# CORPORATE SURVIVAL IN THE CERAMIC SECTOR. DETERMINING FACTORS

**L. Martínez Ch[(1)]. L. Martínez I.[(1)] and P. Corma[(2)]**

[(1)]Universitat Jaume I. [(2)]QPT S.L.

## ABSTRACT

The global economic crisis has been an on-going reality since 2008 and its increasing severity over the last two years has led to the situation we face today where a number of companies have been unable to continue in business.

The aim of this paper is to study and analyse factors that recur in those companies in the ceramic sector that are surviving the financial crisis, as well as factors that are apparent in firms that have not managed to overcome the situation.

The paper cites financial data from the last 15 years - field work that was achieved by surveying companies using EFQM Excellence Model criteria as the basis - as well as interviews based on questionnaires about the Innovation factor. The resulting data have made it clear that a series of recurring factors exist in those firms that are bearing up or surviving the crisis, while other factors also recur in those firms that have sadly been forced under.

## 1. INTRODUCTION

The period 1997-2008 saw the onset of a period of economic adjustment that was eventually rounded off by a financial crisis followed by an economic crisis, from which the Ceramic cluster has not been spared. On the contrary, the crisis has staged an all-out attack on the sector's foundations and has firmly challenged it to demonstrate its underlying strength. From a position of significant growth in production output rates at the beginning of the period, the sector has seen demand falling away as a direct consequence of the shrinking construction business.

On top of that, nobody could foresee that the crisis would last so long and thus the measures that should have been taken were not implemented. Industrial plants continued production at almost the same rate and ended up accumulating large stocks. Such a traditional approach to manufacturing, in which furnaces were charged almost to their maximum level, regardless of the devastating financial effects that such production management entailed as the resulting excess stocks had to be financed, naturally turned into a threat against survival as soon as the squeeze on bank financing started.

Although this paper was drafted in 2011, it forms part of a longer-term project that began last decade aimed at analysing how the financial performance of firms in the Castellon ceramic sector has evolved over time and the relationship those results have with events taking place on the market and with internal response in terms of management. In other words, this paper attempts to analyse HOW company management faces cycle changes and thereby achieves one or another type of result.

Given that this study focuses on a historical series and is therefore dynamic, it aims to answer the question of whether it is possible to foresee a decline in financial performance and thus take measures to prevent it.

A number of papers in the literature (see References at the end of this paper) exist that co-relate corporate results with the criteria that trigger them. Many of these papers are focused on a concrete period of time (1 or 2 years) and in no case do any of them analyse longer periods, although there are many organisations that present healthy financial results at certain moments in their history and yet at other times, including the years immediately subsequent to previously successful years, the results they report are poor, without management criteria apparently having changed. That is the point where this paper attempts to make its contribution, by taking a series of historical data from over a longer period of time that includes periods in which demand was high (1998-2001 and 2005-2008) as well as periods of crisis (2008-2011 and 2001-2003).

This study focuses on firms in the ceramic tile sector because it is a homogeneous universe, in the sense that the industry is concentrated in a specific district and is generally influenced by very similar agents. The same methodology would be applicable to other business sectors grouped in similar or even wider districts and in which individual companies are equally affected by common external agents.

## 2. EXPERIMENT DESIGN

Companies were selected for the study on the basis of the following criteria:

- Ceramic tile manufacturers,
- from the Castellon industrial sector,
- that publish their financial statements,
- for the period 1998-2009.

They were then split into segments as follows:

- Companies reporting losses (L) (i.e. making losses in the period 2005-2009).
- Companies reporting profits (P) (i.e. with profits in the period 2005-2009).
- Each group encompassed about 30 firms.
- Given the universe, the sample group, and the segmentation detailed above, the study sample is deemed to be perfectly representative.

The period 1998-2009 was chosen because it includes periods of high, average and low demand or periods of both growth and crisis.

