via market orientation.

Once each of the main structural variables has been independently studied and taking into account that these factors make up an integrated system (Mintzberg, 1998), we consider it relevant to comment on the effect of them in an aggregated manner as a conclusion. It has been suggested that organizations with high levels of formalization and centralization and low specialization would be more efficient, although it is possible for them to turn out to be less innovative and adaptable (Walker and Ruekert, 1987). On the other hand, the literature on subjects of organizational behaviour notes that the organizations that are more decentralized and less formalized probably have a greater information use (Zaltman et al., 1973; Deshpandé, 1982; Deshpandé and Zaltman, 1982). It is thus pointed out that in a more structured organization (in terms of formalization and centralization) information use is reduced (Menon and Varadarajan, 1992), while the flexibility to adapt itself to changes in the environment is less (Ruekert et al., 1985). The results attained by Avlonitis and Gounaris (1999) in a sample made up of 444 Greek firms clearly show that companies that count on an informal organizational scheme maintain a decentralized structure and show a greater risk tolerance. They also have a positive attitude toward market orientation and present a market-oriented behaviour.

2.2. Conceptual model: Relations between the variables and research hypotheses

As has been clearly shown in the theoretical foundations, the possible relationship between formalization and information processing does not appear to be clear in the literature. According to Hage and Aiken (1970), Zaltman et al. (1973), Deshpandé and Zaltman (1982), John and Martin (1984) and Menon and Varadarajan (1992) formalization reduces information use. Different works support the idea that formalization has a negative impact on the capacity to adapt to the environment's changing conditions (Ruekert et al., 1985; Jaworski and Kohli, 1993; Kelley et al., 1996), while it discourages the use of opportunities (Fredrickson, 1986). Adopting the point of view of Jaworski and Kohli (1993), market orientation involves doing new things and can be interpreted as an innovative culture. From this perspective, formalization does not appear to be coherent with market orientation (Jaworski and Kohli, 1993; Harris, 1996, 2000; Hartline et al., 2000). Following Aiken and Hage (1966) two aspects of each structural variable are considered: the degree of work standardization (work codification index) and the quantity of deviation allowed (the observation of the rules index). All this leads us to set out the following research hypotheses:

H₁: Formalization (work codification index) is negatively related to the organization's market orientation.

H₂: Formalization (observation of the rules index) is negatively related to the organization's market orientation.

Regarding centralization, and in accordance with different works (Hage and Aiken, 1970; Zaltman et al. 1973; Deshpandé and Zaltman, 1982; John and Martin, 1984; Menon and Varadarajan, 1992), this dimension seems to inhibit market information use. Hence, one might expect that the more decentralized organizations would be the ones to allow, to a greater extent, the generation of market information, its dissemination and the design of responses to the customers' changing needs (Jaworski and Kohli, 1993). In this line, various works uphold that decentralized structures favour market orientation (Jaworski and Kohli, 1993; Pelham and Wilson, 1996; Harris, 2000). Accordingly, we propose the following hypothesis:

H₃: Centralization is negatively related to the organization's market orientation.

On the other hand, and according to what has been set out in the theoretical precedents, complexity involves a greater difficulty of coordination (Lawrence and Lorsch, 1986; Fredrickson, 1986) as well as of communication (Blau and Schoenherr, 1971; Hall, 1977). Though Kohli and Jaworski (1990) focus on departmentalization and suggest a negative relationship between this and the generation, dissemination and response design, studies such as that of Pleshko (1993), refer to complexity in the broader sense. In this latter research, the results do not appear to

support the existence of a positive relationship between both variables. According to these precedents, we formulate the following hypothesis:

H₄: Complexity is negatively related to the organization's market orientation.

McNamara, in 1972, suggested that integration is a fundamental element of the aim to introduce the marketing concept into the organization. Though the empirical research about the relation between this variable and market orientation is quite limited, according to the scientific literature the use of complex integration mechanisms allows the improvement of the information processing capacity (Gupta and Govindarajan, 1991). Supported by these theoretical foundations and the works of Pleshko (1993) and Harris (2000), we put forward the hypothesis:

H₅: Integration is positively related to the organization's market orientation.

To sum up, the theoretical review carried out leads us to set out a conceptual model of relationships between variables in which it is proposed that the degree of a firm's market orientation is determined by a series of antecedents relative to the organization's structure, such as formalization, centralization, complexity and integration.

Figure 1. Conceptual model



3. METODOLOGY

To check the hypotheses put forward, we carried out a mail questionnaire of a sample of the population. This was made up of industrial firms of more than twenty workers and located in Andalusia, southern Spain. The respondents were either the director of the marketing department or the general manager. The data collection finished with 107 questionnaires duly filled out. Regarding the statistical techniques, we used the structural equations model with the statistical packet AMOS.

With respect to the measurement instruments used, we designed a questionnaire based on 5-point Likert scales and made up of indicators taken from the theoretical review carried out. The items included in it are presented in Table 1.

