

# An Analysis of Factors Impacting Performance of Spanish Manufacturing Firms

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**ABSTRACT.** This paper reports the results of a study that examined the influence of competitive factors (product innovation, staff and planning issues, quality product, customer orientation and financial attractiveness) on firm performance among 543 Spanish manufacturing firms. The results showed that (1) managers' rankings of the importance of competitive factors were positively associated with firm productivity; and (2) importance of (a) financial attractiveness and (b) staff and planning issues were positively associated with ROA. Understanding factors that impact performance can provide firms with more insight into issues affecting investment decisions. Better investment decisions can enable the firm to become more competitive and lead to greater productivity and employment. Becoming more competitive is especially important as countries continue economic integration and expand world trade.

**SOMMAIRE.** Le présent article présente les résultats d'une étude portant sur l'influence de facteurs concurrentiels (innovation de produits, problèmes de personnel et de planification, produit de qualité, approche client et attrait financier) sur la performance de 543 entreprises manufacturières espagnoles. Ces résultats montrent que : 1) la façon dont les directeurs classent les facteurs concurrentiels par ordre d'importance est en association positive avec la productivité de l'entreprise ; et 2) l'importance de l'attrait financier et des problèmes de personnel et de planification est en association positive avec ROA. Une compréhension des facteurs qui affectent la performance peut donner aux entreprises un meilleur aperçu des problèmes confrontant les décisions d'investissement. De meilleures décisions d'investissement permettent à l'entreprise de devenir plus concurrentielle, et conduisent à une hausse de l'emploi et de la productivité. La compétitivité revêt de plus en plus d'importance à mesure que les pays poursuivent leur intégration économique et étendent leur commerce mondial.

## Introduction

Firm performance is one of the most basic issues of concern for many firm stakeholders, including, for example, owners, employees, suppliers, and investors. The ultimate responsibility for the evaluation and performance of a firm resides with the firm's managers. Research on firm performance has commonly argued that a wide variety of factors can impact firm performance (Chandler and Hanks, 1998). A manager's beliefs about performance and factors that impact performance ultimately determine the development and implementation of management policies (Brigham and Houston, 2004).

Performance is also related to economic development and social policy issues. An economy composed of strong performing firms will generate employment and a wide variety of taxes that are supportive of government policy initiatives. Weak performing firms will be unable to provide strong employment growth or tax revenues. A better understanding of factors influencing performance will enable policy makers to develop programs that promote economic growth and firms to develop better operational and strategic plans. Perceptions of what factors influence performance would directly impact a wide variety of operational and strategic decisions by the firm. The nature of these decisions,

including for example, expenditures on staff, research and development, product improvement, and employment, may ultimately impact the economic conditions.

This paper reports the results of a study that examined the relationship between the performance and competitive influence factors (product innovation, staff and planning issues, quality product, customer orientation and financial attractiveness) of 543 Spanish manufacturing firms. Performance measures used included (1) manager perceptions of productivity and (2) financial performance. Few studies of this type have been conducted on firms in Spain despite the importance of productivity as a key indicator of firm efficiency and ability to remain competitive. Studies on performance and productivity can provide important insight and information to multiple constituents. Understanding factors that impact performance can provide firms with more insight into issues affecting investment decisions. Better investment decisions can enable the firm to become more competitive and lead to greater productivity and employment. Becoming more competitive is especially important as countries continue economic integration and expand world trade.

The remaining paper is organized as follows. Section 2 provides background information on the Spanish economy and role of manufacturing in the Spanish economy. Section 3 develops background information on financial performance. Section 4 explains the methodology used in the analysis that is reported in Section 5. The results are discussed in Section 6. Section 7 concludes the paper.

### Overview of Spanish Economy

The Spanish economy has recently been experiencing one of the strongest rates of GDP growth in the European Union. The GDP growth rates during 1999 and 2000 were 4% and 4.1%, respectively. During 2001 and 2002 the Spanish economy experienced slower growth as a result of the general economic slowdown throughout much of the world (including Europe and the United States) and weaker domestic demand. During 2001 and 2002, Spanish GDP growth was 2.7% and 1.9%, respectively—one of the lowest economic growth rates since 1993. Nevertheless, this economic growth was still the highest among the large European economies. However, in spite of this growth, the index of Spanish firms' productivity is the lowest in the OCDE context (Medel and Martínez, 2004).

