

M@n@gement

ISSN: 1286-4892

Editors:

Emmanuel Jossierand, *HEC, Université de Genève (editor in chief)*

Jean-Luc Arrègle, *EDHEC (editor)*

Stewart Clegg, *University of Technology, Sydney (editor)*

Philippe Monin, *EM Lyon (editor)*

José Pla-Barber, *Universitat de València (editor)*

Linda Rouleau, *HEC Montréal (editor)*

Michael Tushman, *Harvard Business School (editor)*

Olivier Germain, *EM Normandie (editor, book reviews)*

Karim Mignonac, *Université de Toulouse 1 (editor)*

Thibaut Bardon, *Université Paris-Dauphine, CREPA - HEC, Université de Genève (editorial assistant)*

Florence Villesèche, *HEC, Université de Genève (editorial assistant)*

Martin G. Evans, *University of Toronto (editor emeritus)*

Bernard Forgues, *EMLyon Business School (editor emeritus)*

Volume 13, No. 4. Special Issue:

Business Models as an Emerging Research Program in Strategy.

Guest Editors: Xavier Lecocq, Benoît Demil, & Juan Ventura

■ César CAMISÓN Ana VILLAR-LÓPEZ 2010 Business Models in Spanish Industry: a Taxonomy-based Efficacy Analysis *M@n@gement*, 13(4), 298 - 317.

M@n@gement est la revue officielle de l'AIMS



M@n@gement is the official journal of AIMS

Copies of this article can be made free of charge and without securing permission, for purposes of teaching, research, or library reserve. Consent to other kinds of copying, such as that for creating new works, or for resale, must be obtained from both the journal editor(s) and the author(s).

M@n@gement is a double-blind refereed journal where articles are published in their original language as soon as they have been accepted.

For a free subscription to M@n@gement, and more information:
<http://www.management-aims.com>

© 2010 M@n@gement and the author(s).

Business Models in Spanish Industry: a Taxonomy-based Efficacy Analysis¹

César CAMISÓN

Departamento de Administración de Empresas y Marketing
Universitat Jaume I de Castelló, Castellón, Spain
camison@emp.uji.es

Ana VILLAR-LÓPEZ

Departamento de Dirección de Empresas. Juan José Renau Piqueras
Universitat de València, Valencia, Spain
Ana.Villar@uv.es

ABSTRACT

The present study provides a conceptualization of the business model construct from which a multi-dimensional evaluation tool is developed that provides the basis for drawing up a taxonomy and analysing its comparative efficacy. The empirical data was obtained from a sampling of 159 Spanish business organisations. The cluster analysis revealed the existence of four business models that were designated as “multidivisional”, “integrated”, “hybrid” and “network”. The results also indicate that the adoption of a certain business model is not enough to attain superior performance, highlighting the need to consider other contingent factors.

1. This research was financially supported by a research fund from the Spanish Ministry of Science and Innovation (ECO2009-12522) and from the Consellería de Educación de la Generalitat Valenciana (ACOMP/2010/233).

Key words: Business models, cluster analysis, organizational performance, competitiveness.

INTRODUCTION

The business model concept is particularly rich and potentially powerful in the strategic planning literature (Chesbrough, 2007a,b; Chesbrough & Schwartz, 2007; Zott & Amit, 2008), ever since the pioneering work by Hamel (2000) and Hamel and Prahalad (1994) that emphasized its importance in conferring competitive advantage, thereby stimulating the emergence of a new line of investigation. This was supported by the continual introduction of organizational innovation by businesses in response to competitive changes, which in turn gave rise to new business models. However, despite its importance, there is at present no consensus regarding the concept or its classification (Morris, Schindehutte & Allen, 2005; Schweizer, 2005), nor agreement as to the competitive advantage of each type of model (Zott & Amit, 2007). The present study aims to narrow these two research gaps by offering a view of the construct and its implementation through the generation of a multi-dimensional grading scale that will serve to develop a taxonomy of business models and permit a comparative analysis of their efficacy. Interest in business models dates back to studies by Chandler (1962) on strategic and organizational changes in business organisations that accompany the evolution of capitalism. The study of business models

3. There are other existing definitions of the N-model, such as the one described by Hedlund (1994), in which this model form is described as an organizational model. However, in the present work the N-model is considered a business model based on the studies by Hanssen-Bauer and Snow (1996) and Edwards and Samimi (1997).

has re-emerged strongly with the spectacular expansion of the Internet and e-commerce, however, as well as the emergence of new organizational forms in value chain analysis that have in turn led to the development of new models. There has been a great proliferation of new models in recent years, and these are transforming the rules of competitive strategy in an unprecedented manner. In addition to classical types such as the integrated model (I-model) and the multidivisional model (M-model), which have traditionally been associated with a corporation's organizational structure, new models are decentralized and network-based (N-model), underpinned by cooperation, and emphasizing centralized activities and externalization or subcontracting of complementary functions to form a corporation network.³ This continuous evolution has stimulated the development of pioneering research dedicated to business model dynamics (Mason & Leek, 2008; Willemstein, van der Valk & Meeus, 2007) in attempts to systematize distinct business models. These studies, which have mostly been influenced by inductive criteria, are restricted to specific industries such as biotechnology (Bigliardi, Nosella & Verbano, 2005; Nosella, Petroni & Verbano, 2005; March & Seoane, 2006; Willemstein et al., 2007), informatics (Bonaccorsi, Gianmangeli & Rossi, 2006) and electronic commerce (Mahadevan, 2000), or businesses with a certain type of profile such as entrepreneurial firms (Zott & Amit, 2007). Other classifications (Camisón, 2001; Heuskel, 1999) take a deductive approach in the categorization of business models. Although these typologies/taxonomies are of great value, they have not resolved the implicit need to develop a classification capable of a general distinction between business models. The present study aims to delineate the concept based on definitions in the published literature, to implement the concept using a multi-item scale, and to complete a cluster analysis-mediated evaluation of existing business models.

