

Full Length Research Paper

Family businesses: How to measure their performance

Pedro Núñez-Cacho Utrilla* and Félix A. Grande Torraleja

University of Jaén, Andalucía, Spain.

Accepted 6 February, 2012

Numerous studies on family businesses have drawn on the theory of resources and capabilities and have employed the concept of familiness as an indicator of family influence on businesses. A literature review shows that to measure the performance of this type of organization, it is necessary to use indicators that reflect both business variables and socio-economic factors related to family involvement in a company and its duality family and business. This paper presents a performance measurement scale for family firms that accounts for all of these considerations. It then examines its utility using a sample of 501 Spanish family businesses.

Key words: Family businesses, performance measure, resource-based vision.

INTRODUCTION

Research on family businesses has advanced in recent years, and the appearance of new issues, theories, and publications in this field indicates the results of completed studies and gives a general sense of the field's progress (Zahra and Sharma, 2004). As the discipline reaches maturity, researchers are formalizing concepts such as that of the family business and family influences on such companies. However, there is a need for further research on the measurement of performance in this context because previous studies have used indicators that do not cover the specific features of family businesses (Hienerth and Kessler, 2006). In addition to common variables such as profitability, productivity, or growth, it is necessary to study the socio-emotional variables that influence family businesses' expectations while not dealing exclusively with profitability. Studies that do not include these variables in their performance measures cannot yield results that accurately depict the characteristics of family businesses because they ignore the possibility that such firms might be willing to overlook financial success to improve other issues.

Therefore, research on family businesses must consider family goals in addition to the drive for success. The concept of family goals highlights a number of variables that affect strategy in these organizations. The

perception of performance in a family business is influenced by many different factors, which must be identified and measured. Additionally, Tagiuri and Davis (1996) stated that the characteristics of family businesses respond to the duality that results from the interaction between a family and its business. Thus, this duality should be addressed in studies that measure the performance of family businesses. Therefore, it is necessary to develop suitable indicators for family businesses that account for the special characteristics of the family-business duality. The aim of this work is to present a measurement scale for family business performance that incorporates all of the above-mentioned considerations. To achieve our goal, the remainder of the paper is structured as follows. After the introduction, the study discusses the study's theoretical framework and the state of current research. Thereafter, the study defines the research problem and the hypothesis, followed by the methodology, measurements, and results. Finally, the study was discussed and concluded.

THEORETICAL AND CONCEPTUAL FRAMEWORK

The measurement of family business performance requires us to pay attention to numerous considerations, including the variables connected to our chosen theoretical framework. One of the most common approaches in the study of family businesses is the

*Corresponding author. E-mail: pnunez@ujaen.es.

resources based view (RBV), which defines competitive advantage through the connection between a company's internal characteristics and its profits. In RBV, the determining factors of a business's profitability are the type and magnitude of its resources (Amit and Schoemaker, 1993; Dierickx and Cool, 1989). Moreover, as Leiblein (2011) noted, RBV rests on three pillars: Valuable resources, market factors, and competitive advantage. The final concept is the focus of our investigation. Therefore, our family business performance measurement scale introduces indicators that reflect the idea of competitive advantage for the case of family businesses.

However, extensive debate over the definition of competitive advantage has revealed the ambiguity and inconsistency present in this concept, which is a limitation of RBV. Leiblein (2011) considered the definitions in framework of price-cost value to be appropriate. Likewise, Hoopes et al. (2003) defined competitive advantage as the relative difference between consumers' willingness to pay and a company's costs compared to its competitors. Furthermore, Peteraf and Barney (2003) noted that a company has a competitive advantage if it is willing to create a marginal economic value that is higher than its competitors' value in the market for a given product.

In the context of competitive advantage, this study emphasizes the need to measure value creation by estimating changes and variations in product costs and consumers' willingness to pay. However, these are difficult to measure because we require a more precise definition of competitive advantage. Leiblein (2011) proposed using the definition by Walkers (2004), who described it in terms of higher economic contributions (value creation) and a sustainable position in the market (captured value), arguing that resources affect a firm's economic contribution by influencing value, costs, market position, and the creation of isolation mechanisms.