The manufacturing sector in the Spanish economy has been important and a vibrant component to economic growth. Approximately 2.5 million workers were employed by manufacturing firms in 2002, an increase of more than 3% since 1999. Sales among manufacturing firms increased approximately 8% between 1999 and 2002. Research and development expenditures increased more than 8.5% between 1999 and 2002. In 2002, the percentages of domestic and European Union manufacturing sales were approximately 47% and 39%, respectively. The remaining 14% of sales were made to other parts of the world (Instituto Nacional de Estadística, 2004). Slowdown in the manufacturing sector due to weak domestic and international demand that began in the second half of 2000 continued throughout 2001. The industrial production index increased by 4.5% in 2000, declined 1.3% in 2001 and rose by only 0.2% in 2002. Weakness in the manufacturing sector of the Spanish economy led the Ministerio de Ciencia y Tecnología to initiate programs that were designed to (1) improve the financial and tax incentives for investment in innovation, (2) promote public guarantees for the acquisition of capital (especially for SMEs), and (3) provide incentives for sectors that required specific assistance (e.g., aerospace industry, the automobile industry, shipbuilding, textiles and the defense industries).

### Firm Performance

Previous studies have examined factors affecting SME performance from different perspectives. These perspectives include different methods of measuring performances as well as different variables influencing performance. Previous studies used both quantitative and qualitative measures of performance. Factors that have been examined as influencing performance included strategy, human capital, reputation, strategic relationships, and resource availability.

#### *Measuring of Performance*

Strong performance should be one of the most important goals of the firm. Highly performing firms are positioned to generate a wide range of company and society benefits that include attracting resources, generating jobs, and creating wealth. Firms that are underperforming are often uncompetitive and experience financial distress (Brigham and Houston, 2004). Venkatraman and Ramanujam (1987) considered that financial performance measured the fulfillment of the economic goals of the firm. Chandler and Hanks (1994) and VanderWerf (1994) suggested that measures of financial performance were among the most important goals of the firm. An accurate measure of performance can provide reliable insight into what affects performance and how firms can develop better strategies, deploy resources, meet consumer needs, and compete. Inappropriate measures of performance will provide misleading results that lead to a weakened competitive position.

A number of previous studies relied on financial information to measure performance. Chandler and Hanks (1994), VanderWerf (1994), and Venkatraman and Ramanujam (1987) measured performance using financial ratios such as net profit margin, return on equity, return on assets. Santos-Requejo and Gonzalez-Benito (2000) relied on various profit margin ratios to measure performance of Spanish firms. Shepherd et al (2000) stated financial profitability was one of the most important criteria used by venture capitalists in their assessment of the investment potential of firms. A number of studies (Cainelli et al., 2004; De Toni, 2001; Lau, 1997; Youndt, Snell, Dean and Lepak, 1996) have used productivity ratios to assess firm performance.

A potential problem with using financial information is that financial statements from SMEs may be unaudited and, thus, unreliable (Sapienza et al., 1988). Furthermore, accounting information may be altered by accounting norms or management decisions (Camisón, 2001; McGahan, 1999; Kaplan and Norton, 1993; Eccles, 1991). The use of only quantitative indicators may omit valuable intangible assets that impact firm competitiveness (Salgueiro, 2001; Camisón, 1997; Kaplan and Norton, 1993). A number of studies have emphasized that firm success is better understood and, thus, analyzed relative to competitors (Alonso and Barcenilla, 1999; Cuervo, 1993; Salas, 1992; AECA, 1988).

The analysis incorporates both qualitative and quantitative variables to measure firm performance for several reasons. First, a single measure (e.g., either qualitative or quantitative variable) has been cited as being an incomplete measure of performance (Alonso and Barcenilla, 1999; Cuervo, 1993; Salas, 1992; AECA, 1988). The use of only quantitative indicators, for example, omits valuable intangible assets affecting firm competitiveness (Salgueiro, 2001; Camisón, 1997; Kaplan and Norton, 1993). The use of quantitative indicators from accounting information, such as return on assets, have been used in past studies to measure firm performance and reflect management decisions as shown earlier (Camisón, 2001; Kaplan and Norton, 1993; Eccles, 1991). However, even accounting information only captures financial information. Finally since success may be considered

as a relative measure, the study examines a firm's competitive position relative to competitors'. Subjective measures are more appropriate for SMEs since objective measures tend to underestimate degree of innovation (Hughes, 2001). Earlier studies claimed that perceptual measures were highly correlated with objectives measures and have the advantage of facilitating comparisons among firms in different industries (Frishammar and Hörte, 2005; Zahra and Covin, 1993).

### ***Influences on Performance***

Issues related to business strategy have commonly been examined in relation to financial performance. Becchetti and Giovanni (2002) and Brophy and Shulman (1993) stated that the availability of external finance can provide liquidity that is necessary to facilitate firm performance potential. Shrader and Simon (1997) cited undercapitalization as a prime reason for poor performance. Winn (1997) recognized efficient asset utilization as being crucial for strong performance, growth, and business success. Poor asset utilization can be a precursor to poor performance and a deterioration of the firm's competitive capabilities. Brophy and Shulman (1993) confirmed that strong financial performance is a precursor to the firm's ability to attract investment and support innovation. Strategic market orientation was also directly linked with performance (Kholi and Jaworski, 1990; Narver and Slater, 1990; Pelham and Wilson, 1996).