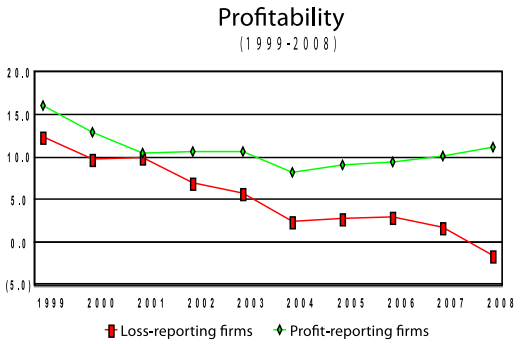
The data used were:

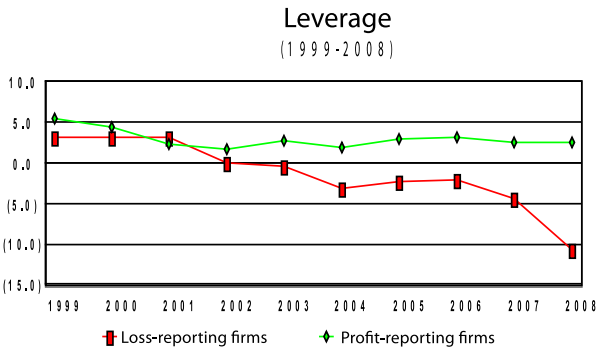
- Financial indicators taken from data published by the companies for the stated period.
- Three business evaluations made in accordance with EFQM Excellence Model criteria in 2002, 2005 and 2009.
- Three assessments of industrial facilities carried out on the basis of Kobayashi's 20 key criteria for factory management.
- A survey on criteria associated with Innovation in 2010 - 2011.

## 3. RESULTS AND DISCUSSION

### 3.1. Key Business-Economic Results

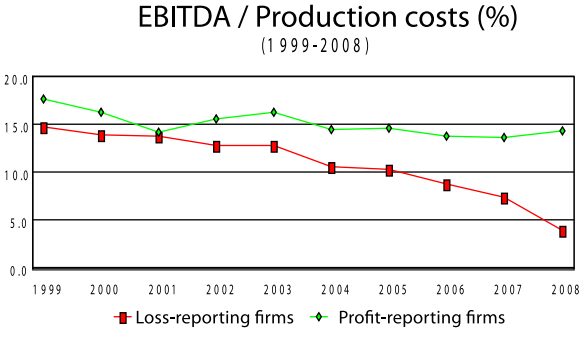
The first step is to analyse Business Results (associated with Criterion 9 in the EFQM Excellence model) and then to verify the Facilitator Agents (Criteria 1, 2, 3, 4, and 5) that may have produced them.

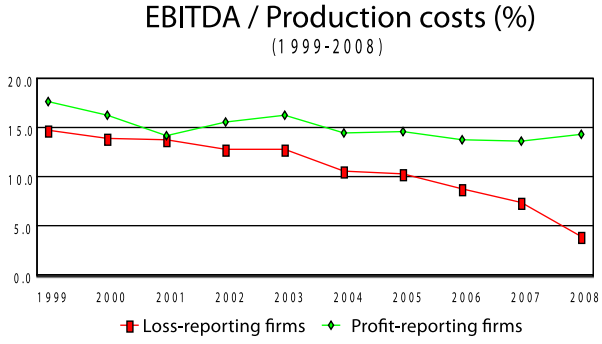



Despite the obvious parity seen in 2001, the end of the period reveals severe deterioration for companies with losses (L), with negative results in 2008. But the most significant trait is the steady decline in profitability (Operating results / Net Investment), which was already noticeable given the unfavourable ratio between production costs and assets. On the other hand, companies making profits (P) held their position and even reported a slightly upward trend, although they never returned to the initial level.

Leverage is the effect that Net Debt has on Profitability, i.e. when net debt is higher than financial costs, leverage is positive and debt is supposed to contribute to and strengthen profitability, which does not occur when leverage is negative. In 2001, the starting positions were similar but from then on, leverage is zero or negative for companies with losses (L) and becomes highly negative in 2008 as a consequence of what happens to profits – this is undoubtedly a position that places these companies (L) in an extremely difficult situation.