The emergence of the new decentralized and network-based business models (N-model) has challenged the competitive advantage of the integrated (I-model) and multidivisional (M-model) models. Existing literature contains extensive and independent reports on the properties and economic impact of the I-model (Afuah, 2001; Cacciatori & Jacobides, 2003), the M-model (Armour & Teece, 1978; Galunic & Eisenhardt, 1996) and the N-model (Cravens, Piercy & Shipp, 1996; Edwards & Samimi 1997; Hanssen-Bauer & Snow, 1996). Despite the controversy surrounding this topic, comparative analyses of the efficiency of the different business models is generally descriptive in character, and empirical studies are almost non-existent (i.e., Volle, Dion, Heliès-Hassid & Sabbah, 2008; Zott & Amit, 2007, 2008). The present work compensates for these deficiencies with a novel deductive-inductive approach to business model classification, providing a theory-based comparative analysis of their performance. Our analysis is based on the Resource Based View as this provides an interesting theoretical framework to analyse a business model's potential and to determine the development of competitive advantages.

This paper is organized as follows. The introduction is followed by a literature review on business model concepts and classification, lea-

ding to the formulation of the hypothesis concerning the relationship between business models and outcomes. The next section provides a detailed description of the empirical work methodology. This is followed by a presentation of the results of the cluster analysis, which serves to classify business models based on the provision of dimensions and the measurement scale thus generated. We then assess the presence of significant differences in organizational performance as a function of the business model used by a company. We finally discuss the results obtained and draw our conclusions.

LITERATURE REVIEW

Definition of business model

The term 'business model' is used ambiguously in the corporate strategy literature (Calia, Guerrini & Moura, 2007), without clear differentiation from other closely related concepts such as business strategy, organizational structure or value chain, and may even be used interchangeably with these concepts (Morris et al., 2005). The number of studies that have focused on refining its boundaries and theoretical support (i.e., Morris et al., 2005, 2006; Schweizer, 2005; Tikkanen, Lamberg, Parvinen & Kallunki, 2005) and in developing typologies/taxonomies (i.e., Bigliardi et al., 2005; Mahadevan, 2000) continues to grow. However, a consensus has still not been reached (Schweizer, 2005), as illustrated in **Table 1** which sets out some of the definitions that have had the greatest impact in the literature.

Table 1. Definitions of business model

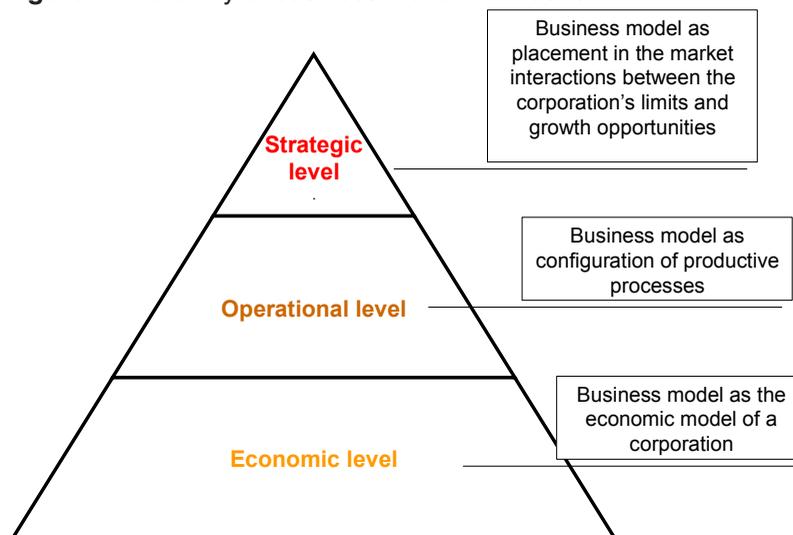
Based on an analysis of 30 business model definitions, Morris et al.

Study	Definition
Timmers (1998)	Architecture of product, service and information flow, including a description of various business players and their roles, a description of the potential benefits of the different types of players, and a description of the sources of revenue.
Venkatraman & Henderson (1998)	The coordinated strategic design planning from three angles: client interaction, asset configuration and knowledge.
Steward and Zhao (2000) [cited by Calia <i>et al.</i> (2007)]	The determination of the means by which a corporation will earn money and maintain income over time.
Amit & Zott (2001)	The structure, content and governance of the transaction between the headquarters and its exchange partners.
Chesbrough and Rosenbaum (2002)	A business model is composed of the value generation, objective markets, the internal structure of the value chain, the cost structure and the revenue model.
Casadesus-Masanell (2004)	A collection of assets and activities, and the governance structure of the assets.
Morris <i>et al.</i> (2005)	The concise representation of how corporate decisions are managed with respect to strategy, architecture and economy to create competitive advantages in defined markets.
Zott and Amit (2008)	The structural pattern, describing how the negotiations between a corporation's headquarters and all the external agents in the product and process markets are organized.

Source: self-generated.

(2005) classify the conceptualizations into three categories, progressively increasing in breadth (Figure 1). The lowest level includes definitions that approach the concept from an economic viewpoint, considering the business model as a revenue-generating agent (i.e., Ghaziani & Ventresca, 2005). These studies are mostly based on e-commerce and are dedicated to the investigation of corporate revenue models that operate within this sector (i.e., Mahadevan, 2000; Timmers, 1998). The second hierarchical level includes definitions (i.e., Venkatraman & Henderson, 1998) in which the business model is correlated with internal processes and the design of the production infrastructure, administrative processes, resource flow, knowledge management and logistics issues. The last stage is composed of the strategic estimates of the concept (i.e., Hamel, 2000). These definitions view the business model as the result of the corporation's market positioning, and the interactions between an organization's limits and growth opportunities.

Figure 1. Hierarchy of business model definitions



Source: self-generated based on Morris *et al.* (2005).

Despite the value of this classification, many of the conceptualizations cannot be placed in a single category due to the multidimensional nature of the business model. Hamel (2000: 73-99) anticipated the complexity of the content of this construct by distinguishing four key business model components: the centralized strategy, the connection with the customer, strategic resources and the value chain. In addition, he differentiates three components that bridge the concept: activity configuration, benefits to the customer, and the corporation's limits. Although prior reports have attempted to define the domain of the construct, the lack of consensus impacts on efforts to identify its dimensions. As seen in **Table 2**, the dimensions identified vary from strategic aspects such as the configuration of the value chain (Camisón, 2001; Chesbrough & Rosenbaum, 2002; Schweizer, 2005) or the product/market sector (Camisón, 2001; Morris *et al.*, 2005, 2006), to economic aspects

such as the revenue model (Chesbrough & Rosenbaum, 2002), and also context-dependent factors such as age or organizational size (Bigliardi *et al.*, 2005).