Resource availability has been consistently cited as a pivotal issue and a common research theme on firm performance. Resource-based theory emphasizes the importance of a firm's resources (physical capital, human capital, and organizational resources) and capabilities in the competitive environment (Collis and Montgomery, 1995). This theory determines that firms are heterogeneous entities in idiosyncrasy, difficult to imitate in resources and capabilities (Barney, 1991; Connor, 1991; Rumelt, 1991; Wenerfelt, 1984). Resources include access to the full range of support that facilitates the firm's activities. Abundant resources enable firms to develop and pursue a wide range of strategic initiatives while resource scarcity can weaken the firm's competitive position (Chandler and Hanks, 1994; Mosakowski, 1993). Brush and Chaganti (1998) pointed out that effectively utilizing resources in conjunction with different business strategies can improve performance. They speculate that human and organizational resources play a greater role in explaining performance than strategy.

Soh (2003) suggested that increasing the number of strategic relationships can provide the firm with competitive information that can lead to improved financial performance. Network theory examines the relationship between SME network resources, activities and support relative to firm performance. SMEs that are able to access a broad and diverse network and who receive much support from their network are more successful than those who don't (Brüder and Preisendörfer, 1998). Green and Brown (1997) emphasized that information and resources also contribute to stronger company performance. SMEs with larger networks are better positioned to acquire the needed information and resources.

Other studies emphasized the importance of human resources on firm performance. West and Meyer (1998) found that the quality and diversity of ideas among management have impact performance. Chandler and Hanks (1998) and Brush and Chaganti (1998) found that human capital was a critical factor influencing firm performance. Santos-Requejo and Gonzalez-Benito (2000) confirmed that smaller staff led to higher profit margins and found that higher qualified staff had a positive impact on performance. Watson et al (2003) revealed that human capital is an important factor in assessing the investment potential of the firm due to the impact of human capital on financial performance.

Finally, new product innovation is important for firm performance. Hall (1993) showed that firms with high R&D spending have above-industry-average financial performance. Regev (1998) and Chaney et al (1991) found that innovating firms had higher labour productivity and sales growth than non-innovating firms. Heunks (1998) found that innovation increased firm productivity but not profits in the short-run due to the cost of innovation.

The following hypotheses are based on the findings of these previous studies:

*H1: Spanish manager perception of performance is directly associated with both internal and external operations.*

*H2: Spanish SME financial performance is directly associated with both internal and external operations.*

### Sample, Questionnaire, and Methodology

#### Sample

The sample consisted of 739 Spanish manufacturing firms with 10 or more employees. Data came from the *Asociación Española de Contabilidad y Administración de Empresas Factores Determinantes de la Eficiencia y Rentabilidad de las Pyme en España* project. This database contains qualitative and quantitative information gathered through a mail survey sent to managers of each firm. The questionnaire was developed and pretested during May to September, 2000. A total of 543 usable questionnaires were returned and used in the analysis. Financial information (matched with sample firms) was obtained from the SABI database (Informa S.A. and Van Dijk Bureau).

The sample design was based on a stratified sampling in finite population considering two variables: activity and size. The number of firms in each stratum was provided by the Directorio Central de Empresas elaborated by the Instituto Nacional de Estadística. Following this procedure the maxim sampling error was 3.68 with a significance level of 95%.

Sector				Size		
High-Technology	Medium-High Technology	Medium-Low Technology	Low Technology	Large	Medium	Small
7	113	161	262	32	148	363

The sample composition is shown in Table 1. Respondent firms were partitioned according to OECD (1997) categories of technological intensity. These categories, which are based on the level of technology specific to the sector (measured by the ratio of R&D expenditure to added value) and the technology embodied in the purchases of intermediate and capital goods, were used to classify technological intensity. The respondent firms were also segmented according to the European Union's (2003) criteria for firm size: (1) small firms: less than 50 employees and annual sales less than 7 million euros or total assets not larger than 5 million euros; (2) mid-sized firms: 50–249 employees and annual sales less than 40 million euros or total assets less than 27 million euros; and (3) large firms: more than 249 employees and annual sales more than 40 million euros or total assets greater than 27 million euros.

#### Questionnaire

The questionnaire contained two major sections. Each section was designed to collect specific information necessary for the analysis. The first section collected demographic

information about the firm and firm's manager (e.g. age of firm and manager, number of employees, and market served: regional, national, European community, or international). These questions were developed to collect information on characteristics of the company that were relevant to the study.