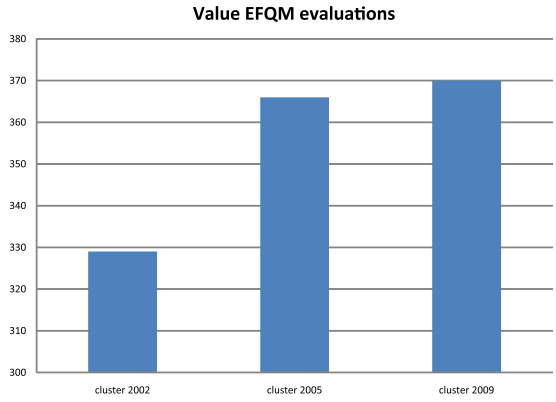


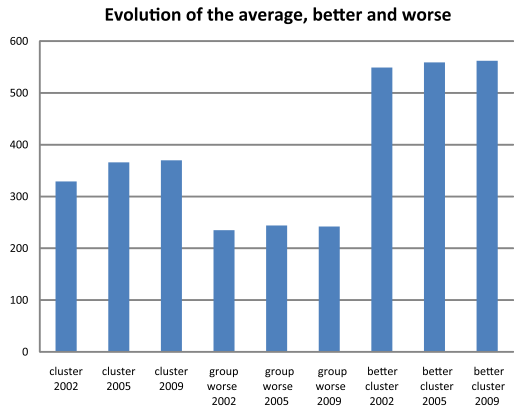



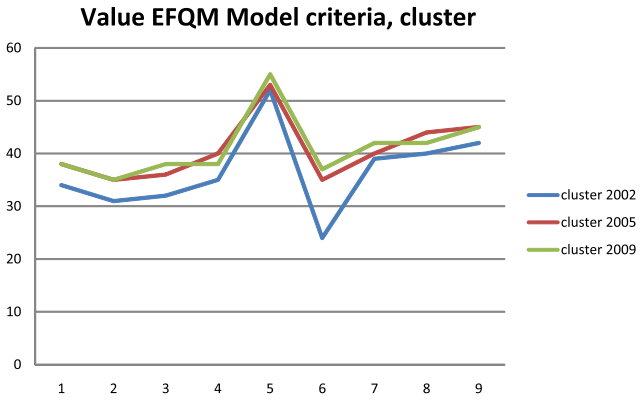

An analysis of how EBITDA evolved shows that both curves were significantly close to each other in 2001 but from then on started to separate and concluded with a gap of more than 10 per cent at the end of the period. This figure is highly relevant to performance. Furthermore, Employment Costs / Production costs (%) is directly responsible for the poor behaviour of EBITDA, as can be seen in the graph showing how this ratio developed, with a large gap of 6 per cent between the two groups at the end of the period, which is clearly detrimental to the companies with losses (L).

## 3.2. Results of EFQM – Business Management Model assessments

With regard to the results of the EFQM evaluations made, the following can be seen:



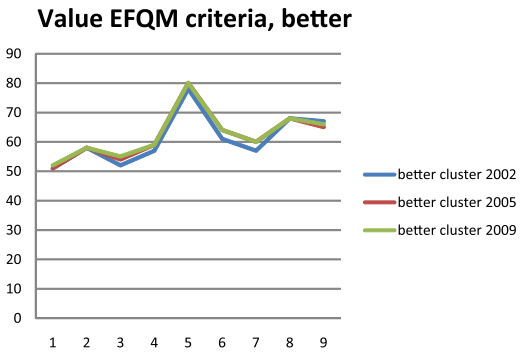



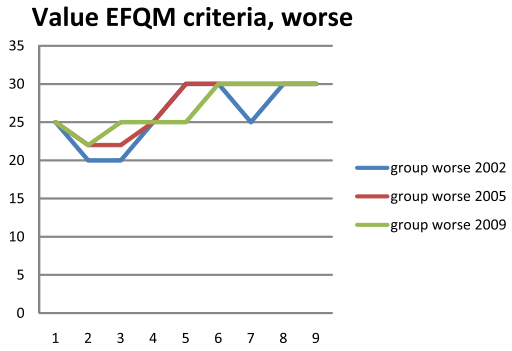




The total EFQM value for all the companies in the sample grew significantly between 2002 and 2005, although less so than between 2005 and 2009.

Total value grew very little in all three groups (average, worse (L) and better (P)), although the range was smaller between the better companies over the specific period.

Analysis of the nine Model criteria for the period and the segmentation between the two groups (companies making profits (P) and companies making losses (L)) produces the following results:

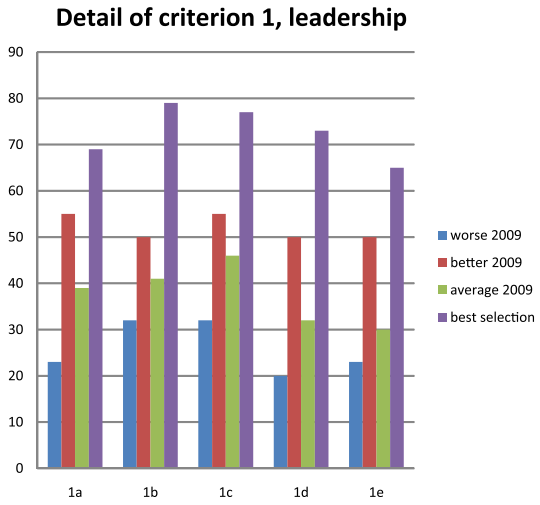


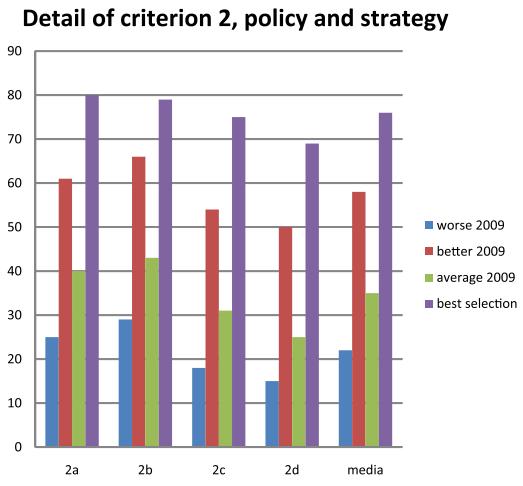




For the companies reporting profits (P)

- Significant improvement in criterion 6 (Customers) was seen over the period, although it remained fairly steady between 2005 and 2009.
- The same occurred to a lesser extent with Criteria 1 (Leadership), 2 (Policies and Strategy), 3 (Personnel), 4 (Other resources and alliances).
- In general, improvement can be said to have occurred between 2002 and 2005, which then stagnated between 2005 and 2009 for the entire group.

In the case of companies reporting losses (L), apart from the loss of 'profile', the curve tends to level off at low values and with small differences between the various criteria. Of special relevance are the low values recorded in "Facilitator Agent criteria 1, 2, 3, and 4, especially 2 and 3. A standard 'profile' can be seen in all the periods in the profit-reporting companies. If we now look at the sub-criterion level for the 5 Criteria behind these results, the outcome is:



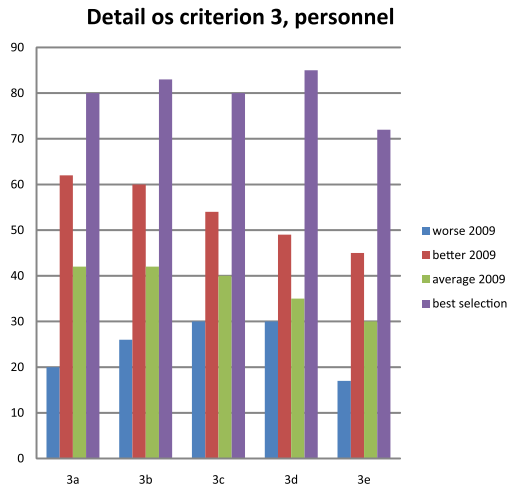



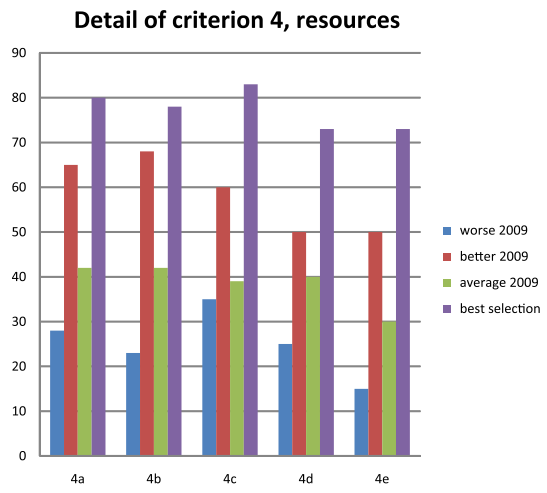
### 3.2.1. Criterion 1 (Leadership):

- An extremely low value is seen for loss-making companies (L) in sub-criterion 1.a (Leaders develop strategy principles and act as reference models) and sub-criterion 1.d (Leaders enhance a culture of excellence throughout the organisation). These sub-criteria produce the lowest results generally, especially when compared to the other group of profit-making companies (P).
- The smallest gap between the profit-making companies (P) and the selection of best companies is in sub-criterion 1.c (Leaders involved with external stakeholders), which is also the best for the average group.
- **CONCLUSION**: Group (P) reveals the presence of teams of leaders who define strategy and enhance a culture of excellence, unlike the leadership teams in Group (L). The difference is clear.