The advantage of RBV is that it identifies the factors that make family businesses unique and show a family business can gain competitive advantages based on those factors, thus, introducing the concept of familiness. This concept highlights the interaction between family and business systems and the associated potential advantages over competitors (Habbershon et al., 2003; Habbershon and Williams, 1999). Familiness creates a unique environment within a family business. According to Chrisman et al. (2003), family character contributes to an organization's competitive position by adding non-economic benefits, because, due to the interactions between family and business structures, the family business is already considered a unique grouping of resources. Thus, we believe that when family business researchers use RBV to analyze familiness, they should connect success to the concept of competitive advantage and introduce the latter into performance measures for family businesses.

LITERATURE REVIEW

Measuring family business performance

After reviewing the considerations related to performance in our theoretical framework, we present a literature review to develop a measurement scale that draws on the contributions of various authors. First, numerous variables have been used as indicators of performance. Delaney and Huselid (1996) categorized performance into two areas: organizational performance and market performance. Organizational performance is based on the following indicators: the quality of company products and services, the development of new products, the company's potential to attract and retain talent, customer satisfaction, management-employee relationships, and relationships among employees. This measure is appropriate for family businesses because it can evaluate the relationships between employees and management and between family employees and non-family employees, including perceptions of fairness. Market performance is based on the following indicators: marketing, sales growth, profitability, and market share. These variables are suitable for the concept of competitive advantage (that is, growth, market share, and sales increase) and were implemented by Uysal (2008) and Hernández and Peña (2008).

Productivity has also appeared frequently in the literature as an indicator of performance. Birdi et al. (2008), Combs et al. (2006), Huselid et al. (1997) and Patterson and West (2004) considered productivity to be a good indicator of efficiency that directly reflects the impact of management practices. Likewise, for Hassan et al. (2006), productivity is a variable indicator of results. However, these authors noted some limitations of this approach; for example, it does not control potential cost increases. Furthermore, employees are unable to control all of the parameters involved in its calculation, as Datta et al. (2005) also noted. Thus, it is necessary to supplement productivity with additional indicators, such as sales growth or profitability.

Previous studies have also used efficiency indicators (Huselid, 1995; Black and Lynch, 2001; Huselid et al., 1997; Ichniowski and Shaw, 1999; Barrett and O'Connell, 2001) and economic-financial indicators (Huselid, 1995; Delery and Doty, 1996) to measure performance. Kallenberg and Moody (1994) used indicators from both categories as proxies for performance, including production efficiency, market share growth, returns on investment, dividends received, company capital, financial returns, economic returns, strategic success, customer loyalty, ability to retain talent, and work conditions. Meanwhile, Hansson (2007) measured performance using corporate profitability and benefits, whereas Chand and Katou (2007) used sales growth, productivity, profitability, compliance with objectives, and the quality of goods and services.

Lastly, Akdere and Schmidt (2007) provided another view of the performance construct and employed a set of indicators based on management quality, strategic management, knowledge management, and process management.

The variables discussed in the previous review are used to measure the general performance of organizations, and they are also applicable to the case of family businesses. However, due to the unique family characteristics of these firms, it is necessary to use additional indicators to help identify perceptions of family success. Indeed, we should incorporate indicators that cover both aspects of the family-business duality. Thus, Hienert and Kessler (2006) used a configuration approach to measure success in family businesses. Their conclusions indicate, first, that using a single measure of success based on sales growth is vague and subject to influence by various external factors, including company size, age, and industry.

Thus, the configuration model is more reliable than the single measure approach because it is not affected by these influences. Secondly, the authors argued that using the configuration model to estimate success avoids the positive bias found in measurements reported by company owners. Specifically, the model used by Hienert and Kessler (2006) consists of 22 items related to leadership, resources, environment, and entrepreneurship.

Furthermore, Sorenson (2003) developed a broad indicator of family business performance that includes many socio-emotional factors, such as quality of work life, family security, family independence, time with family, loyalty and family support, family unity, respect for the company name, customer loyalty, company image, family interest in business, development of children's abilities, and intentions to undertake further business.

Furthermore, Rutheford et al. (2008) provided a summary of 23 studies on family businesses that measured the familiness on performance with the following indicators: sales in the last three years, sales per employee, debt / equity, sales growth in the last three years, changes in firm size, number of full-time employees in the last three years, perception of financial performance, increase in cash flow, increase in added value, ability to fund increased operating expenses, returns on investment, and returns on invested capital.