The second section asked respondents to rank the importance of 20 factors that affected firm performance during the previous two years using a 5-point Likert scale (1 = not important and 5 = very important). These factors were identified through a review of previous research on strategic factors affecting firm performance. The list of factors included growth based on access to new markets, continuous improvement in products/services, development of new products/services, prices lower than competition, superior product/service quality, R&D, cost reduction, manufacturing/commercial process flexibility, availability and quality of supplies, technological innovation, staff experience, customer service, customer orientation, marketing, brand, product diversification, reputation, centralized controls, and planning. Similar methodology was previously used in studies by Kotha and Vadlamani (1995), Arthur (1992), and Segev (1989). The second section also asked respondents to rank (1) staff productivity, (2) asset productivity, and (3) ability to obtain external capital relative to competitors using a five-point Likert scale (1 = much worse and 5 = much better). The rankings on staff and asset productivity were summed to form a new variable (referred to as productivity measure) that was used in the analysis. The scale reliability value of the new variable is 0.7 (Nunnally and Bernstein, 1994). This section also asked respondents to rank their ability to obtain external capital relative to competitors using a 5-point Likert scale (1 = much easier and 5 = much more difficult).

### **Methodology**

The results were initially summarized using univariate statistics (means and frequencies) to provide a better understanding of the respondents and characteristics of the responding companies. The sample was then evaluated by several segments to provide greater insight into sample characteristics and to justify further analysis.

Principal component analysis was used to form groups of related variables among the 20 factors thought to influence firm performance. Principle component analysis determines linear composites of the variables that display certain similar properties. A number of factors are produced and related variables can be sorted into categories according to the magnitude of loadings under each factor. Varimax rotation, a procedure through which each component correlates high with a smaller number of variables and low on the other variables, was subsequently used to enhance the interpretability of the principal components or factors. This procedure identified six factors.

Several multiple regression analyses used different dependent variables to measure firm performance (both qualitative and quantitative measures). The first multiple regression analysis examined the relationship between the managers' ranking of firm productivity (dependent variable), the six factors from the principal components analysis (independent variables—product innovation, internal controls, customer orientation, market recognition, efficiency, product quality), three control variables (age of firm, technological intensity of the firm, and size of firm), and financial attractiveness of the firm (e.g., ability to attract external capital) relative to competition.

Measure of productivity was used as a dependent variable due to the impact of productivity on performance. Measure of productivity may also lead to development and implementation of business strategy. The measure of productivity was developed by

summing rankings of (1) labor productivity relative to competition (1–5 Likert scale with 1 = much worse and 5 = much better) and (2) asset productivity relative to competition (1–5 Likert scale with 1 = much worse and 5 = much better) from the questionnaire.

$$PM = a_0 + b_1\text{Age} + b_2\text{TI} + b_3\text{Medium} + b_4\text{Large} + b_5F_1 + b_6F_2 + b_7F_3 + b_8F_4 + b_9F_5 + b_{10}F_6 + b_{11}\text{FA} + b_{12}e$$

where:

PM = Productivity Measure; Age = Age of Firm in Years (control variable); TI = Technological Intensity of Firm (control variable: 1=high and medium high, 0 = medium low and low); Size = Size of Firm (control variables: Medium [1 = medium 0 = other] Large [1 = large 0 = other]); F<sub>1</sub> ... F<sub>6</sub> = Factors 1–6 (from principal components analysis) FA = Financial Attractiveness

The next multiple regression used a 4-year average return on assets (1999–2002) as the dependent variable and the same independent variables. The purpose of this analysis was to understand the relationship between firm performance using ROA and the independent variables. The analysis was extended to include total asset turnover and net profit margin (components of ROA using the DuPont formula).

$$ROA = a_0 + b_1\text{Age} + b_2\text{TI} + b_3\text{Medium} + b_4\text{Large} + b_5F_1 + b_6F_2 + b_7F_3 + b_8F_4 + b_9F_5 + b_{10}F_6 + b_{11}\text{FA} + b_{12}e$$

$$TAT = a_0 + b_1\text{Age} + b_2\text{TI} + b_3\text{Medium} + b_4\text{Large} + b_5F_1 + b_6F_2 + b_7F_3 + b_8F_4 + b_9F_5 + b_{10}F_6 + b_{11}\text{FA} + b_{12}e$$

$$NPM = a_0 + b_1\text{Age} + b_2\text{TI} + b_3\text{Medium} + b_4\text{Large} + b_5F_1 + b_6F_2 + b_7F_3 + b_8F_4 + b_9F_5 + b_{10}F_6 + b_{11}\text{FA} + b_{12}e$$

where:

ROA = Mean Return on Assets (1999–2002); TAT = Total Asset Turnover (1999–2002); NPM = Net Profit Margin (1999–2002); Age = Age of Firm in Years (control variable); TI = Technological Intensity of Firm (control variable: 1 = high and medium high, 0 = medium low and low); Size = Size of Firm (Control Variables: Medium [1 = medium 0 = other] Large [1 = large 0 = other]); F<sub>1</sub> ... F<sub>6</sub> = Factors 1–6 (from principal components analysis); FA = Financial Attractiveness

The control variables were used as a result of discussion and findings in previous research. For example, technological level was shown to be related to performance in several studies (Acs and Audretsch, 1990; Acs and Audretsch, 1991; Oakey, 1991; Poutziouris et al., 2000; Audretsch, 2002). Additionally, a number of studies (Fu et al., 2002; Calvo Flores et al, 2000; Sanchez and Bernabe, 2002; and Majumdar, 1997) found that size and profitability can be related due to advantages associated with production flexibility (Fariñas and Martín, 2001), adaptability and more flexible bureaucratic environment (Camisón, 2001), absence of agency problems (Fernández and Nieto, 2001), and demand proximity (Vossen, 1998). Jovanovic (1982) and Durand and Coeurderoy (2001) found that age may be related to performance due to “liability of newness” (e.g., higher failure rates among newer firms), “liability of adolescents” (e.g. failure rates associated with competition during firm’s later years), and “liability of obsolescence” (e.g. failure rates associated with older firm).