### 3.2.2. Criterion 2 (Strategy):

- Companies in group (L) returned extremely low values in sub-criterion 2.c (Strategy is developed, reviewed and updated) and Criterion 2.d (Strategy is communicated, implemented and supervised).
- All subcriteria are relatively high for Group (P) and relatively close to the best selection group.
- **CONCLUSION**: Group (P) companies have a clearly defined strategy which they implement, develop, communicate and update, whereas the opposite occurs with Group (L) companies.

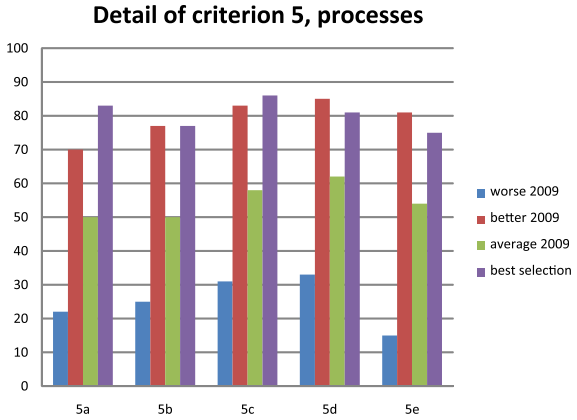



### 3.2.3. **Criterion 3 (Personnel):**

- A very low value was obtained by Group (L) companies in sub-criterion 3.a (Personnel management systems support and are in line with the organisation's strategy) and sub-criterion 3.e (The organisation's personnel receive reward and recognition).

- The highest values for Group (P) companies were seen in the afore-mentioned sub-criterion 3.a and sub-criterion 3.b (Employee knowledge and skills are developed).
- In general, this criterion is the one that is furthest from the selection of best companies.
- **CONCLUSION**: Group (L) companies do not have a Human Resources policy and/or strategy, whereas Group (P) companies run and maintain plans and schemes in this area.




### 3.2.4. Criterion 4 (Alliances and Resources):

- The lowest – extremely low – value for Group (L) companies is seen in sub-criterion 4.e (Information and knowledge management to support decision-making), whereas Group (P) companies obtain a comparatively higher result in this sub-criterion.
- The biggest difference between Group (L) and Group (P) companies is seen in sub-criterion 4.b (Economic and financial resource management to ensure sustained success).
- Sub-criterion 4.b is the one in which the result for Group (P) companies is closest to the best selection. They also produce similar values in sub-criterion 4.a (Management of suppliers and partners for mutual benefit).
- **CONCLUSION**: A relatively high value is seen in 4.c (Building and Plant & Machinery management) for both groups, in which Group (P) companies were seen to exercise much more efficient management of information and knowledge, as well as stronger alliances with partners and suppliers.

### 3.2.5. Criterion 5 (Processes, Products and Services):

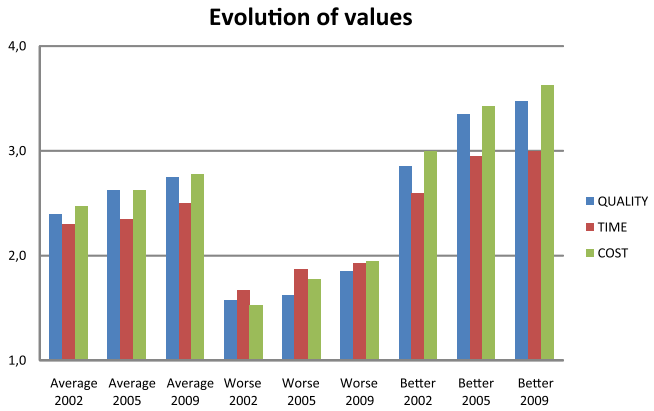
- The average value was the highest for both groups in criteria 1, 2, 3, 4, and 5.
- The low value obtained by Group (L) companies in 5.e (Relations with customers are managed and improved) is a significant highlight, whereas Group

(P) companies returned the highest value here, more so than even the best selection group.

- The highest value, even for Group (L) companies, is in 5.d (Production and Distribution), in line with these companies' prevailing industrial philosophy.
- **CONCLUSION:** The general business approach is an industrial philosophy, although somewhat lacking in orientation towards processes and customer relations in Group (L) companies. For Group (P) companies, values are generally high and close to the best selection. This is the criterion with the best average score.