Our concept of business model combines the operational and strategic approximations but excludes the economic perspective.⁴ A business model can be considered as the standard generated by the corporation to organize its processes and tasks with a specific internal configuration of its value chain, manage its assets, realize transactions with external agents, and determine the market in which it intends to compete. On the other hand, a revenue model refers to the specific means by which a business model facilitates the generation of revenue (Zott & Amit, 2008: 3). Taking this concept as a basis, in addition to studies by Camisón (2001), Morris *et al.* (2005, 2006) and Schweizer (2005), the business model concept can be defined by three basic dimensions: (1) organizational structure, (2) degree of diversification (product/market sector), and (3) management of the value chain activities (vertical integration vs. cooperation).

Organizational structure is the first key dimension in the definition of a business model (Camisón, 2001; Alt & Zimmerman, 2001). The hierarchical structure of a corporation, the degree of formality in workers' behaviour, the degree of centralization in decision making, the configuration of the productive process and the mechanisms of work coordination are all essential aspects of the definition of a business model.

4. The business model conceptualization developed considers business model and revenue model as separate concepts, as suggested by prior studies (Amit & Zott, 2001; Zott & Amit, 2008). The economic perspective identified by Morris *et al.* (2005) has not been taken into consideration because it can be associated with the revenue model concept.

Table 2. Dimensions of the business model construct

Study	Dimensions or components of the business model
Alt and Zimmerman (2001) [cited by Morris <i>et al.</i> (2005)]	Mission, structure, processes, revenue, technology and legal aspects.
Camisón (2001)	Organizational structure; product/market sector; degree of integration vs. cooperation.
Chesbrough and Rosenbaum (2002)	Value generation; objective/s market/s; cost structure; revenue model.
Casadesus-Masanell (2004)	Group of tangible and intangible assets; value chain; asset management.
Morris <i>et al.</i> (2005, 2006)	Product/services offer; market characteristics; source of competitive advantage; competitive strategy; economic factors; growth opportunities.
Bigliardi <i>et al.</i> (2005)	Age; size; degree of novelty of the biotechnology used; level of integration of the I+D; level of industrialization of the sector.
Schweizer (2005)	Level of integration/externalization of the value chain activities; relations between different companies (licences, strategic alliances or joint corporations); revenue generation potential.

Source: self-generated.

The second dimension considered is the degree of diversification of the corporation (Camisón, 2001; Chesbrough & Rosenbaum, 2002; Morris *et al.*, 2005, 2006). The business model includes the delimitation of the products/markets that the company aims to achieve in order to create a position in which it can exploit and maintain its competitive advantage.

The last dimension in the business model refers to the management of the value chain activities (Camisón, 2001; Chesbrough & Rosenbaum, 2002; Schweizer, 2005). This is a key dimension in that the continuous

emergence of new business models is motivated by organizational innovation based on inter-organizational cooperation. A precise definition of the business model must therefore determine which value chain activities will remain integrated in the company and which ones will be developed through cooperation. This issue is closely related to the company's competitive advantage (Schweizer, 2005). Management must think about the activities that give rise to a corporation's competitive advantages in order to establish inter-organizational cooperation for decentralized activities. The business model conceptualization developed in this study distinguishes between this concept and other more traditional ones such as competitive strategy, organizational structure and value chain. The business model is not a strategy, but includes a series of strategic decisions (Morris et al., 2005; Pazlet, Knyphausen-Auseß & Nikol, 2008). It is neither the organizational structure nor the value chain, but both are integral components of the business model definition (Camisón, 2001; Schweizer, 2005). The business model encompasses these concepts, but is considered superior to the sum of the parts, reflecting how the business will be approached with regard to these features (Morris et al., 2005, 2006).

Configuration of business models and effect on organizational performance

The existence of alternative business models raises an interesting second issue: the competitiveness of business models that encompass an industrial outlook (Schweizer, 2005; Zott & Amit, 2007, 2008). There are several extensive reports that independently study the properties and economic effects of integrated models (Afuah, 2001; Cacciatori & Jacobides, 2003), multidivisional models (Armour & Teece, 1978; Galunic & Eisenhardt, 1996) and network-based models (Cravens, Piercy & Shipp, 1996; Edwards & Samimi 1997; Hanssen-Bauer & Snow, 1996). However, as yet there is no consensus as to which business model results in superior performance.

Integrated models have been widely considered as adequate models for the end of the 19th century and a large part of the 20th century. However, the new, flexible, cooperation-based business models are now considered as better adjusted to the present chaotic environment. Their superiority is based on their enhanced flexibility, which allows faster adaptation to changes in the environment, at the same time allowing improvements in the competitive positioning with regard to cost, quality and flexibility, and greater capacity to manage intra- and inter-organizational conflicts (Aoki, 1990; Chesbrough & Schwartz, 2007; Morris, Hassard & McCann, 2006; Schweizer, 2005; Volberda, 1996). However, certain authors argue that the new network-based business models reduce organizational coherence and weaken viability over time (i.e., Arrazola, 2007; Cappelli, Bassi, Katz, Knoke, Osterman & Useem, 1997; Ichnioswki, Kochan, Levine, Olson & Strauss, 1996). In this regard, Schweizer (2005) points to the success of integrated companies such as Procter & Gamble in the domestic product industry and Nestle in the food industry.

Results from the few empirical studies that compare efficacy in the different business models have been inconsistent regarding the relationship

between business model design and organizational performance. For example, Zott and Amit (2007) provide inconclusive results in a comparison between innovative business models and those aimed at efficacy, without determining the superiority of either. In a later study, Zott and Amit (2008) appear to come up with a solution regarding the prior results, concluding that an innovative business model definition shows increased corporate performance when it is defined with strategies aimed at differentiation, cost leadership or prompt entry into a market. However, after analyzing business models with different sources of competitive advantage, Volle *et al.* (2008) conclude that no single model ensuring competitive success exists.

The lack of consistency in empirical evidence regarding the effect of business model selection on organizational performance could be due to the absence of a solid theoretical basis for the predictions, or to the multitude of different theoretical approaches to its analysis (Amit & Zott, 2001; Morris *et al.*, 2005, 2006). A contingent approach is the traditional one in the field (i.e., Chandler, 1962; Zott & Amit, 2008), together with transaction cost theory (Williamson, 1993). However, these theories have recognised limitations in arguments regarding the competitive superiority of a business model. On the other hand, the Resource Based View offers an interesting theoretical framework for analysing a business model's capacity to determine the development of competitive advantage. Schweizer (2005) identifies two contributions made by the Resource Based View to the study of business models. Firstly, the strategic value of a business model can be supported if its resources and capabilities are more difficult to imitate, less transferable and more complementary. Secondly, the centralized capabilities of a company define not only the value of the business model but also help decide which business model is more appropriate with respect to each competitive situation and based on the need to reconsider the present transaction

The business model can become a primary element in the mobilization and coordinated work of a company's assets, and a determinant factor in the company's capacity to generate competitive advantage (Morris, Schindehutte, Richardson & Allen, 2006). Therefore, a company's definition of each of the three dimensions included in its concept must be directed towards the development and maintenance of competitive advantages.