## Results

### *Demographic Characteristics*

The demographic characteristics of the sample firms are shown in Table 2. Almost two-thirds of the responding firms (66.9%) are small, and 27.3% are medium-sized firms. The manager of more than the 50% of the responding firms had a university degree. Approximately 45.4% of sales among the sample firms are to the national market, 37.5% to a regional market, and 12.1% to the European Union market.

Firm Characteristic	Percentage of Firms
Educational Level of Manager	
Primary School	19.7
Secondary School / Professional Formation	24.7
3 years–university	19.9
>3 years–university	35.8
Market Served	
Regional	37.5
National Market	45.4
European Union	12.1
International	5.2
Number of Employees	
<50	363
50–250	148
>250	32

### *Mean Rankings of Influence Variables*

Table 3 shows manager mean rankings of the importance of the competitive influence factors on firm performance. Results in the table show that the majority of the mean rankings were above 3.0. This provides support for the relative importance of these influence factors on firm performance. Factors with rankings higher than four are product/ service quality (4.30) and firm's reputation (4.17). Factors that have mean rankings less than 3.0

Variable	Mean
Product/Service Quality	4.30
Firms Reputation	4.17
Products/Services Improvements	3.88
Staff Experience	3.74
Customer Orientation	3.71
Customer Service	3.68
Cost Reduction	3.59
Availability/Quality Supplies	3.56
Staff Qualifications	3.53
Flexible Manufacturing Processes	3.46
Product Diversification	3.45
New Products/Services	3.38
Brand identity	3.28
Growth	3.08
Technological Innovation	3.01
Planning	2.99
Research and Development	2.98
Centralized Control Procedures	2.95
Prices Lower Than Competitors	2.78
Marketing	2.85
Financial Attractiveness	3.63
Ranking of Productivity	3.48
Return on Assets	4.62%
Total Asset Turnover	1.50
Net Profit Margin	2.95%



include planning, research and development, centralized control procedures, prices lower than competitors, and marketing. Generally, these mean rankings suggest that managers believe that variables associated with customers have a greater impact on firm performance than variables associated with internal operations.

The top five mean rankings are related to issues directly impacting the firm's relationship with customers and, thus, highlight managers' beliefs about the importance of customer orientation. Product/service quality and products/services improvements provide evidence of the importance of high-quality products/services while staff experience, customer orientation, and customer service provide evidence for the importance of high-quality customer-firm interaction. The impact of these five variables ultimately affects the firm's reputation and, thus, ability to effectively compete in the market.

The five lowest mean rankings (planning, research and development, centralized control procedures, prices lower than competitors, and marketing) are associated with issues that are related to the internal operations of the firm. Planning is central to a wide variety of internal operational decisions. Internal decisions often begin with development of operational and strategic planning.

Table 3 also shows mean rankings for the managers' rankings of relative firm productivity (3.48), return on assets (4.62%), total asset turnover (1.50), and net profit margin (2.95%). The mean ranking of relative productivity suggests that the managers believe that their firm is slightly more productive than competitors. The positive average return on assets and net profit indicate that firms are generally profitable.

#### **Factor Analysis**

Table 4 shows the results of varimax rotated factor analysis of the rankings of the 20 factors that influence firm performance. Factor loadings above 0.4 were considered to be high enough to be included in a factor grouping. According to the Kaiser-Meyer-Olkin measure of sampling adequacy (K-M-O = 0.874), the degree of common variance among the initial variables is "meritorious" boarding on "marvelous". Another indicator of the strength of the relationship among variables is Bartlett's test of sphericity. This test ( $\chi^2 = 3251.92$  df: 190 sig.: 0.000) shows that the sample correlation matrix does not come from a population in which the correlation matrix is an identity matrix, so the non-zero correlations in the sample matrix are not due to sampling errors.

Factor 1 included four influence variables: growth, product/service improvements, research and development, and technical innovation. Factor 1 was labeled as Product Innovation. Factor 2 included three influence variables: staff experience and qualification, centralized control procedures and planning. Factor 2 was labeled as Internal Controls. Factor 3 (labeled Customer Orientation) included two influence variables: customer service and customer orientation. These variables reflect the importance of customer orientation as an important component of the firm's market orientation.