### 3.3. Facility assessment results - Installations

Moving on to an analysis of Quality, Costs and Time from the Manufacturing point of view and using Kobayashi's Key 20 model for the same period, the following results are seen:




**QUALITY**: This includes Quality Management, Supplier Management, Plant & Machinery maintenance and Minimal Control Manufacturing:

- The average value increases over the period, although growth is greater in Group (P) companies.
- Above all, this is thanks to the Supplier Management and Plant & Machinery Maintenance factor.
- The influence of Quality Management grew between 2002 and 2005 and remained fairly stable thereafter.

**TIME**: This includes inventory reduction, quick changeover technology, coupled production processing and production programming:

- Stagnation is also apparent between 2005 and 2009, both for the average group and for Group (L) and Group (P) companies.
- Time is the lowest value of the three under analysis (Cost, Quality and Time)
- The greatest differences between Group (P) and Group (L) are seen in Pro-

duction Management. The rest of the factors are closer to the Best Selection group than in the case of Quality.

**COST**: This includes an analysis of production costs, preparing people to make improvements, efficiency control and use of ICTs:

- This is where the greatest difference occurs between the two groups (P) and (L) and slightly higher than in Quality.
- It continued to grow between 2005 and 2009, unlike Quality.
- The four factors comprising Cost improved for Group (P) compared to Group (L) companies,

All of which implies that:

- Group (P) companies improve throughout the cycle, especially in Cost and Time.
- The gap between Group (P) and Group (L) widens (except in Quality)
- The greatest differences can be seen in:
  - Production management.
  - Production cost analysis.
  - Efficiency control.
  - Use of ICTs
  - Maintenance management
  - Preparing people to make improvements.

### 3.4. Data linked to the Innovation factor

Finally, on the basis of field data collected in 2010-2011, the results for both groups in certain factors relating to Innovation as a means of driving change are presented. Firstly, we analysed the organisational capacity and approach to R&D among the companies in the two groups under study – those that report profits for the period 2005-2009 and those whose business underwent hardship and difficulties in the same period. Thus, the variables taken into consideration are as follows:

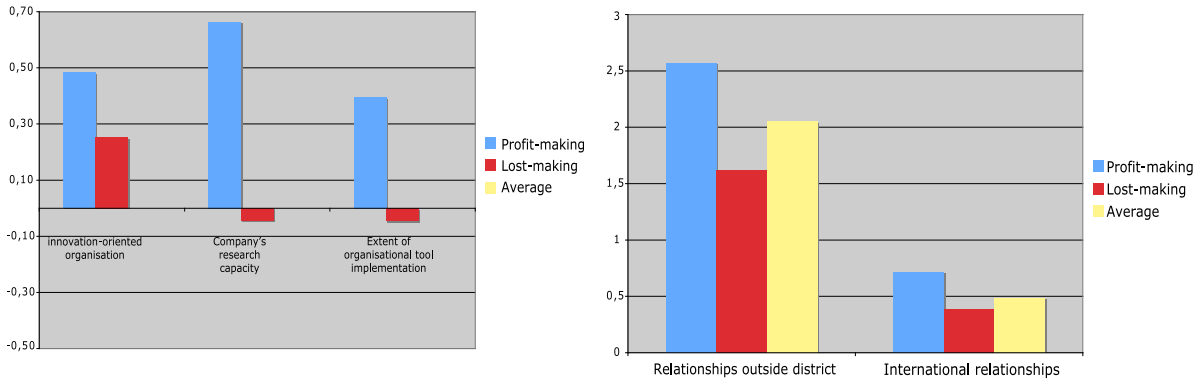
- **Innovation-oriented organisation**: this variable measures the degree of formality a company presents in its internal processes to strengthen collaboration and the standard of mechanisms and incentives designed for company employees to detect and develop new ideas. Likewise, it pinpoints the existence of formal mechanisms for processing external information and initiatives to improve the skills of the company's human resources. At the same time, it also measures to what extent company employees bear influence on the design of internal processes and decision-making. All of this is concen-

trated into a single standard indicator by means of factorial analysis of the 7 items covered by the Innovation survey.

- **Company's research capacity**: this measures the degree of internal research-dedicated activity, the development of inter-departmental workgroups and employee rotation, participation in forums and conferences, collaboration projects with other agents, publication of technical articles, etc. As in the previous case, various items are concentrated into a single indicator by means of factorial analysis in order to provide a comparable basis.