Based on the Resource Based View theory, the development of competitive advantage depends on the characteristics of each business model. For example, the I-models and the M-models tend to develop advantages based on cost or quality, while the N-models can generate valuable competitive advantages based on intangible assets, such as their increased capacity to change and adapt or their organizational flexibility. The strength of each business model to develop distinct differential capabilities leads us to consider the possible co-existence of all of them (Camisón, 2003, 1996; Volle *et al.*, 2008). Subscribing to a specific business model is therefore not expected to have a direct positive effect on corporate results in itself, meaning that no model is predicted to provide the competitive advantages that will justify superior performance. This reasoning is reflected in the following working hypothesis:

Hypothesis 1 (H1). *The selection of an organizational model per se does not result in significant differences in organizational performance.*

METHODOLOGY

Database

The empirical data was obtained from a primary source of information based on a survey conducted with executives from Spanish industrial corporations and developed with wider objectives than those of this study. Our population of Spanish industrial corporations did not include the energy and oil sectors.⁵ Corporations in different industrial sectors and of different sizes were included with the purpose of finding greater diversity in the business models. The corporations included in the sample were found in the SABI (Sistema de Análisis de Balances Ibéricos) database. To be considered as part of the sample population, the corporations were required to offer complete contact information. The SABI database has the advantage of providing certain economic and financial data that are difficult to obtain from the companies directly, in addition to information regarding the companies' location and the people responsible for them. The questionnaire was sent to 2145 corporations in 30 sectors.

By the end of the fieldwork, 175 responses had been obtained. 16 of them were eliminated as the questionnaires were incomplete or incorrectly completed. The final sample comprised of 159 companies, with a sample error of 7.6%, where $p = q = 0.5$. The corporations included in the sample belong to 19 industries with a variation in size of between 10 and over 500 employees. Table 3 shows the technical specifications of the fieldwork.

5. The energy and oil sectors were not included to avoid the possible distortion of the final data caused by the size magnitude of corporations operating in these sectors

Table 3. Technical data chart

Environment	Spanish industry corporations excluding oil and energy
Geographical scope	National
Data collection	Through a structured questionnaire completed by personal or electronic interview
Population	2145 companies
Final sample size	159 companies
Level of confidence	95%
Sample error	7.6%
Unit of analysis	Company
Person receiving questionnaire	Managing Director
Dates of fieldwork	April-November 2006

Measurement of variables

Business model. The implementation of this variable was based on the three dimensions identified in the literature review. Table 4 summarizes the dimensions and variables used to measure the construct, as well as the references used for their identification and implementation. The formalization and centralization of the variables were measured using a seven-point Likert scale, where 1 reflects "total disagreement" and 7 indicates "total agreement". These variables were introduced as the

measurement of the items included in each dimension. For the two remaining dimensions, the variables were classified using values from 1 to 5 (with the exception of the degree of diversification, which was graded from 1 to 6), and each company chose the option that best described their model. The complete scales as they were presented in the questionnaire are shown in the appendix.

Table 4. Implementation of the business model construct and references

Dimensions / Items	References
Organizational structure	Alt and Zimmerman (2001); Camisón (2001); Zott and Amit (2007)
Hierarchical structure	Mintzberg (1979)
Degree of formalization	Hage and Aiken (1967); Aiken & Hage (1968)
Degree of centralization	Hage and Aiken (1967); Aiken and Hage (1968); Pugh <i>et al.</i> (1963)
Productive process	Mintzberg (1979)
Coordination mechanism	Mintzberg (1979)
Degree of diversification	Camisón (2001); Chesbrough and Rosenbaum (2002); Bonaccorsi <i>et al.</i> (2006); Nosella <i>et al.</i> , 2004; Morris <i>et al.</i> (2005, 2006); Volle <i>et al.</i> , 2008
Product/market sector	Ansoff (1978)
Value chain management	Camisón (2001); Chesbrough and Rosenbaum (2002); Casadesus-Masanell (2004); Schweizer (2005); Zott and Amit (2007)
Degree of integration/cooperation	Camisón and Guía (1999)

Organizational performance. Organizational performance is measured according to nine variables, of which three represent the return on capital, two refer to market performance, one is an indicator of work productivity, two refer to stakeholder satisfaction and the last represents the value of the competitive positioning. These indicators have been used in previous studies (Camisón, 1999). The indicators were evaluated using a seven-point Likert scale, in which a value of 1 reflects “much worse” and a 7 indicates “much better”. The managers were asked to evaluate each of the items in the scale in relation to the contest average.

Performance indicators as subjective evaluations are commonly found in the strategic literature on this topic (i.e., Lin & Germain, 2003; Nahm, Vonderembse & Koufteros, 2003). However, to ensure the absence of bias in the managers’ perceptions of performance, validity of the values was confirmed using two objective measures from outside the survey, namely economic return and benefit margin. These indicators were obtained from the SABI database. Data on all the indicators were obtained for 105 and 112 corporations, respectively. The correlations between objective and subjective indicators were statistically significant with a value of 0.001 (economic return = 0.269; benefit margin = 0.311). The self-assessment of organizational performance is therefore considered valid.

Statistical evaluation

To develop a taxonomy of the business models adopted by the Spanish industrial corporations, a cluster analysis was performed using SPSS for Windows version 15.00.⁶ The cluster analysis was performed following the method described by Hair *et al.* (1998).⁷ The classification variables are inferred based on the dimensions and items that consti-

6. The cluster analysis and the strategic group analysis have specific similarities and differences. While both identify statistically distinct groups based on specific variables, the first evaluation identifies statistically distinct groups a posteriori, that is, it uses the classification variables to later define the groups that are most similar to each other and different from the rest. On the other hand, the analysis of strategic groups performs an a priori analysis, first defining the strategic groups to enable the later confirmation or rejection of the empirical results based on the strategic variables.