Factor 4 included three influence variables: marketing, brand identity, product diversification. Factor 4 was labeled Market Recognition. Factor 5 included five influence variables: prices lower than competitors, cost reduction, flexible manufacturing processes, and availability/quality of supplies. These variables in Factor 5 are consistently related to the improvement of the manufacturing process efficiency. Factor 5 was labeled Efficiency. Factor 6 included two influence variables: product/service quality and firm reputation. This last factor shows the importance of quality as a competitive factor and was labeled Product Quality.

**Table 4. Component Loadings for Competitive Factor (n=543)**

Variables	Product Innovation	Internal Controls	Customer Orientation	Market Recognition	Efficiency	Product Quality
Growth	0.595					
Products/Services Improvements	0.583					0.459
New Products/Services	0.736					
Prices Lower Than Competitors					0.635	
Product/Service Quality						0.702
Research and Development	0.701					
Cost Reduction					0.639	
Flexible Manufacturing Processes					0.535	
Availability/Quality Supplies					0.537	
Technological Innovation	0.560					
Staff Experience		0.655				
Staff Qualifications		0.686				
Customer Service			0.827			
Customer Orientation			0.802			
Marketing			0.406	0.449		
Brand Identity				0.834		
Product Diversification				0.687		
Firms Reputation				0.417		0.537
Centralized Control Procedures		0.659				
Planning		0.680				
Crombach-alpha	0.739	0.744	0.797	0.624	0.519	0.642
Kaiser-Meyer-Olkin	0.874					
Percentage of total variance explained	60.245					

Only loadings > 0.4 are shown

The scale reliability values for each factor (coefficient alpha) are also reported in Table 4. All scales have alpha coefficients between 0.52–0.74, which suggests moderate to high reliability (Van de Ven and Ferry, 1980). The factors from the principal components analysis can be grouped in two categories: competitive factors related to internal processes (product innovation, internal control and efficiency factors) and competitive factors related to market recognition (customer base, market recognition and quality factors).

#### **Regression Analysis**

Tables 5, 6, 7, and 8 show the results of the regression analyses using the different dependent and independent variables. Absence of multicollinearity was verified after analyzing the correlations among the different independent variables and the variance inflation

factor collinearity diagnostic. The variance inflation factor collinearity diagnostic is shown in Tables 5, 6, and 7. Values close to 1.0 indicate that the independent variables are not correlated and precision of estimates is not lost due to multicollinearity. The purpose of the regression was to analyze the relationship between the influence factors and firm performance rather than to predict future performance. Table 5 shows the results using the manager's perception of productivity as the dependent variable. The results show acceptable model fit (F-statistic=26.035; significance= 0.000; adjusted  $R^2=0.344$ ). The coefficients for the seven independent variables are significant and positive. The standardized coefficients show that the most important influence variable is financial attractiveness (0.359), followed by internal controls (0.249) (which includes employee characteristics), quality (0.157), and product innovation (0.131). The coefficient for age (negative and significant), verifies the liability of obsolescent. This result provides strong support for hypothesis one.

Independent Variables (F=26.035 <sup>1</sup> R <sup>2</sup> =0.344)	Parameter Estimate	t-value	p	VIF*
Age	-0.108	-2.923	0.004	1.103
TI	-0.023	-0.624	0.533	1.052
Medium	0.015	0.401	0.689	1.106
Large	0.038	1.025	0.306	1.097
Product Innovation	0.131	3.643	0.000	1.044
Internal Controls	0.249	6.818	0.000	1.071
Customer Base	0.119	3.354	0.001	1.014
Market Recognition	0.076	2.117	0.035	1.044
Efficiency	0.129	3.632	0.000	1.016
Quality	0.157	4.380	0.000	1.028
Financial Attractiveness	0.359	9.736	0.000	1.092

Standardized regression coefficients are shown: 1 = Significant at 1%; 2 = Significant at 5%; \* Variance inflation factor

Table 6, which is used to assess short-term performance, shows the results using average return on assets (1999–2002) as the dependent variable. The results show modest model fit (F-statistic= 1.932; significance=0.033; adjusted  $R^2=0.019$ ). The coefficients for Internal Control (0.097) and Financial Attractiveness (0.082) are significant. The positive coefficient for Internal Control indicates that higher ROA is associated with more qualified staff and more planning/control within the firm. The positive coefficient for Financial Attractiveness indicates that higher ROA is associated with easier access to external capital relative to the firm's competitors. The regression coefficients on the remaining influence factors are not significant.

The results suggest that the competitive factors that are associated with ROA are those related to employee characteristics, planning issues and financial attractiveness. Additionally, the coefficient for the technological intensity (0.108) and for the dummy variable that represents the medium size category (-0.101) are significant. This finding reveals the importance of taking into account the sector and size variables.