Table 1. Measurement scales

Scale: MO	
MO1	We meet with clients at least once a year to find out which products and services they will need in the future.
MO2	We carry out market research.
MO3	We quickly detect changes in the preferences of our customers.
MO4	At least once a year we ask the end customers to assess the quality of our products and services.
MO5	We quickly detect the fundamental changes in our industry (example: competition, technology, regulations).
MO6	We periodically analyze the probable effect that changes in our environment (example: regulations, competition) may have on our customers.
MO7	We have interdepartmental meetings at least once a quarter to discuss the market's trends and evolution.
MO8	The marketing staff spends time discussing the customers' future needs with other areas.
MO9	When something important happens to a major customer, the whole organization knows about it in a brief period of time.
MO10	Data about customer satisfaction are regularly disseminated across all the organization's levels.
MO11	When a department finds out something important about the competitors it quickly alerts the other departments.
MO12	We take little time to decide how to respond to the price changes of our competitors.
MO13	In this organization we take into account the changes in the needs of products or services of our customers.
MO14	We periodically review our efforts to develop products to guarantee that they are in line with what the customers need.
MO15	Some departments periodically meet to plan a response to the changes that take place in our environment.
MO16	If an important competitor launches an intensive campaign aimed at our customers, we respond immediately.
MO17	The activities of our different departments are well coordinated.
MO18	Customer complaints are taken into account in this organization.
MO19	In the case of our having an important marketing plan, we would be able to carry it out at the right moment.
MO20	When we detect that our customers would like to modify a product or service, the departments involved concentrate their efforts on doing it.
Scale: Formalization	
	Work codification index
WC1	I think that I am my own boss in most matters.
WC2	People in this organization can make their own decisions without the control of any other person.
WC3	Everyone here is allowed to organize their work.
WC4	People in this organization are allowed to do their work almost as they wish.
WC5	The majority of people in this organization establish their own work rules.
	Observation of rules index
OR1	The employees are being constantly controlled in order for them not to violate the rules.
OR2	The people in this organization feel as if they are under constant surveillance to see that they are obeying all the rules.
Scale: Centralization	
CE1	In this organization it is necessary to have the prior approval of a supervisor to make a decision.
CE2	People who wish to make their own decisions would be quickly discouraged.

CE3	Even small matters have to be referred to a superior for a final response.
CE4	Those in charge of each department have to ask a superior before doing most things.
CE5	Any decision that is made has to have the approval of a superior.
Scale: Integration	
	To what degree are the following integration mechanisms used to ensure compatibility between the decisions of one area (for example, marketing) and those of other areas (for example, production)?
IN1	Interdepartmental committees, put together to allow the departments to commit themselves in joint decision-making.
IN3	Work groups that are organisms put together temporarily to favour interdepartmental collaboration for a specific project.
IN3	Linking staff whose specific work is to coordinate the efforts of various departments for a specific project.
Scale: Complexity	
COMPL1	Indicate the number of departments or functional areas below the Managing Director and Deputy Director (or Manager).

To measure *market orientation (MO)* we used a scale proposed by Kohli et al. (1993). This choice is justified by the concept adopted of market orientation. Market orientation is considered from a behavioural perspective, regarding it as a process of information management. This scale has been widely used in, amongst others, the research of Pitt et al. (1996); Selnes *et al.* (1996); Balabanis *et al.* (1997); Barrett and Weinstein (1998); Siguaw *et al.* (1998); Avlonitis and Gounaris (1999); Baker and Sinkula (1999a, 1999b); Caruana *et al.* (1999); Vorhies *et al.* (1999); Verhees and van der Lans (2001); Rose and Shoham (2002); Llonch *et al.* (2003) and Verhees and Meulenber (2004). In the present research we use the reduced version of 20 items. The scale is made up of three dimensions: intelligence generation, its dissemination and the response. Intelligence generation refers to the obtaining, analysis and interpreting of the forces that influence the customers' needs and preferences. The second dimension is the process of interchanging information within the organization. The last dimension refers to the response action by all the organization to the intelligence generated and disseminated.

With respect to the scales to measure *formalization* and *centralization*, it must be pointed out that in the review of the literature carried out these concepts have been studied via two methods. The first focused on “institutional” measures that analyze aspects such as the worker/supervisor rate, the distribution of employees throughout the different departments and other indicators of the graph of the organization (Pugh et al., 1968). The works of Pugh et al. (1968), Blau and Schoenherr (1971), Hinings and Lee (1971) and Child (1972a), amongst others, follow this approach. On the other hand, it is possible to use questionnaires in which the interviewees are requested to express their degree of agreement or disagreement with a series of sentences referring to the flexibility, the level of decentralization, etc. (Aiken and Hage, 1968). Both methods produce different results. According to the work of Pennings (1973, cited by Deshpandé, 1982), while the measures of formalization and centralization through questionnaires present a positive association, the institutional measures produce negative correlations between the dimensions. From a replica of this work, Sathe (1978) concludes that the institutional measure reflects the structure designed, while the questionnaire method tends to reflect the structure perceived by the manager - the “emerging” structure in the firm's day-to-day (Sathe, 1978). This last method is that which seems to be the most appropriate for the present research.