7. The reader may refer to Hair *et al.* (1998), chapter 9, for details on the cluster analysis methods.

tute the measurement scale of the business model construct. Due to the variation in the classification variables' scales of measurement, these variables were standardized following the method described by Hair *et al.* (1998). To determine whether the business model selected by a company is a determinant of organizational performance, the data obtained from the cluster analysis were evaluated using an analysis of variance (ANOVA).

RESULTS

Results of the cluster analysis

8. See Appendix 2.

A dendrogram represents the results of the hierarchical clustering.⁸ The interpretation of the dendrogram suggests that the sample of corporations can be divided into four groups that are separated by a smaller distance, and are assumed to be very different from one another as they are grouped in a single cluster separated by a greater distance. With this information, a non-hierarchical clustering was performed to calculate the optimal configuration of the four groups identified by the hierarchical clustering. The four groups identified are composed of 30, 65, 46 and 18 corporations, respectively. The median values obtained for each classifying variable in each group are shown in **Table 5**. These values determine the characteristics of the clusters that are analyzed further on.

Before analyzing the characteristics of the groups, the clusters identified must be shown to be significantly different from one another. The analysis of variance (ANOVA) provides information on the quality of the clusters obtained. **Table 6** shows the results obtained with a p value of 99% and a significance level of 95%. The variable averages all exhibited significant differences among the four clusters except for the Productive process variable. Although this variable does not show significant differences, it is not recommended to eliminate it because it provides information during the clustering process (Hair *et al.*, 1998). **Table 6** also shows that the variable with the greatest effect on the clustering profile was the "degree of vertical integration."

Table 5. Mean values of the classification variables for each group

Classification variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Hierarchical structure	4.03	1.82	3.46	4.33
Degree of formalization	4.27	2.96	3.27	4.54
Degree of centralization	3.45	4.53	2.36	5.07
Productive process	2.78	2.47	2.26	2.83
Coordination mechanism	2.83	2.68	3.39	3.67
Degree of diversification	2.33	2.66	2.84	3.67
Degree of vertical integration	3.61	1.69	1.52	5.00
Number of cases	30	65	46	18

Note: The values for the degree of formalization and centralization of the variables are measured on an increasing scale from 1 to 7. The rest of the variables are measured categorically through the selection of one of the options, which have been codified from 1 to 5 (except the degree of diversification, which is codified from 1 to 6), with a higher value denoting a greater significance of a specific variable.

Table 6. Results of the analysis of variance (ANOVA)

	Cluster		Error		F	Signif.
	Mean squared	Degrees of freedom	Mean squared	Degrees of freedom		
Hierarchical structure	54.951	3	1.059	155	51.891	0.000
Degree of formalization	19.551	3	0.829	155	23.581	0.000
Degree of centralization	53.833	3	0.883	155	60.958	0.000
Productive process	2.357	3	1.788	155	1.318	0.271
Coordination mechanism	7.511	3	0.912	155	8.236	0.000
Degree of diversification	7.061	3	1.112	155	6.349	0.000
Degree of vertical integration	78.174	3	0.630	155	124.107	0.000

After confirmation of the quality of the cluster analysis, and based on the results shown in **Table 5**, the groups obtained present the following characteristics:

- The corporations included in Cluster 1 are characterized by a hierarchical structure formed by organizational subunits that function autonomously but that are coordinated by the general management. The degree of formalization is low and centralization in decision making shows an intermediate degree. The basic mechanism for the coordination of work is the normalization of processes. Its degree of diversification is defined by the inclusion of the entire market, with the manufacture of several products. The degree of integration shows an intermediate value. These characteristics suggest that this group could be defined as a Multidivisional Model (M-Model) because its traits are similar to those of this organizational form.
- The corporations in Cluster 2 show an organizational structure that possesses the typical traits of a machine bureaucracy: distinct hierarchical levels, decision making follows the chain of command, employees are not highly qualified, a high degree of formalization, and centralization in decision making. Consequently, the coordination mechanism uses a pattern of direct supervision where one supervisor in charge of controlling the employees' activities. The corporation covers certain market sectors for which it manufactures variations of the same product. The degree of vertical integration is defined as very high. These characteristics suggest that this configuration can be considered as an Integrated Model (I-Model).
- Cluster 3 is composed of corporations with a hierarchical structure that is similar to professional bureaucracy, in which tasks are standardized, the personnel is qualified, there is an intermediate degree of formalization, and decentralized decision making. The work is coordinated through the normalization of processes and results. There is an intermediate degree of diversification, with the manufacture of various products aimed at different market sectors. The corporation targets certain market sectors only, offering variations of the same product. The degree of vertical integration is very high, and there is no cooperation or subcontracting of suppliers or competitors. Therefore, these corporations are considered as using the Hy-

brid Model (H-Model).

- The corporations included in Cluster 4 promote a hierarchical structure that is defined as adhocratic due to the company's capacity to adapt to changes in the environment, associated with highly qualified personnel. Formalization in employee behaviour is low and centralization in decision making is high. The work coordination mechanism is aimed at normalizing results. The company manufactures one or several products aimed at various market sectors. In addition, the degree of integration is very low, with a preference for decentralization of the production activity and the maintenance of activities that are crucial for competitive success. The corporations in this group could be classified as representative of the Network-based Model (N-Model).

Table 7 summarizes the characteristics of each of the clusters identified in the cluster analysis.

Table 7. Characteristics of the business models identified by cluster analysis

	Cluster 1: Multidivisional model	Cluster 2: Integrated model	Cluster 3: Hybrid model	Cluster 4: Network-based model
Hierarchical structure	Multidivisional	Machine bureaucracy	Professional bureaucracy	Adhocratic
Formalization	Low	High	Intermediate	Very low
Centralization	Intermediate	High	Low	High
Coordination mechanism	Process normalization	Direct supervision	Normalization of processes and results	Normalization of results
Degree of diversification	Intermediate	Intermediate	Intermediate	High
Degree of vertical integration	Intermediate	Very high	Very high	Very low

Results of the variance analysis (ANOVA)

The second objective of this study was to demonstrate that the business model adopted by a corporation is not a determining factor for organizational performance. To prove this hypothesis, the results obtained through the cluster analysis were compared using a variance analysis (ANOVA). **Table 8** shows the results obtained in relation to a group of economic and financial performance indicators. The ANOVA results show that there are no significant differences in performance between the different business models, thus verifying **hypothesis 1**.

These results are consistent with a wide variety of performance indicators, such as those concerning capital revenue, market performance, productivity, stakeholder satisfaction and competitive positioning.