Like Dyer (2006), Rutheford et al. (2008) proposed a model for the influence of family character on performance. However, because they focused on the unique aspects of this factor and its origin and nature, they neglected the characteristics of the family effect on the other side of the model. In other words, they treated family business performance as being identical to that of all other organizations.

A PROPOSED PERFORMANCE CONSTRUCT FOR FAMILY BUSINESSES

Based on Rutheford et al. (2008), we can conclude that few studies

have used specific family business indicators, and that it is necessary to develop new proposals, to identify the characteristics of these businesses and the family-business duality, and to incorporate them into a measurement scale. In other words, to measure a family business' performance, we must account for both its company characteristics and its family character.

Therefore, this study draws on the approaches set forth in the literature review to propose a performance scale that integrates the duality of these organizations (that is, business and family) and measures performance with several groups of variables, in accordance with Delaney and Huselid (1996).

The business dimension

We measured the first construct (BUSINESS) using three groups of variables. The first variable was growth (GROWTH) and includes the following indicators: organizational growth, sales growth in the last three years, growth of the company's market share, and the evolution of productivity. This construct uses accepted variables to measure performance by its dynamic character; moreover, the concept of familiness requires us to examine the concept of competitive advantage to measure performance. Therefore, as discussed previously, we use the proposal of Leiblein (2011) and Walker (2004) to identify value creation and a sustainable market position as indicators of competitive advantage. Thus, we can achieve reliable conclusions using RBV.

The second performance construct for individuals (HRPERF) consists of variables related to human resources, which are an important reflection of an organization's success (Delaney and Huselid, 1996). Studies on the relationship between human resources and performance or corporate profit are numerous and diverse, as are the variables they employ. For example, Wang et al. (2003) compared organizational performance with the relationships among employees, and Powers and Hahn (2002) examined staff competencies and competitive resources. Li et al. (2006) explored technological innovation; De Carolis and Deeds (1999) studied organizational knowledge; and Marques and Simon (2006) reported on knowledge management. Finally, Liao (2006) studied performance in the context of human resources management. Thus, we included the following variables: degree of employee commitment to an organization, level of satisfaction, level of absenteeism, and the reduction of employee turnover.

The third construct, financial and economic performance (ECOFIN), includes economic and financial variables that reflect the situation of a company, including economic profitability, rate of returns on capital, rate of returns on assets, and the profit margin. We used these indicators because they are objective, allow us to compare results, and are a clear reference in family business research (Rutheford et al., 2008). We named these three groups of variables "BUSINESS". Thus, the hypotheses for this study are the following:

H₁: The measure of family business performance requires business-related variables.

H_{1a}: The variables of individual performance are indicators of business performance.

H_{1b}: Economic and financial variables are indicators of business performance.

H_{1c}: The variables that reflect the growth of the company are appropriate indicators of business performance.

The family dimension

The dual nature of family businesses makes it necessary to measure a family's perception of its business. Frequently, families