The scales that are more widely accepted by researchers are , on the one hand, those developed by Pugh et al. (1968) and Inkson et al. (1970) and, on the other hand, those of Aiken and Hage (1966, 1968).

By formalization we mean the degree of standardization of the work and the amount of deviation allowed. Following Aiken and Hage (1966), this construct was measured via two scales: the work codification index, made up of 5 items and the observation of the rules index, formed by 2 items. As in some of the scales previously commented on, a high score in the work codification index must be interpreted as a reduced level of formalization. Centralization, on the other hand, refers to the degree to which members of the organization take part in decision-making. Although the previously-cited authors consider two aspects of this variable, the authority hierarchy index and the participation in decision-making index, in our research, and following Jaworski and Kohli (1993), we only consider the 5 items of the first indicator. The same as with the rest of the measurement instruments used in the questionnaire, we acknowledge a variation of 1 (strongly disagree) to 5 (strongly agree) in the degree of agreement/disagreement with each of the items, though the original work used a 4-point scale.

As far as the construct *complexity* is concerned, and despite the interest of this variable and its importance when studying it in depth, the limitations in the extension of the questionnaire lead us to focus only on the horizontal differentiation. Hence, the interviewee was requested to count the number of departments or units of the organization. This is, among others, an indicator normally used in the academic literature (Hall et al., 1967; Pugh et al., 1968; Evers et al., 1976; Dewar and Hage, 1978; Jaworski and Kohli, 1993; Balabanis et al., 1997).

To finish, the scale for the variable *integration* is limited to the study of the coordination devices used by the firm, distinguishing between interdepartmental committees, work groups and linking staff (Miller et al., 1988).

All the scales underwent their corresponding confirmatory analyses of validity and reliability. To do so, we assessed the reliability of each scale via Cronbach's alpha coefficient, as well as the reliability of the indicators and the latent variables via the confirmatory factor analysis (CFA). In this sense, it is necessary to point out that given the nature of the data employed, polychoric correlations were used as input matrices (Barroso, 2000; Hair et al., 2000; Martín, 2001). Likewise, robust estimators have been used. This allows the use of the method of maximum likelihood (ML) to estimate the parameters (Satorra, 2002).

Table 2. Formalization and Centralization scales

Works based on the scales of Pugh et al. (1968) and Inkson et al. (1970)	Works based on the scales of Aiken (1967), Aiken and Hage (1966, 1968) and Hage and Aiken (1970)
Miller and Dröge (1986)	Deshpandé (1982)
Miller and Toulouse (1986)	Deshpandé and Zaltman (1982)
Miller (1987)	Dewar and Dutton (1986)
Miller (1988)	Jaworski and Kohli (1993)
Miller et al. (1988)	Selnes et al. (1996)
Pleshko (1993)	Avlonitis and Gounaris (1999)
Pelham and Wilson (1996)	Hartline et al. (2000)
	Maltz and Kohli (2000)
	Cadogan et al. (2001)

Table 3. Explanatory factor analysis of the MO scale

MO Indicator	FACTOR 1	FACTOR 2	FACTOR 3
MO1	0.153	0.769	0.063
MO2	0.096	0.602	0.127
MO3	0.273	0.657	0.146
MO4	-0.065	0.718	0.311
MO5	0.578	0.491	0.159
MO6	0.617	0.471	0.188
MO9	0.040	0.258	0.802
MO10	0.467	0.116	0.745
MO11	0.163	0.230	0.810
MO13	0.834	0.114	0.107
MO14	0.776	0.137	0.187
MO16	0.793	-0.045	-0.003
MO17	0.763	0.216	0.056
MO18	0.678	0.073	0.195
MO20	0.604	0.149	0.126
% Explained variance	29.383	17.357	14.368
% Accumulated variance	29.383	46.740	61.108
Kaiser-Meyer-Olkin (KMO)			0.840
Bartlett (Chi-square, df)			702.731 (105)
Meaning			0.000

Market orientation scale

The original scale (Kohli et al., 1993) is made up of three dimensions: intelligence generation, its dissemination and the response, composed of six, five and nine indicators respectively.