- **Extent of organisational tool implementation**: this variable measures the degree of formality with which the company develops and applies strategic plans, innovation projects, IT management systems, quality management systems, etc. This variable is also reduced by means of factorial analysis to provide a single standard result.

The results obtained for the first set of variables and indicators analysed can be seen in the graphs below:



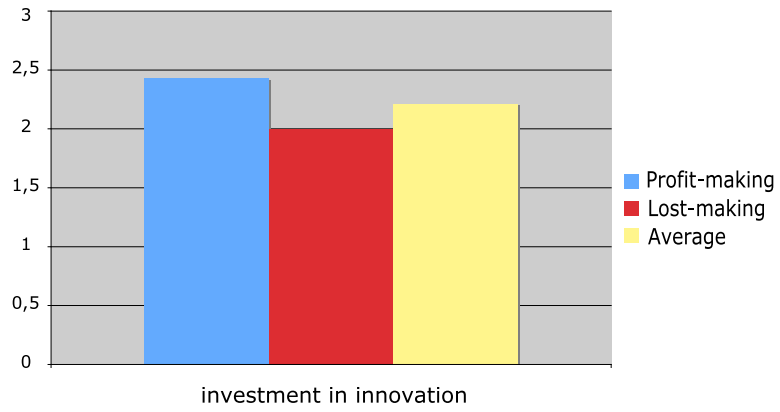

The results thus obtained show that both successful and unsuccessful firms have higher than average levels in innovation-oriented organisation. However, the results for the other two variables – company's research capacity and extent of organisational tool implementation – reveal significant differences between those companies comprising the group with the best performance and those that form the group of companies with the weakest performance.

Apart from organisational capacity, the extent of the company's external relationships was also analysed. Such relationships are those that the company establishes with agents located outside their geographical location, both on a national and international level, such as: customers, suppliers, technology institutes, universities, etc. This type of relationship provides new knowledge that is not tainted by redundant data from industrial clusters highly concentrated around a single district, such as in the case of the ceramic sector that forms the subject of this study. This section returns two variables: one which contemplates the existence of relationships with agents outside the district on both a national and international level, while the second variable focuses exclusively on the company's international relationships (See graph: Companies' external relationships).

In the comparison between both groups of companies in our analysis with regard to their relationships outside their local district, Group (L) companies reporting poor results in the period are clearly seen to have a weaker performance than companies reporting profits (P), who score higher than average in both factors – the one that covers relations on both a national and international scale and the one that only focuses on international relations. This is extremely significant, as it may well indicate that one of the reasons behind the failure of the loss-reporting companies is their weakness in obtaining information from external sources – this concept is remarked on further in the conclusions.

Finally, another variable we computed measures the level of investment in Innovation by our sample firms, expressed as a percentage of total annual costs. That produces a range of 1 to 6, where 1 represents a level of investment below 1%, while 6 is for those companies that spend more than 15% of their total outgoings on R&D.

The results referring to the companies' level of investment in Innovation can be seen in the graph below:




This part of the study also reveals that the firms with the weakest performance report a level of investment in innovation below average, as depicted in the graph. Firms with the best performance are heavier investors than the average for the entire sample, which strengthens the argument that innovation-related activities tend to lead to improved business performance and financial results.

## 4. OVERALL CONCLUSIONS:

The following features are especially noteworthy in view of financial performance:

- The gradual deterioration in Profitability and Leverage for companies reporting losses and the increase in the gap between them and companies reporting profits.
- The same deterioration seen when the EBITDA to Production Costs ratio (%) is measured.

- The difference between the two groups in the Employment Costs to Production Costs ratio in percentage terms features as a clearly determining factor for performance.

**From the management point of view,** what clearly differentiates the two groups as far as their Management Model and Financial Performance go is the following:

- The best-performing companies have teams of leaders that define strategy and strengthen the culture of excellence, unlike the leadership team in the worse-performing firms. The difference is clear.
- The best-performing companies have a clearly defined Business Strategy, which they then implement, develop, communicate and update, again unlike the group of worst-performing firms.
- The group of worst-performing firms do not have an HR policy and/or strategy, whereas the best-performing companies do maintain clear plans in that area.
- The best-performing companies have much better information and knowledge management as well as alliances with partners and suppliers.
- The general business philosophy is an industrial one, although the worst-performing firms reveal a lack of focus on processing and a significant lack of focus on customer relations.
- In the sub-criteria indicated above, the lowest scores obtained by the worst-performing companies remained more or less stable or with minimal variation throughout the 2002-2009 cycle.
- The average value went up slightly.
- Growth was much greater among the best-performing firms.
- The gap between the best-performing and worst-performing firms grew over the period.
- The scores obtained by the worst-performing companies were significantly low, whereas the best-performers revealed relatively high values.