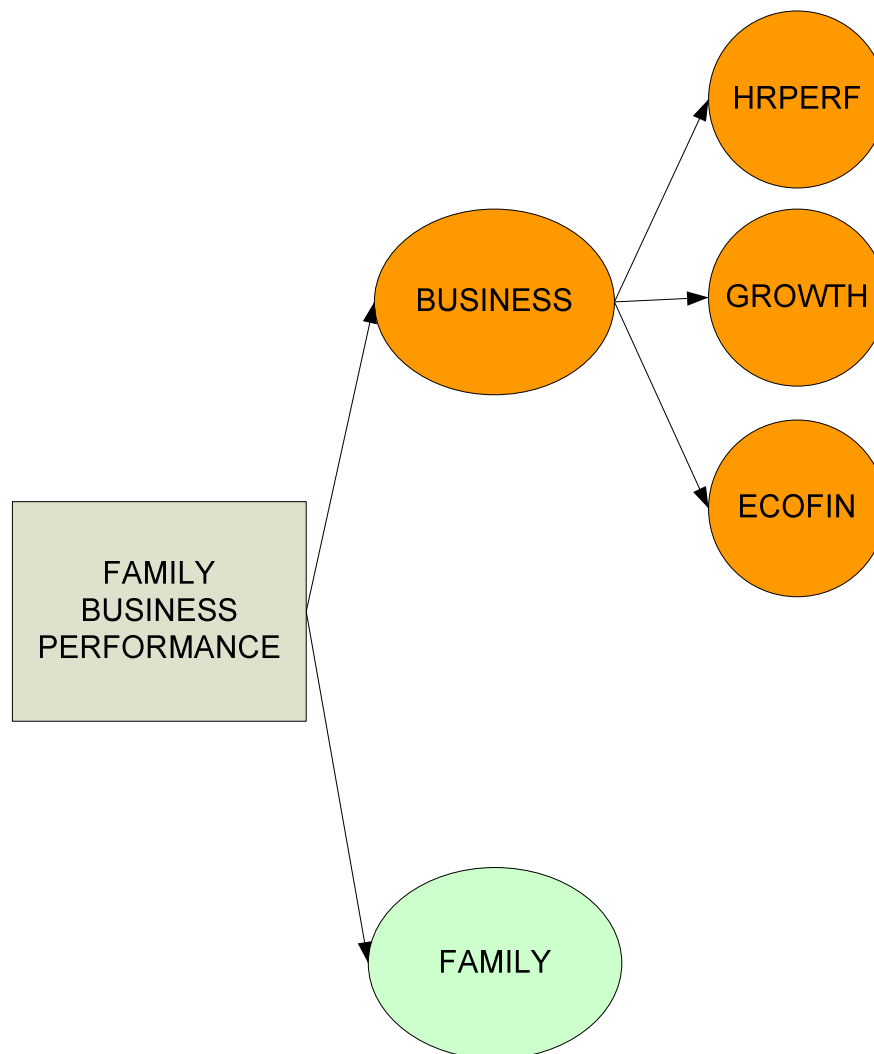


Figure 1. Performance measure for family businesses. Source: authors.

pay more attention to family values than to other objective indicators of performance (Welsh and Klandt, 1997). Therefore, to measure family business performance, we used a dimension called "FAMILY". To evaluate the success of a business, studies have frequently used satisfaction as an indicator, including the works of Chand and Katou (2007), De Kok et al. (2006), and Venter et al. (2005). Therefore, the following variables compose this dimension: the degree of family satisfaction with the business, the degree of satisfaction of family employees, and the degree of satisfaction of the successor or potential successor. The hypothesis to be tested is as follows:

H₂: Family variables must be included in measures of family business performance.

Figure 1 presents our research proposal. This scale incorporates the ideas, as discussed previously, about performance measurements for different jobs and includes family performance expectations, competitive advantage in the context of family businesses, and the duality of relationships caused by the family-business interaction. Thus, it is suitable for family business

research. However, this theoretical approach should be empirically tested, which is why we formulated the following hypothesis:

H₃: Family business performance measures should include the dimensions of business and family.

ANALYSIS AND RESULTS

Population and sample

This study's sample consisted of Spanish family businesses. Data were obtained from a previous study on the composition of governing bodies and shareholders of businesses included in Spain's SABI database. Vallejo (2007) described the family character of a company in the following terms: "a family business is one in which family members have enough share in its capital to dominate decision-making and in which family members have the

desire to continue the business for multiple generations". Therefore, according to this working definition of family businesses, we included items in the questionnaire to identify the following aspects of family management: the majority of the business is family-owned and the family is or has been involved in management for more than one generation. The population sample was comprised of 4,450 family businesses, from which we selected a random sample of 501.

This sample size allowed us to maintain sufficient stability in the covariance structure to perform a confirmatory factor analysis (Bentler, 2006). The 501 companies in the sample operate in different economic sectors: 32.4% from the industrial sector, 41.1% from the services and retail sector, and 26.5% from other sectors. The average number of employees was 205, and the average company age was 32 years. A total of 26% of the companies were in the first generation; 51% in the second; 18% in the third; and 5% in the fourth or a later generation. The companies in the sample had an average productivity of 4.8%. The control variables were company age, number of employees, and current family generation.