The reliability analysis clearly shows the need to suppress the indicators MO7 and MO8 relative to the subscale of dissemination and the indicators MO12, MO15 and MO19 of the subscale of response action. The Cronbach alpha coefficients are 0.7782, 0.7931 and 0.8787 for each of the initially-foreseen dimensions. Later, an exploratory factor analysis revealed that there are three factors that explain 61.1 per cent of the variance. The indicators MO5, MO6, MO13, MO14, MO16, MO17, MO18 and MO20 are loaded in the first factor. In the second are MO1, MO2, MO3, and MO4. In the last are MO9, MO10 and MO11. The extraction method has been the analysis of the main components with varimax rotation. The factors mentioned are rather similar to those proposed in the theoretical method. The first refers to the response, the second to the information generation and the last to its dissemination. In this sense, the interviewees have understood the analysis of the environment as a response action facing its changes.

Via the confirmatory factor analysis (CFA) we analyse the convergent validity, the construct's reliability and the discriminant validity of the refined scale. The results appear in Table 4

Table 4. Validity and reliability of the indicators of the MO scale

MO scale	GENERATION INTELLIGENCE			DISSEMINATION INTELLIGENCE			RESPONSE		
	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²
MO1	0.692	*	0.479						
MO2	0.504	4.170	0.254						
MO3	0.614	4.858	0.377						
MO4	0.606	4.814	0.367						
MO5							0.708	*	0.501
MO6							0.717	6.973	0.514
MO9				0.661	*	0.437			
MO10				0.802	6.426	0.644			
MO11				0.790	6.384	0.623			
MO13							0.815	7.891	0.664
MO14							0.804	7.793	0.647
MO16							0.678	6.602	0.459
MO17							0.766	7.436	0.587
MO18							0.692	6.735	0.479
MO20							0.619	6.040	0.383

*The initial load was set equal to the unit

Although the critical ratios are over 1.96 (α level = 0.05) and guarantee the convergent validity of the dimensions, various indicators present a low internal consistency. We have opted for eliminating MO2 (“we carry out market research”) and MO4 (“at least once a year we ask the end customers to assess the quality of our products and services”). As far as the rest of the indicators are concerned, we have decided to maintain them given that the final reliability is not excessively small.

Table 5. Validity and reliability of the indicators of the refined MO scale

MO scale	GENERATION INTELLIGENCE			DISSEMINATION INTELLIGENCE			RESPONSE		
	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²
MO1	0.643	*	0.413						
MO3	0.669	4.050	0.448						
MO5							0.708	*	0.515
MO6							0.718	6.985	0.501
MO9				0.653	*	0.426			
MO10				0.812	6.325	0.660			
MO11				0.784	6.250	0.615			
MO13							0.815	7.894	0.664
MO14							0.804	7.799	0.647
MO16							0.678	6.604	0.459
MO17							0.765	7.435	0.586
MO18							0.690	6.719	0.476
MO20							0.622	6.073	0.387

* The initial load was set equal to the unit

The values of the correlations between the dimensions are not too high, so it is possible to note that they refer to different factors. Nevertheless, the extracted variance of each dimension has been calculated in order to check the discriminant validity.

Table 6. Correlations between the dimensions of the refined MO scale

MO scale	GENERATION INTELLIGENCE	DISSEMINATION INTELLIGENCE
DISSEMINATION INTELLIGENCE	0.576	
RESPONSE	0.624	0.618

Table 7. Variance and reliability of the refined MO scale

MO scale	GENERATION INTELLIGENCE	DISSEMINATION INTELLIGENCE	RESPONSE
Construct reliability	0.602	0.796	0.899
Extracted variance	0.431	0.567	0.529

The correlations between the different dimensions are not over 0.8. Furthermore, insofar as none of the squared correlations is over the variance extracted of the different constructs we can conclude that there is discriminant validity. Despite the extracted variance of the intelligence generated not attaining the proposed acceptance limit of 0.5, we have opted for maintaining the dimension. The rest of the values are over the limits established.

The scale's goodness of fit measurements are in Table 8. The fit indices are not as good as we would like. As far as the absolute measures are concerned, the Goodness of Fit Index (GFI) is considered acceptable from 0.9 and in this case, although it is, near it does not reach that. On the other hand, the Root Mean Square Error of Approximation (RMSEA) is above the recommended threshold of 0.08. The adjusted Goodness of Fit Index (AGFI) does not reach 0.9 and the same is the case of the Normed Fit Index (NFI). However, it is necessary to take into account that the sample size is not large and as a consequence the indicators may be affected, specifically the chi-square, the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI). That is why it is advisable to estimate relative goodness measurements. The RGFI and RAGFI indicators take into consideration both the sample size and the number of indicators. For guidance, the models that are over 0.9 and 0.8 respectively are considered appropriate.

Table 8. Measurement model fit of the refined MO scale

Absolute fit measures	Market orientation scale
Degrees of freedom	62
Chi-square value and level of signification	117.657 (0.000)
Noncentrality parameter (NCP)	55.657
Goodness of Fit Index (GFI)	0.852
Relative Goodness of Fit Index (RGFI)	0.928
Root Mean Square Residual (RMSR)	0.069
Root Mean Square Error of Approximation (RMSEA)	0.092
Incremental fit measures	
Adjusted Goodness of Fit Index (AGFI)	0.783
Relative Adjusted Goodness of Fit Index (RAGFI)	0.890
Normed Fit Index (NFI)	0.833
Comparative Fit Index (CFI)	0.911

The final scale is made up of thirteen indicators.