Table 8. Differences in organizational performance as a function of the

business model implemented

	Inter-groups			Intra-groups			Total			F	Signif.	Result significance (p < 0.05)
	Sum of squares	Degrees of freedom	Average squared	Sum of squares	Degrees of freedom	Average squared	Sum of squares	Degrees of freedom				
Average economic revenue	4.933	3	1.644	233.416	155	1.506	238.348	158	1.092	0.354	NOT SIGNIFICANT	
Average financial revenue	1.781	3	0.594	252.478	155	1.629	254.260	158	0.365	0.779	NOT SIGNIFICANT	
Average sales revenue	0.873	3	0.291	233.211	155	1.505	237.084	158	0.193	0.901	NOT SIGNIFICANT	
Average annual growth in sales	1.624	3	0.541	214.595	155	1.384	216.219	158	0.391	0.760	NOT SIGNIFICANT	
Market share earnings	9.267	3	3.089	200.307	155	1.292	209.574	158	2.390	0.071	NOT SIGNIFICANT	
Work productivity	0.881	3	0.294	227.042	155	1.465	227.923	158	0.200	0.896	NOT SIGNIFICANT	
Customer satisfaction	8.737	3	2.912	174.712	155	1.127	183.449	158	2.584	0.055	NOT SIGNIFICANT	
Other interest group satisfaction	4.826	3	1.609	219.658	155	1.417	224.484	158	1.135	0.337	NOT SIGNIFICANT	
Competitive position strength	8.086	3	2.695	178.851	155	1.154	186.937	158	2.336	0.076	NOT SIGNIFICANT	

DISCUSSION AND CONCLUSIONS

This study set out to promote advances in the conceptualization and implementation of the business model construct, as well as in its classification and the comparative analysis of its efficacy.

The first contribution of this work comprises the development of a delimitation of the business model concept. Largely based on the studies by Camisón (2001), Morris et al. (2005, 2006) and Schweizer (2005), the concept was developed around three key dimensions, namely organizational structure, degree of diversification and management of the value chain activities. The concept developed provided the basis for a multi-dimensional method for evaluating the business model. These contributions are important because as far as we know there is no solid conceptualization and implementation of the business model concept in the academic literature to date (Morris et al., 2005; Zott & Amit, 2007).

The second contribution consists of offering a taxonomy of the business models that exist in Spanish industry. Prior studies indicated the need to step up research in this area (Schweizer, 2005). The evaluation method developed was used for a cluster analysis. The results of the cluster analysis show that the business models in Spanish industrial corporations can be grouped into four distinct categories: multidivisional, integrated, hybrid and network-based. These clusters are statistically different with respect to the classification variables hierarchical structure, formalization, centralization, coordination mechanisms, degree of diversification and degree of vertical integration. The taxonomy enables the identification of two clear directions in the selection of a business model by Spanish industrial corporations. The first encompasses corporations that define their business model in a traditional manner, emphasizing characteristics such as formalization of employee behaviour or centralization in decision making; this includes the multidivisional and integrated models. The second group includes more modern and innovative business models, mainly characterized by the externalization of activities or the decentralization of decision making. This group includes hybrid and network-based models. These results provide evidence that there is a proliferation of new business

models in Spanish industry, alongside the more traditional models. In addition, the present study contributes to the development of a comparative analysis of business model competitiveness. The definition of the construct developed is closely related to the generation and maintenance of competitive advantage. According to the Resource Based View, the business model can be considered as responsible for the mobilization of a company's assets, and should therefore be a determinant in the achievement of competitive advantage and, as a consequence, the capture of economic rent. However, the results of this study show that the implementation of a specific business model does not result in significant differences in organizational performance. These findings challenge deterministic statements that defend the total superiority of a business model while vertically devaluing integrated models. As Hamel & Prahalad pointed out (1994), the issues related to the design of business models are not always clear. The exaggerated tendency to subcontract activities or to delegate power can be as damaging as the problem the company is trying to resolve (Hamel & Prahalad 1994: 373).

The advent of network-based business models constitutes a major advance. Cooperation among companies and the tendency towards innovation are valuable characteristics of this model because they favour the development of dynamic capabilities that can sustain competitive advantages based on intangible assets (Villar, 2008). The value of vertically integrated business models and other intermediate models should nonetheless be acknowledged. It is important to note that many companies still attain significant competitive positions due to vertical integration (Yusuf & Adeleye, 2002). In this regard, Chesbrough & Teece (1996) cite the success of certain corporations that have adopted an integrated business model such as Intel or Microsoft, as they make substantial investments to develop the necessary capabilities and to promote the development of new capabilities "at home", arguing that certain types of innovation can only be developed by corporations with the reach and range needed to coordinate their development.

The findings provide empirical support for studies that address the existence of contingent factors in the relationship between choice of business model and organizational performance (i.e., Villar, 2008; Zott & Amit, 2007, 2008). A promising investigative direction is the study of a corporation's internal characteristics and/or external factors that can mediate this relationship. It would also be of interest to carry out longitudinal studies on the evolution of the different business models and the factors that influence their progression.

With respect to the practical implications of this study, managers need to understand that there is no such thing as a single superior business model. Competitive success appears to depend on a formula that is more complex than the choice of one business model or another. This is proved by the co-existence of several business models in the Spanish business environment that use different organizational structures, product-market definitions and distinct degrees of vertical integration. In addition, managers should also be aware that success in the imple-

mentation of a specific model depends on other factors contingent to the corporation, each of which possesses its respective advantages and disadvantages. It is a mistake to assume that business models based on cooperation provide a universal antidote for all corporate problems.

César Camisón is Senior Lecturer in Business Administration at Jaume I University, Castellón, Spain. He holds a PhD in Economics and Business. He has served as a visiting professor at the University of Texas, the Università Commerciale Luigi Bocconi of Milano, the University of Surrey, and Vienna University. His main research interest lies in strategic management, especially competitiveness, size and SMEs, internationalization and innovation strategies, strategic alliances and quality management. He has published more than sixty books and book chapters, and over a hundred articles in academic journals (such as *Organization Studies*, *Environment and Planning A*, *Journal of Business Research*, *International Marketing Review*, and *Journal of Small Business Management*).

Ana Villar-López is Assistant Professor (PhD) in Business Administration at Valencia University, Valencia, Spain. She holds a PhD in Business Management. Her main research interests are organizational forms, innovation strategies, internationalization and SMEs. She has published in scientific journals such as *International Marketing Review*, *Journal of Small Business Management*, *Universia Business Review* and *International Journal of Operations and Production Management*.