Data collection

We used both primary and secondary sources to obtain our data. The primary data were collected with a questionnaire, which was first sent to a group of experts to assess the adequacy of the research items and constructs. Based on the experts' comments, we eliminated certain items and included others. After a second round of interviews, the modified questionnaire was subjected to a pre-test to evaluate its practical functionality. The pre-test did not indicate a need for further changes, so we designed the final questionnaire. Finally, the interviewee profile corresponded to the manager or executive with the highest level of responsibility in a given organization. The information was obtained through a phone survey in the third quarter of 2009.

To obtain secondary data, particularly relating to the profitability construct (economic profitability, rate of returns on capital, rate of returns on assets, and profit margin), we analyzed the balance sheets and profit and loss accounts of each of the companies surveyed. These data are available in the SABI database, and we extracted the information for each company individually.

Measures

To develop our proposed family business performance measurement scale, we drew on the variables employed by Aragón et al. (2003), Chand and Katou (2007), Huselid et al. (2005), Hernández and Peña (2008), Delaney and Huselid (1996), Hassam et al. (2006), Kallenberg and Moody (1994), Carlson et al. (2006),

Piñeiro and García (2009), Rutheford et al. (2008), and Molina et al. (2009). These variables are listed in Table 1.

The methodology used to construct the family business performance indicator was a causal analysis using covariance structures, specifically a CFA. Before estimating the confirmatory models, we evaluated the dimensionality, reliability, and validity of the scales.

Dimensionality, reliability, and validity of the scales

We assessed the scales' dimensionality using exploratory factor analysis, which emphasizes the suitability of the initial variable pool. Thus, the family business performance scale consists of two dimensions that involve four constructs: individual performance, business growth, profitability, and family. To analyze the reliability of these measurement scales, we used representative indicators of internal consistency in the measurement for each construct. Specifically, we calculated Cronbach's alpha coefficient for each scale. Table 2 presents the results of this analysis, and it should be noted that the Cronbach alpha coefficients are greater than 0.7, as recommended by Bagozzi and Yi (1988).

We addressed the analysis of convergent and discriminant validity of the business scales to determine whether the proposed measurement model, based on our theoretical hypotheses and exploratory factor analysis, is consistent with reality. For this task we have made a confirmatory factor analysis and confirmed that the variables in each construct match the proposed model. An evaluation of the analysis shows good fit using accepted criteria (Kline, 2005; McDonald and Ho, 2002). Figure 2 shows the results for used indices.

The convergent validity of the FAMILY scale was tested with a first-order confirmatory factor analysis (Figure 3). The results of the adjustment estimation were good according to the criteria of Kline (2005). Furthermore, in the fine tuning, we observed that the relations established in the model are statistically significant, with a confidence level of 95% ($p > 1.96$).

To test the model's discriminant validity, we analyzed the correlations among dimensions measuring different factors. We observed that the value of the square of the correlation coefficient does not exceed the extracted variance of the construct. Furthermore, this variance is greater than 0.5, and the correlation among the different factors is below the Cronbach alpha coefficient for the factors examined. By verifying these issues, we concluded that the scales have discriminant validity. The results of this analysis are shown in Table 2.

After validating the measurement scales, we estimated the model's goodness of fit using the information obtained from the chosen sample. We used this technique for the third-order confirmatory factor analysis. When we performed the estimation, we obtained the following values for goodness of fit indices: NNFI = 0.873, CFI = 0.902, IFI = 0.903 and MFI = 0.829. The RMSEA

Table 1. Variables of the family business performance scale.

Dimension	Construct	Variable description
BUSINESS	GROWTH	Improvement of the productivity index in the last three years
		Sales growth in the last three years
		Market share growth in the last three years
	HRPERF	Employees are committed to the organization
		Employees are satisfied with the organization
		Reduction in the level of absenteeism
FAMILY	ECOFIN	Economic profitability
		Rate of returns on capital
		Rate of returns on assets
	FAMILY	Satisfaction of the family members
		Satisfaction of the family employees
		Satisfaction of the successor

Source: authors.

Table 2. Correlations between variables and Cronbach's alpha (diagonal).