Formalization scale

Following the proposal of Aiken and Hage (1966), this construct was measured via two scales: the work codification index, made up of 5 items, and the observation of the rules index, formed by 2 items. In this section we have only studied the first of the scales. Due to the reduced number of indicators of the scale concerning the observation of rules index, we leave the analysis of its validity and reliability for when the organization's structure measurement model is considered. The study of the internal consistency of the indicators produces a Cronbach alpha of 0.7138. However, the low consistency of the CT1 and CT2 indicators determined their removal. After the refining the coefficient attained 0.8593. Via an exploratory factor analysis it was clearly shown that there is a unique factor that explains 78.17 per cent of the variance. The next step was to work out the scale's convergent and discriminant validity. To do so the weights of each indicator were analysed.

According to the results obtained, all the coefficients are significant with high standardized loads. Likewise, the individual reliability of each indicator is over 0.5 which implies that they explain a high percentage of the variance of the latent variable. As far as the construct is concerned, its reliability and extracted variance have been calculated and in accordance with the values obtained it can be stated that there is convergent validity. In so far as it is an identified model (degrees of freedom equal to zero), one could think that the fit is perfect, with the solution not being generalizable. Given that it is not suitable to make statements about the fit indices, we wait for the assessment of the measurement model prior to the structural one to continue with the refining of the scale.

Centralization scale

The scale's reliability analysis (Jaworski and Kohli, 1993) via Cronbach's alpha determined the need to remove the CE2 and CE1 indicators due to their low internal consistency. After the process of refinement, the aforementioned coefficient attained 0.9028. Via an exploratory factor analysis it was confirmed that there is a unique factor with an explained variance of 83.74 per cent. The different standardized regression loads and the critical ratios of each of the indicators are shown in Table 10. The results obtained in the confirmatory factor analysis show the convergent validity of the indicators as well as their reliability. The final scale has three indicators and as with the previous scale it was evaluated later.

Table 9. Validity and reliability of the indicators of the refined CT scale

CT scale	Construct reliability = 0.862		Extracted variance = 0.677
Indicators	Est.Load	C.R.	R ²
CT3	0.741	*	0.548
CT4	0.870	8.196	0.756
CT5	0.852	8.171	0.726

* The initial load was set equal to the unit

Table 10. Validity and flexibility of the indicator of the refined CE scale

CE scale	Construct reliability = 0.905		Extracted variance = 0.762
Indicators	Est.Load	C.R.	R ²
CE3	0.808	*	0.653
CE4	0.844	10.213	0.713
CE5	0.959	11.049	0.920

* The initial load was set equal to the unit

Integration scale

The scale adopted in the work has three indicators (Miller et al., 1988). Cronbach's alpha coefficient clearly shows that there is internal consistency between the indicators, 0.748 being attained. Via an exploratory factor analysis it was confirmed that there was a unique factor that explains 66.82 percent of the variance. As can be observed in Table 11 the results obtained show that all the weights are significant at the level $\alpha = 0.05$. However, the individual reliability of the two indicators is somewhat small, though very close to 0.4. It is considered that the scale is acceptable.

Table 11. Validity and flexibility of the indicators of the IN scale

IN scale	Construct reliability = 0.761		Extracted variance = 0.523
Indicators	Est.Load	C.R.	R ²
IN1	0.623	*	0.388
IN2	0.884	4.769	0.782
IN3	0.631	5.181	0.398

*The initial load was set equal to the unit

Table 12. Measurement model "Structure of the organization"

Indicators	Work codification			Observation rules			Centralization		
	Est. Load.	C.R.	R ²	Est. Load.	C.R.	R ²	Est. Load	C.R.	R ²
CT3	0.697	*	0.486						
CT4	0.886	7.767	0.785						
CT5	0.852	7.700	0.725						
OR1				0.788	*	0.621			
OR2				0.816	5.289	0.666			
CE3							0.820	*	0.672
CE4							0.825	10.108	0.680
CE5							0.959	11.831	0.919

* The initial load was set equal to the unit

Tabla 13. Measurement model “Structure of the organization”

Indicators	Complexity			Integration			Market orientation		
	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²	Est. Load	C.R.	R ²
COM	-	*	0.050						
IN1				0.606	*	0.367			
IN2				0.890	5.536	0.792			
IN3				0.581	4.839	0.337			
GI							0.690	6.859	0.476
DI							0.634	6.308	0.402
R							0.875	*	0.765

*The initial load was set equal to the unit

All the constructs with multiple indicators surpass the commonly-accepted threshold of 0.7 and are therefore reliable measurements. As far as the extracted variance is concerned, the greatest value is for centralization (0.757) and the least for integration (0.499), which practically attains the minimum acceptance value. For the set of constructs analysed the indicators are sufficient in terms of how the measurement model is specified.