REFERENCES

- Alt, R., & Zimmerman, H. D. (2001). Introduction to special section on business models. *Electronic Marketing*, 11(1), 3-9 [cited by Morris et al., 2005].
- Amit, R., & Zott, C. (2001). Value Creation in e-Business. *Strategic Management Journal*, 22, 493-520.
- Ansoff, I. (1978). *Corporate Strategy*. Middlesex: McGraw-Hill.
- Aoki, M. (1990). *La estructura de la economía japonesa*. México, D. F.: Fondo de Cultura Económica.
- Arrazola, J. (2007). Hacia un nuevo modelo: la empresa global integrada. *Universia Business Review*, 4, 108-118.
- Bigliardi, B., Nosella, A., & Verbano, C. (2005). Business Models in Italian Biotechnology Industry: a Quantitative Analysis. *Technovation*, 25, 1299-1306.
- Bonaccorsi, A., Giannangeli, S., & Rossi, C. (2006). Entry strategies under competing standards: hybrid business models in the open source software industry. *Management Science*, 52(7), 1085-1098.
- Calia, R. C., Guerrini, F. M., & Moura, G. L. (2007). Innovation Networks: from Technological Development to Business Model Reconfiguration. *Technovation*, 27, 426-432.
- Camisón, C. (1996). Competitividad y teoría de la estrategia: un análisis aplicado a la cohabitación PYME-gran empresa. *Revista Asturiana de Economía*, 6, 63-101.
- Camisón, C. (1999). La medición de los resultados empresariales desde una óptica estratégica: construcción de un instrumento a partir de un estudio Delphi y aplicación a la empresa industrial española en el período 1983-96. *Estudios Financieros*, 62, 201-265.
- Camisón Zornoza, C. (2001). La investigación sobre la pyme y su competitividad. Balance del estado de la cuestión desde las perspectivas narrativa y meta-analítica. *Papeles de Economía Española*, 89-90, 43-83.
- Camisón Zornoza, C. (2003). *La competitividad de la pyme frente a la gran empresa: un análisis a partir de los modelos alternativos de organización de la producción*. En Genescà, E., David, U., Guayarte, C., Vergás, J. (coords.), Creación de empresas. Entrepreneurship, Homenaje al Profesor Veciana (pp. 687-723). Universitat Autònoma de Barcelona: Servei de Publicacions.
- Camisón, C., & Guía, J. (1999). Relaciones verticales y resultados: estudio empírico de la eficiencia comparativa de la integración vertical versus descentralización productiva. *Revista Europea de Dirección y Economía de la Empresa*, 8(2), 101-126.
- Cappelli, P., Bassi, L., Katz, H., Knoke, D., Osterman, P., & Useem, M. (1997). *Change at Work*. New York: Oxford University Press.
- Casadesus-Masanell, R. (2004). Dinámica competitiva y modelos de negocio. *Universia Business Review*, cuarto trimestre, 8-17.
- Chandler, A. D. (1962). *Strategy and Structure*. Chapters in the History of the Industrial Enterprise. Cambridge, MA: MIT Press.
- Chandler, A. D. (1990). *Scale and Scope*. The Dynamics of Industrial Capitalism. Cambridge, MA: Harvard University Press.
- Chesbrough, H. W. (2007a). Why Companies Should Have Open Business Models. *MIT Sloan Management Review*, 48(2), 22-28.
- Chesbrough, H. W. (2007b). Business Model Innovation: It's Not Just About Technology Anymore. *Strategy & Leadership*, 35(6), 12-17.
- Cravens, D. W., Piercy, N. F., & Shipp, S. H. 1996. New organization forms for competing in highly dynamic environments: the network paradigm. *British Journal of Management*, 7(3), 203-218.
- Chesbrough, H. W., & Teece, D. J. (1996). When is virtual virtuous? *Harvard Business Review*, 74(1), 65-73.
- Chesbrough, H. W., & Rosenbaum, R. S. (2002). The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spin-Off Companies. *Industrial and Corporate Change*, 11(3), 529-555.

- Chesbrough, H. W., & Schwartz, K. (2007). *Innovating Business Models With Co-Development Partnerships*. Research Technology Management, Enero-Febrero, 55-59.
- Edwards, C. T., & Samimi, R. (1997). Japanese interfirm networks: exploring the seminal sources of their success. *Journal of Management Studies*, 34(4), 489-511.
- Ghaziani, A., & Ventresca, M. J. (2005). Keywords and Cultural Change: Frame Analysis of Business Model Public Talk 1975-2000. *Sociological Forum*, 20, 523-559.
- Hair, J., Andersson, R., Tatham, R., & Black, W. (1998). *Multivariate Data Analysis*, Madrid: Prentice Hall.
- Hamel, G. (2000). *Leading the revolution. How to thrive in turbulent times by making innovation a way of life*. Boston: Harvard Business School Press.
- Hamel, G., & Prahalad, C. K. (1994). *Competing for the future*. Boston: Harvard Business School Press.
- Hanssen-Bauer, J., & Snow, C. C. (1996). Responding to hypercompetition: the structure and processes of a regional learning network organization. *Organization Science*, 7(4), 413-428.
- Hedlund, G. (1994). A model of knowledge management and the N-form corporation. *Strategic Management Journal*, 15, 73-90.
- Heuskel, D. (1999). Wettbewerb jenseits der Industriegrenzen (Competition beyond industry boundaries), Frankfurt: Campus Verlag [cited by Schweizer, 2005].
- Hughes, J. (1966). *The vital few: American economic progress and its protagonist*. Boston: Houghton.
- Ichnioswki, C., Kochan, T. A., Levine, D., Olson, C., & Strauss, G. (1996). What works at work: overview and assessment. *Industrial Relations*, 35(3), 299-331.
- Lin, X., & Germain, R. (2003). Organizational structure, context, customer orientation, and performance: lessons from Chinese state-owned enterprises. *Strategic Management Journal*, 24, 1131-1151.
- Mahadevan, B. (2000). Business Models for Internet-based E-commerce. *An Anatomy. California Management Review*, 42, 55-69.
- March Chordà, I., & Seoane Trigo, R. (2006). Los modelos de negocio en las empresas de biotecnología españolas. *Universia Business Review*, cuarto trimestre, 22-35.
- Morris, J., Hassard, J. & McCann, L. (2006). New organizational forms, human resource management and structural convergence? A study of Japanese organizations. *Organization Studies*, 27(10), 1485-1511.
- Morris, M., Schindehutte, M., & Allen, J. (2005). The Entrepreneur's Business Model: Toward a Unified Perspective. *Journal of Business Research*, 58, 726-735.
- Morris, M., Schindehutte, M., Richardson, J., & Allen, J. (2006). Is the business model a useful strategic concept? Conceptual, theoretical, and empirical insights. *Journal of Small Business Strategy*, 17(4), 27-50.
- Nahm, A. Y., Vonderembse, M. A., & Koufteros, X. A. (2003). The impact of organizational structure on time-based manufacturing and performance. *Journal of Operations Management*, 21, 281-306.
- Nosella, A., Petroni, G., & Verbano, C. (2005). Characteristics of the Italian biotechnology industry and new business models: the initial results of an empirical study. *Technovation*, 841-855.
- Patzelt, H., zu Knyphausen-Aufseß, D., & Nikol, P. (2008). Top management teams, business models, and performance of biotechnology ventures: an upper echelon perspective. *British Journal of Management*, 19(3), 205-221.