Factor	Average	Standard deviation	GROWTH	HRPERF	ECOFIN	FAMILY
GROWTH	2.88	0.77	(0.812)			
HRPERF	2.91	0.61	0.271	(0.611)		
ECOFIN	2.14	0.81	0.185	0.283	(0.701)	
FAMILY	3.21	0.77	0.466	0.298	0.332	(0.774)
Variance extracted.	-	-	0.424	0.512	0.503	0.676

Source: authors.

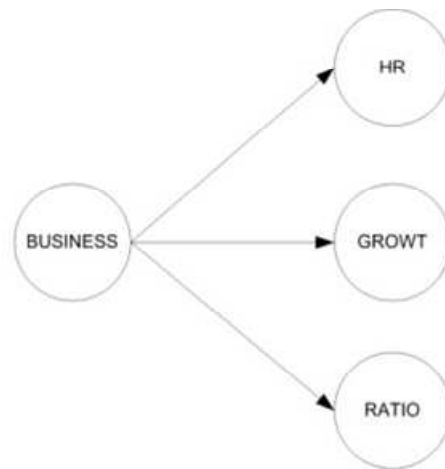
error is 0.08 (Figure 4). Thus, our results show a high goodness of fit and our revision of the standardized residuals matrix did not indicate the need for any additional modifications. Furthermore, we verified that all indications for modifying the model were small, which implies that further modifications to the additional relations model would not have improved the model's fit (Goffin, 2007; Barret, 2007).

In summary, the first research hypothesis stated that measures of family business performance must take business-related variables into consideration. We confirmed this hypothesis through a second-order confirmatory factor analysis and through the hypothesis H_{1a} , H_{1b} , and H_{1c} . It was determined that the variables for individual performance, economic and financial indicators, and company growth are appropriate indicators of business performance. We tested the second hypothesis using a first-order confirmatory factor analysis and the third hypothesis using a third-order confirmatory factor analysis.

CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

Throughout our study, we have emphasized that measuring the performance of family businesses requires indicators that are specific to this type of company and cannot be confined to traditional economic and financial measures of performance. This context requires researchers to consider variables that are often socio-emotional and to measure whether a company is meeting family goals. A unique characteristic of family businesses results from the family-business interaction, and performance measures should therefore reflect this duality between business and family.

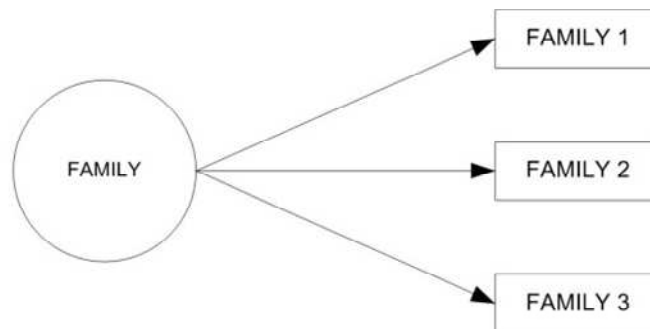
The dimensions used in this study include the concepts that we consider essential to measuring family business performance. Studies that use familiness and RBV approaches must include variables that quantify competitive advantage. However, numerous authors (Delaney and Huselid, 1996; Huselid et al., 1997) have emphasized the



Results of AFC 2^o order for factor business

Factor	NNFI	CFI	IFI	MFI	RMSEA
Business	0.976	0.979	0.981	0.998	0.038

Figure 2. Convergence validity for business dimension. Source: Authors.



Results of AFC 1^o order for factor family

Factor	NNFI	CFI	IFI	MFI	RMSEA
Family	0.877	0.901	0.941	0.822	0.055

Figure 3. Convergence validity for family dimension. Source: Authors.

need to incorporate variables related to individual performance in such measures because they provide insight into an organization's human resource situation, which is crucial to smooth operation of a company.

In addition to the foregoing concepts, we cannot ignore economic indicators of performance, which include financial ratios such as returns on assets, returns on investment, profitability, and productivity. As we observed

in the literature review, these indicators have been used in numerous studies. These measurements are objective and include interesting features for family businesses, such as returns on capital. These indicators help to complete the insight we want to offer into the performance of family organizations.