Tabla 14. Reliability and variance of the constructs of the model “Structure of the organization”

	Work codification	Observation rules	Centralization	Integration	MO
Construct reliability	0.855	0.783	0.903	0.741	0.781
Extracted variance	0.665	0.643	0.757	0.499	0.548

Tabla 15. Correlations between the constructs of the model “Structure of the organization”

	Observation rules	Centralization	Integration	MO	Work codification
Centralization	0.450				
Integration	-0.291	-0.339			
MO	-0.008	-0.478	0.593		
Work codification	-0.213	-0.454	0.204	0.272	
Complexity	-0.181	-0.210	0.262	0.160	0.256

Before assessing the structural model, we analyse the measurement model. The t values associated with each of the weightings exceed the critical values for the signification level of 0.05 (critical value 1.96) and the level of 0.01 (critical value 2.576). In accordance with these results, all the variables are significantly related to their respective constructs. As took place in the analysis of the individual scales, the reliability of two indicators of the construct relative to integration is low. Considering as a whole all the scales that refer to the organizational structure, the CT3 indicator of the work codification index has slightly reduced its reliability. Despite this, we study the internal consistency of the indicators of each construct via the composite reliability and the extracted variance.

The correlations between the constructs are very small and the extracted variances surpass the squared correlations in all cases, so that we can state that they are different constructs.

The fit indicators of the measurement model appear in Table 16.

Table 16. Indicators of Adjusted Goodness of the measurement model “Structure of the organization”

Absolute fit measures	
Degrees of freedom	76
Chi-square value and level of signification	117.117 (0.002)
Noncentrality parameter (NCP)	41.117
Goodness of Fit Index (GFI)	0.878
Relative Goodness of Fit Index (RGFI)	0.961
Root Mean Square Residual (RMSR)	0.064
Root Mean Square Error of Approximation (RMSEA)	0.071
Incremental fit measures	
Adjusted Goodness of Fit Index (AGFI)	0.808
Relative Adjusted Goodness of Fit Index (RAGFI)	0.936
Normed Fit Index (NFI)	0.853
Comparative Fit Index (CFI)	0.941

The level of signification does not reach the minimum accepted level (0.05). The noncentrality parameter (NCP) and the Goodness of Fit Index (GFI) do seem to indicate a better adjustment. Also the Root Mean Square Error of Approximation (RMSEA) has an acceptable value (between 0.05 and 0.08 is considered appropriate). Regarding the second class of measurements, the Adjusted Goodness of Fit Index (AGFI) as well as the Normed Fit Index (NFI) are slightly below the recommended levels (0.90). In general, the model as a whole is acceptable.

Once the estimation of the measurement model has been carried out, we must proceed to the analysis of the structural model. To do so, we will use the strategy of the development of the model.

Now we examine the estimated coefficients. For a signification level of 0.05 the critical value is 1.96. The table shows that the coefficients concerning the work codification index and complexity are not statistically significant.

The analysis of the matrix of the model's normalized remainders clearly shows that there are three significant remainders (that exceed 2.58 in absolute value) not surpassing the threshold of 5 per cent (specifically 2.5 per cent). Eliminating the two non-significant relationships, the results attained show good global fit measurements of the model both for the Adjusted Goodness of Fit (AGFI) and the Root Mean Square of Approximation (RMSEA) (Table 18).

Table 17. Structural model “Structure of the organization”

Relationship	Standardized load	Critical coefficient
Market orientation ← Work codification *	0.047	0.461
Market orientation ← Observation rules	0.313	2.754
Market orientation ← Centralization	-0.411	-3.471
Market orientation ← Complexity	-0.033	-0.355
Market orientation ← Integration	0.525	4.158

* A high score in the scale of the precedent means less formalization

Table 18. Refined structural model “Structure of the organization”