Table 7 shows the results using average asset turnover (1999–2002) as the dependent variable. The results show modest fit (F-statistic=3.645; significance=0.000; adjusted  $R^2=0.052$ ). The coefficient for Product Innovation (-0.122) is significant. The negative

**Table 6. Regression Analysis: Relationship Between Mean Return on Assets (1999–2002) and Independent Variables (n=543)**

Independent Variables (F=1.932 <sup>2</sup> Adjusted R <sup>2</sup> =0.019)	Parameter Estimate	t-value	p	VIF*
Age	0.020	0.433	0.665	1.103
TI	0.108	2.437	0.015	1.052
Medium	-0.101	-2.214	0.027	1.106
Large	0.002	0.050	0.960	1.097
Product Innovation	0.008	0.184	0.854	1.044
Internal control	0.097	2.182	0.030	1.071
Customer Base	0.026	0.594	0.553	1.014
Market Recognition	-0.002	-0.044	0.965	1.044
Efficiency	-0.045	-1.038	0.300	1.016
Quality	0.007	0.163	0.870	1.028
Financial Attractiveness	0.082	1.826	0.068	1.092

Standardized regression coefficients are shown: 1 = Significant at 1%; 2 = Significant at 5%; 3 = Significant at 10%; \* Variance inflation factor

**Table 7. Regression Analysis: Relationship Between Mean Asset Turnover (1999–2002) and Independent Variables (n=543)**

Independent Variables (F=3.645 <sup>1</sup> Adjusted R <sup>2</sup> = 0.052)	Parameter Estimate	t-value	p	VIF*
Age	-0.116	-2.594	0.010	1.103
TI	-0.042	-0.965	0.335	1.052
Medium	-0.137	-3.060	0.002	1.106
Large	-0.078	-1.765	0.078	1.097
Product Innovation	-0.122	-2.807	0.005	1.044
Internal control	0.075	-1.710	0.088	1.071
Customer Base	0.011	0.264	0.792	1.014
Market Recognition	0.001	0.034	0.973	1.044
Efficiency	-0.007	-0.162	0.872	1.016
Quality	-0.007	-0.159	0.874	1.028
Financial Attractiveness	0.003	0.071	0.943	1.092

Standardized regression coefficients are shown: 1 = Significant at 1%; 2 = Significant at 5%; 3 = Significant at 10%; \* Variance inflation factor

**Table 8. Regression Analysis: Relationship Between Mean Net Profit Margin (1999–2002) and Independent Variables (n=543)**

Independent Variables (F=1.222 Adjusted R <sup>2</sup> =0.005)	Parameter Estimate	t-value	p	VIF*
Age	0.062	1.365	0.173	1.103
TI	0.046	1.028	0.305	1.052
Medium	-0.100	-2.196	0.029	1.106
Large	-0.013	-0.275	0.784	1.097
Product Innovation	-0.021	-0.470	0.639	1.044
Internal control	0.090	1.997	0.046	1.071
Customer Base	-0.006	-0.141	0.888	1.014
Market Recognition	-0.063	-1.422	0.156	1.044
Efficiency	-0.024	-0.539	0.590	1.016
Quality	-0.036	-0.809	0.419	1.028
Financial Attractiveness	0.036	0.781	0.435	1.092

Standardized regression coefficients are shown: 1 = Significant at 1%; 2 = Significant at 5%; 3 = Significant at 10%; \* Variance inflation factor

coefficient for Product Innovation indicates that higher asset turnover is associated with less effort devoted toward innovative activities within the firm. The impact of the costs associated with innovation and the investment necessary for the firm to achieve a superior competitive position has a negative impact on asset turnover. Furthermore, companies that embark on aggressive growth strategies often find their asset effectiveness severely compromised in the short term (Winn, 1997).

The coefficient for Internal Controls (0.75) is also significant. The positive coefficient indicates that better asset utilization is associated with better staff qualifications, planning, and internal controls. The results from this model also show that smaller firms have higher asset turnover than larger firms.

Table 8 shows the results using average net profit margin (1999–2002) as the dependent variable. The independent variable Internal Control (0.090) is significant and indicates that higher net profit margin is associated with factors related to better internal controls. This result should be interpreted with caution, however, because the overall model is not significant. The results in Tables 6 and 7 provide limited support for hypothesis two.

### Discussion

The findings of the study provide a number of managerial implications. Factor analysis revealed that managers' perceptions of their firm's competitive position can be grouped into product innovation, internal controls, financial attractiveness, customer orientation, market recognition, efficiency and product quality categories. Further analysis showed that the more important these factors, the greater the manager's perception about competitive position of the firm relative to competition. Additionally, ROA is positively influenced by internal controls and financial attractiveness. Asset turnover, on the other hand, is negatively influenced by the product innovation.

The positive association between innovation and performance verifies the findings of several studies (Chaney et al., 1991; Grant, 1991; Damanpour and Evans, 1984; Damanpour et al., 1989). These findings are also consistent with Heunks (1998), who found that innovation tended to increase productivity but not profits in the short-run due to the innovation's cost.