Finally, building on the three considerations mentioned previously, we are in a position to measure the

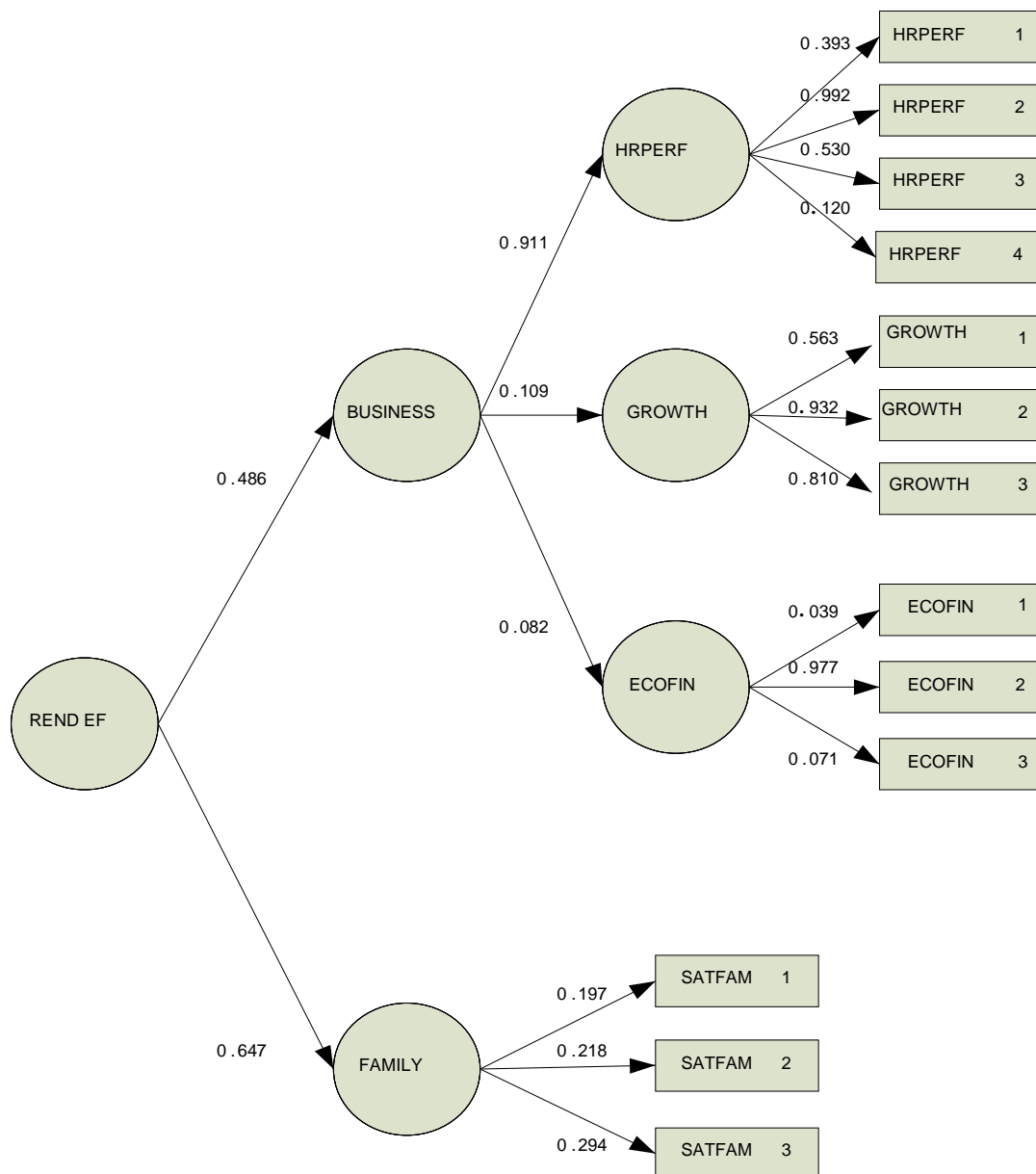


Figure 4. Model estimation results based on a third-order confirmatory factor analysis.

performance of family businesses, and this measurement must reflect the unique aspects of family businesses. Therefore, the most innovative aspect of this study is its incorporation of variables that reflect specific aspects of family businesses in a performance scale. These aspects include the satisfaction of family members with the company's progress, the satisfaction of family employees with their situation, and the satisfaction of the successor or potential successor with his or her career in the organization.