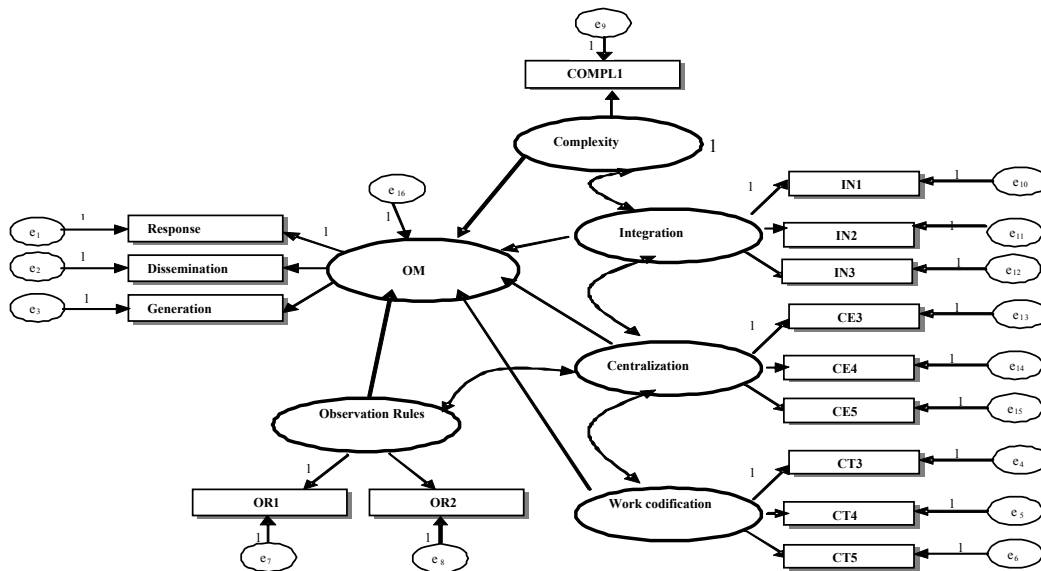
Absolute fit measures	
Degrees of freedom	39
Chi-square value and signification level	61.360 (0.013)
Noncentrality parameter (NCP)	22.360
Goodness of Fit Index (GFI)	0.908
Relative Goodness of Fit Index (RGFI)	0.968
Root Mean Square Residual (RMSR)	0.085
Root Mean Square Error of Approximation (RMSEA)	0.074
Incremental fit measures	
Adjusted Goodness of Fit Index (AGFI)	0.845
Relative Adjusted Goodness of Fit Index (RAGFI)	0.944
Normed Fit Index (NFI)	0.890
Comparative Fit Index (CFI)	0.956

Table 19. Structural model “Structural consequences of MO”

Relationship	Standardized load	Critical coefficient
Work codification * ← Market orientation	0.371	3.101
Observation rules ←Market orientation	-0.160	-1.175
Centralization ← Market orientation	-0.540	- 4.661
Complexity ← Market orientation	0.249	2.274
Integration ← Market orientation	0.627	4.111

* A high score in the scale of the precedent means less formalization

Figure 2. Structural model



4. DISCUSSION OF RESULTS AND CONCLUSIONS

Formalization has been estimated via two scales. The first is the work codification index. The results obtained do not allow hypothesis H_1 to be confirmed. As Jaworski and Kohli (1993) point out, it is possible that the content of the rules is more decisive than there being rules. On the other hand, there does seem to be a significant relationship between the second of the indices used to measure formalization (observation of the rules index) and the construct that is under study (H_2). Nevertheless, the sign is positive and therefore opposite to what the hypothesis set out. This circumstance is not too surprising as the works of Pleshko (1993) and Rivera and Molero (2000) equally support the positive association between both variables. Hence, more than the mere existence of rules, it seems that the surveillance of the compliance of them is what favours market orientation. Formalization is thus established as an instrument of the firm that allows the reduction of labor uncertainty associated with adopting innovative behavior, such as a market-oriented strategy (Rivera and Molero, 2000).

As far as centralization is concerned, it is checked that the relationship between this precedent and market orientation is negative and significant, confirming hypothesis H_3 . These results bear out the theoretical approaches of Jaworski and Kohli (1993), Pleshko (1993), Pelham and Wilson (1996), Varela et al. (1996b) and Álvarez (2000).

The relationship put forward between complexity and the degree of market orientation has been rejected (H_4). In this sense, we believe that the results may be conditioned by focusing on a unique aspect of this variable - that relative to departmentalization. As Jaworski and Kohli (1993) suggest, a more important factor than the number of departments can be the relationship between them. Despite the difficulty, it is necessary to continue investigating this precedent as the results of previous research are not conclusive.

Finally, we highlight the confirmation of hypothesis H_5 . This hypothesis proposes a positive association between the degree to which the integration mechanisms are used and the construct that is under study. That is to say, as the organization makes an effort to use coordination devices with the aim of guaranteeing the compatibility between the decisions of different functional areas, the organization's market orientation increases. It has been proved that the effect of this precedent on the three dimensions of the market orientation construct is positive and significant. Moreover, until now, this is the factor that most strongly influences the variable analysed. Despite the few studies that consider this variable, the results reached by Pleshko (1993) and Harris (2000) are confirmed.

Could the contrary approach be possible? That is to say, could a market-oriented organization condition a specific organizational structure? Much attention has been paid to strategy and structure by the scientific literature. The meaning of a causal relation between both variables and the possibility of a circular model has been discussed. According to the thesis of Chandler (1962), firms take advantage of economies of scale and of scope to broaden their geographical market and integrate themselves vertically and horizontally. These strategic changes are accompanied by organizational changes. Different works support the hypothesis that suggests that "structure follows strategy" (among others, Channon, 1973 and Rumelt, 1974, cited by Miller, 1988). Within this conception, more than a precedent, organizational design could be considered as a consequence of a market-oriented strategy. It has been decided to check this approach. The results are surprising.