- Schweizer, L. (2005).
Concept and Evolution of Business Models. *Journal of General Management*, 31(2), 37-56.

- Steward, D. W., & Zhao, Q. (2000).
Internet Marketing, Business Models, and Public Policy. *Journal of Public Policy & Marketing*, 19, 287-296, [cited by Calia et al. (2007)].

- Timmers, P. (1998).
Business Models for Electronic Markets. *Electron Commer Europe*, 8(April), 1-6.

- Venkatraman, N., & Henderson, J. C. (1998).
Real strategies for virtual organizing. *Sloan Management Review*, 40(1), 7-19.

- Villar, A. (2008)
Formas organizativas de la producción integradas y reticulares: características estructurales y efectos sobre la innovación y el desempeño. Tesis Doctoral no publicada, Universitat Jaume I de Castellón, Castellón de la Plana.

- Volberda, H. W. (1996).
Toward the flexible form: how to remain vital in hypercompetitive environments. *Organization Studies*, 7(4), 359-374.

- Volle, P., Dion, D., Hélie-Hassid, M. L., & Sabbah, S. (2008).
Les business models dans la distribution. Repérer les chemins de la performance. *Revue Française de Gestion*, 34(181), 123-144.

- Willemstein, L., van der Valk, T., & Meeus, M. T. H. (2007).
Dynamics in business models: an empirical analysis of medical biotechnology firms in the Netherlands. *Technovation*, 221-232.

- Zott, C., & Amit, R. (2007).
Business Model Design and the Performance of Entrepreneurial Firms. *Organization Science*, 18(2), 181-199.

- Zott, C., & Amit, R. (2008).
The Fit Between Product Market Strategy and Business Model: Implications for Firm Performance. *Strategic Management Journal*, 29, 1-26.

APENDIX 1. Measurement of variables.

GROUP A	ORGANIZATIONAL STRUCTURE
Hierarchical structure	<ol style="list-style-type: none"> 1. The hierarchical structure of my company is limited to the senior management and the personnel directly associated with the company's main activities. 2. The hierarchical structure of my company is characterized by a clear distinction between hierarchical levels, decision making takes place according to the chain of command, and the employees are not highly qualified. 3. The hierarchical structure of my company is characterized by the high standardization of tasks and the high qualifications of the personnel. 4. The hierarchical structure of my company is characterized by the presence of several organizational subunits that function autonomously under the coordination of the management. 5. The hierarchical structure of my company is characterized by an increased capacity to adapt to changes in the environment and by highly qualified personnel.
Degree of formalization	<ol style="list-style-type: none"> 1. The members of the corporation feel that they are their own bosses in many instances. 2. The members of our company can make their own decisions without consultation. 3. The completion of tasks depends on the person performing the task. 4. The members of our company set their own work rules. 5. The members of our company are under constant surveillance to ensure that they follow the rules.
Degree of centralization	<ol style="list-style-type: none"> 1. The members of our company can accomplish few tasks without a supervisor's approval. 2. The members of our company are discouraged from making decisions. 3. The members of our company must have final approval from a hierarchically superior person before making even the smallest of decisions. 4. The members of our company must obtain prior approval from their supervisor for most actions. 5. Any decision made by the members of our company must have the prior approval of their direct supervisor.
Productive process	<ol style="list-style-type: none"> 1. Manufacture by project 2. Manufacture in small batches based on manual labour 3. Manufacture in large batches 4. Mass manufacture 5. Continuous production manufacture (blast furnace, cement, petrochemicals)
Coordination mechanism	<ol style="list-style-type: none"> 1. In my company, the work is controlled by informal communication methods 2. In my company one person is responsible for the work of others through instructions and control of activities. 3. In my company the procedures to be followed for completion of work are clearly specified. 4. In my company the results that need to be achieved are clearly specified. 5. In my company the skills and knowledge required for the completion of the work are clearly specified.
GROUP B	PRODUCT/MARKET SECTOR
Degree of diversification	<ol style="list-style-type: none"> 1. A single product for the entire market. 2. Several products, each directed to a different market sector encompassing the entire market. 3. Several products, each aimed at a different segment and encompassing only certain market segments. 4. One single product for certain market segments. 5. Several products sold only in one market segment. 6. Single product sold only in one market segment.
GROUP C	DEGREE OF VERTICAL INTEGRATION VS. SUBCONTRACTING
Degree of vertical integration	<ol style="list-style-type: none"> 1. My company specializes in the manufacture of products that are part of the production process of our customer companies. 2. My company specializes in the manufacture of the final product, using intermediate components and products manufactured by our supplying companies. 3. My company subcontracts with other companies based on the production capacities. 4. My company subcontracts specialized activities that are not part of the main activities of our company. 5. My company decentralizes the production activity while maintaining activities that are crucial for competitive success.

* Control items, introduced in reverse.

GROUP D

ORGANIZATIONAL PERFORMANCE

1. Intermediate economic return (profit before interest and taxes/total net assets)
 2. Intermediate financial return (profit after taxes/shareholder's equity)
 3. Intermediate return on sales (profit before interest and taxes/sales)
 4. Intermediate annual sales growth
 5. Market quota earnings (increase in the participation in total industry period sales)
 6. Work productivity
 7. Customer satisfaction
 8. Other interest group satisfaction
 9. Competitive positioning strength
-