The findings in this study also verified that Spanish manufacturing firms experience higher performance (as measured by ROA) by investing in human capital and planning issues. This finding is consistent with previous studies that found that a firm can be a source of sustainable competitive advantage through human resources that add value to production processes and are a unique resource (Santos-Requejo and Gonzalez-Benito, 2000; Youndt et al., 1996; Chandler and Hanks, 1998; Brush and Chaganti, 1998; Huselid, Jackson and Schuler, 1997).

The standard coefficients of the different regressions provide evidence for the high importance of financial attractiveness and internal controls as the most important contributors to the firms' competitive position in terms of both ROA and productivity. Financial attractiveness and internal controls may be closely linked. Effective internal controls provide evidence that the firm is efficiently operated. The degree to which a firm is able to implement effective internal controls is a factor evaluated by potential investors. Firms that have effective internal controls, especially relative to competitors, will be more financially attractive to potential investors.

The findings also showed that, in terms of productivity, product quality relative to competitors is one of the most important factors affecting business performance. Quality

not only enhances the reputation of the firm, it also can allow the firm to earn higher profits, expand market share, and generally to grow the business (Buzzell and Gale, 1987; Bigwood, 1997). Calantone and Knight (2000) confirmed that product quality plays an important role in performance. However, quality standards may be hard to achieve in some markets (Calantone and Knight, 2000). While industrial firms may prefer superior quality products, the effect of quality on corporate performance can be equivocal. If manufacturers are unable to pass-on the added costs when improving product quality, then profit margins will decline (Szymansky et al., 1993). This is verified for Spanish manufacturing firms in this paper. Quality is one of the three most important factors that determine the performance in terms of productivity, but not in ROA.

The findings provide strong support for hypothesis one. Managers believe that performance will be enhanced with better internal and external operational activities. This result suggests that managers recognize the value of effective strategies and market orientation. Belief in the value of these activities would likely lead to commitment, development, and implantation of strategic policy. This is consistent with findings by Soh (2003), Watson, Stewart, and BarNir (2003), Santos-Requejo and Gonzalez-Benito (2000), West and Meyer (1998), Chandler and Hanks (1998), and Brush and Chaganti (1998).

The findings provide limited support for hypothesis two. Factor analysis provided groupings of variables that were evaluated related to financial performance measures. The results indicated that variables grouped into product innovation and internal controls were associated with higher performance. This is consistent with findings by Hall et al. (1993), Chan et al. (1990), and Chaney et al. (1991).

### Conclusions

This paper examined the relationship between factors influencing Spanish firms' competitive position and performance. Firm productivity (qualitative variable) and return on assets (quantitative variable) were used as performance measures, and rankings of factors affecting firm performance and ability to attract capital were used as influencing variables. The availability of better information about factors impacting performance is important to understand so that firms are able to explore the ramifications of alternatives, develop contingent plans, and make informed decisions. The major findings from the study include (1) the positive impact of competitive factors on firm productivity; and (2) the importance of (a) financial attractiveness and (b) staff and planning issues relative to a firm's ROA.

The study provides insight into policy issues that may be useful for Spanish manufacturing firms. First, government and company policies should be developed that facilitate access to capital to Spanish SME manufacturing firms. Access to capital can provide the liquidity required to pursue market opportunities, develop innovations, and remain competitive. Second, firms should recognize that developing policies that promote effective planning and high-quality staff can lead to higher performance. High-quality staff and effective planning likely lead to more efficiency of operations, innovations, and effective plans. Firm managers should develop long-term plans to support near-term investment decisions. Since more than 50% of the firm managers have a college degree, university training programs may consider integrating these issues into their curriculum.

Third, the results suggest that the positive effect of these factors may not be realized in the short term due to the time lag of their impact on performance. Short-term performance may decline in order to achieve long-term success. Firms should not avoid the

negative effects of new investment or obstruct capital access to achieve increases in long-term performance.

The results can also be used by consultants and support agencies that provide assistance to manufacturing firms in areas of planning and capital acquisition. Remaining competitive and viable are complementary issues that can be supported through the findings of this study. Since managers' perceptions of issues affecting performance would be expected to influence policy development and implementation, this study may aid consultants and support agencies to better assist policy development among all firms. The information can be used to assist firms that are in crisis to understand important changes required to improve performance and be competitive. Successful firms can use the information from this study to understand how to retain strong performance and remain competitive. Information in this study could easily be built into training programs for both new and existing businesses.

The study has several limitations that provide avenues for potential future research. The sample was limited to only manufacturing firms. Future studies could compare results across industries. The data was also collected at a single point in time. A longitudinal study would provide evidence on the changes in factors affecting performance over time. Environmental moderators that may affect the manager's perceptions and decisions, such as industry change and diversity of market segments, are not incorporated into the analysis. Finally, an important potential limitation is that the analysis relied on manager perceptions rather than quantitative data. Future studies could validate the results in this paper by collecting reliable quantitative data on factors associated with firm performance among Spanish companies.

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