**With regard to the Industrial concepts of Quality, Time and Cost:**

- The group of best-performing companies improved throughout the entire period, especially in Cost and Time.
- The gap between them and the worst-performing firms grew wider (except in Quality).

The main differences can be found in:

- Production management.

- Production cost analysis.
- Efficiency control.
- Use of ICTs.
- Maintenance management.
- Preparing people to make improvements.

**With regard to the Innovation factor:**

- Companies reporting profits have implemented organizational tools and a stronger in-house research capacity.
- Likewise, the profit-reporting companies are more focused on wider external relations that go beyond the obvious direct customer and supplier.
- Although the difference between them is not huge, investment in Innovation was above average for the profit-making companies and below average for the worst-performing firms.

## REFERENCES:

[1] Albors J. y Hervás J.L. 2008: Dinámica de innovación en una región intermedia: el caso de la Comunidad Valenciana. Ed. Tirant lo blanc.

[2] Bou Llusar JC, Escrig Tena AB, Roca Puig V, Beltran Martín I. 2002. La situación de la gestión de calidad en la empresa cerámica. Revista de treball, economía i societat(24): 25-38

[3] Budí V. 2008. El distrito de la Cerámica de Castellón. Mediterráneo Económico 13: 383-407

[4] Camison-Zornoza C. 1999. Estilos de aprendizaje, valores organizativos y competitividad en el sector cerámico: un estudio de casos. Revista Europea de Dirección y Economía de la Empresa 8(1): 41-62

[5] Camison-Zornoza C, Molina FX. 1998. El Distrito industrial cerámico Valenciano: ¿mito o realidad competitiva? Revista Valenciana d'Estudis Autonòmics 22: 83-102

[6] Corma F. 2011: "Innovación, Innovaciones y Empresa Innovadora". Ed. Díaz de Santos

[7] Corma F. 2006: "Evaluación de la gestión empresarial del cluster cerámico basada en criterios EFQM" Qualicer

[8] Corma F y Carda J.B. 2006: "La gestión de la fábrica como factor de competitividad. Estudio de Benchmarking industrial del cluster cerámico" Qualicer

[9] Corma F. 2007: "Modelo de innovación en el cluster cerámico". Ed. ATC

[10] Corma F. 2005: Aplicaciones prácticas del Modelo EFQM de Excelencia Empresarial. Ed. Díaz de Santos

[11] Fernandez de Lucio I, Gabaldón D, Gómez C. 2005. La innovación en el sector de pavimentos y revestimientos cerámicos de la Comunidad Valenciana. Alto Consejo Consultivo en I+D de la Presidencia de la Generalitat Valenciana: Valencia

[12] Hervás Oliver JL, Dalmau Porta JI, Albors Garrigós J. 2008. Influencia de los recursos y capacidades territoriales sobre las empresas en un distrito industrial. Evidencia empírica para el sector cerámico en España. Economía Industrial(369): 213-224

[13] Martinez-Chafer L, Molina FX. 2011. Restricciones en la financiación de la innovación. El caso de la Comunidad Valenciana. Investigaciones europeas de dirección y economía de la empresa 2 (17): 143 – 159.

[14] Molina FX. 1997. Sistemes Productius Descentralitzats: Factor Territorial i Estratègies Empresarials. Comite, Econòmic i Social de la Comunitat Valenciana en la Serie 7 (Economía y Empresa), Fundació Bancaixa: Valencia

[15] Molina FX, Martínez MT. 2009. Too much love in the neighborhood can hurt: how an excess of intensity and trust in relationships may produce negative effects on firms. Strategic Management Journal 30(1013): 1023

[16] Oltra Mestre MJ, Flor Peris ML, Alegre Vidal J. 2002. Identificación de empresas innovadoras a partir de indicadores de la actividad de innovación tecnológica: una aplicación en el sector español de pavimentos y revestimientos cerámicos. Revista Europea de Dirección y Economía de la Empresa 11(3): 121 - 138