As can be observed, except the relationship concerning the observation of the rules index, the rest are significant. According to these results, market orientation leads to a structure that is less formalized (measured via the work codification index), decentralized, more complex and integrated. These results appear coherent. Market orientation fosters less trust in the rules and procedures. It thus favours a quick response to the customers' needs. On the other hand, the difficulty of introducing an innovative strategy, such as market orientation, seems to lead to a greater delegation of authority in decision-making as well as the use of integration devices that allow the collaboration between the different functional areas.

Concerning the influence of each of the components of the market orientation construct on the organizational structure, it has been proved that market intelligence generation is negatively related to the work codification (CR = 2.384¹⁴ and standardized regression weight of 0.250) inasmuch as it fosters organizational complexity measured via the number of departments (CR = 3.095 and standardized regression weight of 0.301). Dissemination of market intelligence is negatively associated with centralization (CR = -2.885 and standardized regression weight of -0.279). Finally, response fosters the development of a structure that is more integrated (CR = 3.288 and standardized regression weight of 0.417) and decentralized (CR = -3.182 and standardized regression weight of -0.310).

Of the hypotheses concerning organizational structure, the hypothesis check confirms H₃ and H₅. Indeed, in accordance with the results obtained, centralization is a barrier for market orientation (H₃). Perhaps, as Pelham and Wilson (1986) suggest, decentralization could allow a greater involvement of the employees in activities aimed at increasing customer satisfaction while stimulating the managers to appreciate market information.

Likewise, the findings concerning hypothesis H₅ have been considered to be very important in checking a positive relationship between the degree to which integration mechanisms are used and the market orientation construct. Thus, despite the limited literature that considers this variable, it can be an interesting precedent which it will be necessary to go deeper into in future research.

On the other hand, it has been proved that there is a significant relationship between formalization, measured via the observation of the rules index, and market orientation, though the sign is contrary to that initially foreseen (H₂). As has been commented before, this result is not too surprising as the works of Pleshko (1993) and Rivera and Molero (2000) pointed in this direction. Surveillance of the compliance with the rules then favours the organization's market orientation.

To the extent to which the causal relation between strategy and organizational structure has been the object of a profound debate and the possibility of the latter being a consequence of the former having been put forward, it has been decided to check the possibility of market orientation conditioning an organization with specific structural characteristics. The results obtained are interesting. With the exception of the relationship concerning formalization, using the observation of the rules index as an indicator, the rest are significant. In accordance with the results attained, market orientation fosters an organizational structure that is less formalized (measured via the work codification index) and centralized and more complex and integrated.

The implications for management stem from the interest that managers may have in knowing the typical factors of the organizational structure that limit or reinforce the development of market orientation. In this sense, only an in-depth knowledge of these factors will allow the firm to modify them in practice and adapt its organizational structure to the requirements of market orientation.

5. LIMITATIONS AND FUTURE RESEARCH LINES

A series of limitations have been recognized in the present work. Firstly, the transversal nature of the research makes it difficult to establish causal relationships. This is due to the fact that to be able to infer causality, the requirement of time priority is necessary, according to which the cause precedes its effects in time. That is why it is risky to state the existence of causal relationships in the strict sense. Nevertheless, the theoretical foundations developed are aimed at supporting the set of causal relationships proposed in this research's hypotheses.

On the other hand, and also concerning the type of research carried out, it is necessary to point out that although the empirical work considers organizations included in seven groups of different activities, thus favouring the generalization of the results attained, the firms considered are in all cases in the industrial sector. Likewise, the whole of the sample is made up of organizations that are small and medium-sized.

As to the method and instruments used, first a comment about a series of aspects relative to the method used - structural equations. With the aim of guaranteeing goodness of fit, a sample size of between 150 and 400 observations is suggested. Despite immense efforts, in terms of time and economic resources, there have only been 107 valid questionnaires in this work. The lack of goodness of some fits is perhaps due to this. As a consequence,

¹⁴ We recall that a greater value of the work codification index must be interpreted as a lesser level of formalization.

the statistical signification of the relationships may be affected. Finally, we have measured the construct of market orientation as a reflective scale, although recent studies have affirmed that market orientation should be measured as a formative scale.

It is considered that limitations are inherent to any scientific work and the present research is no exception. However, these limitations are conceived to be opportunities for improvement as they are the starting point for future research projects.

The work carried out and the reflection about its limitations suggest a series of aspects that we would like to tackle in future research. Firstly, it would be interesting to widen the set of factors considered. Secondly, given the weakness of the scales used to measure some constructs, the aim could be to try and improve the measurement instruments, using other scales or even carrying out other alternatives in order to increase the explanatory and predictive power of the model proposed. Finally, in order to be able to establish comparisons, the research concerning organizational precedents could be replicated in other activity sectors, such as the services sector.

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