The main contribution of this research is that it provides a scale for measuring family business performance and

has confirmed its reliability and validity in a sample of 501 family businesses. This scale may be applied to future studies and for comparing research performed in this field. Furthermore, our scale incorporates recent contributions focused on RBV, especially those studies related to competitive advantage. This scale may be useful for investigations that employ the concept of family character because it allows researchers to assess different areas, such as management, government, succession, human resources management, investment, and financing. In sum, this approach is based on the idea that a family business may be willing to surrender some

economic benefits to achieve "family benefits", and that an important family influence on the business results from this duality.

This study is subject to some limitations. We used a questionnaire to gather our data, and specific constraints result from the self-reported nature of this tool. Specifically, the survey included a margin of free interpretation that may have distorted the parameters we sought to measure in the questionnaire items. To circumvent this problem, we used secondary sources of data on organizational performance; in particular, we collected variables for the ECOFIN dimension from the SABI database.

A second limitation is the result of this study's time frame. We collected all of the data, with the exception of the growth indicators, for a given point in time. However, it is also desirable to analyze the effect that training and development have on employees and organizational performance from an evolutionary perspective, using long periods to isolate temporal phenomena and circumstances that may influence the outcome of an investigation.

Given these limitations, we can suggest some future lines of investigation. First, this study could be repeated over a long time period, which would allow for longitudinal analyses of the evolution of the studied variables. It may also be possible to incorporate moderating variables between family and business into the performance measure, for which one could use the F-PEC scale developed by Astrachan et al. (2002). Such a study could group family businesses and analyze the effect this grouping has on the family business performance measure.

REFERENCES

- Akdere M, Schmidt S (2007). Measuring the Effects of Employee Orientation Training on Employee Perceptions of Quality Management: Implications for Human Resources, *Bus. Rev. Cambridge*, 7: 336-343.
- Allen DG, Shore LM, Griffeth RW (2003). The Role of Perceived Organizational Support and Supportive Human Resource Practices in the Turnover Process, *J. Manage.*, 29: 99-118.
- Amit R, Schoemaker P (1993). Strategic assets and organizational rent, *Strateg. Manage. J.*, 14: 33-46.
- Aragón A, Barba MI, Sanz R (2003). Effects of training on business results, *Int. J. Hum. Resour. Manage.*, 14: 956-980.
- Astrachan J, Klein S, Smyrnios K (2002). The F-PEC scale of family influence: a proposal for solving the family definition problem, *Fam. Bus. Rev.*, 15: 45-58.
- Bagozzi RP, Yi Y (1988). On the evaluation of structural equation models, *J. Acad. Mark. Sci.*, 16: 79-94.
- Barney JB (1991). Firm resources and sustained competitive advantage, *J. Manage.*, 17: 99-110.
- Barret A, Oconnell PJ (2001). Does Training Generally Work? The Return to In-Company Training, *Indu. Labor Relat.*, 54: 647-663.
- Barret P (2007). Structural Equation Modeling: Adjusting Model Fit. *Personality and Individual Differences*, 42: 815-824.
- Bentler PM (1995). EQS structural equations program manual. Encino, CA.
- Birdi K, Clegg C, Patterson M, Robinson A, Stride D, Wall T (2008). The impact of human resource and operational management practices on company productivity: a longitudinal study, *Personnel Psychol.*, 61: 467-501.
- Black S, Lynch L (2001). How to compete: The impact of workplace practices and information technology on productivity, *Rev. Econ. Statistics*, 83: 435-445.
- Carlson DS, Upton N, Seamans S (2006). The impact of human resources practices and compensation design on performance: An analysis of family-owned SMEs, *J. Small. Bus. Manage.*, 44: 531-543.
- Chand M, Katou A (2007). The impact of HRM practices on organizational performance in the Indian hotel industry, *Employee Relat.*, 29: 576-594.
- Chrisman JJ, Chua JY, Litz R (2003). A unified systems perspective of family firm performance: An extension and integration, *J. Bus. Vent.*, 18: 467-472.
- Combs J, Hall A, Ketchen D (2006). How much do high performance work practices improve establishment-level outcomes? *Personnel. Psychol.*, 59: 501-528.
- Datta DK, Guthrie JP, Wright PM (2005). Human resource management and labor productivity: does industry matter? *Acad. Manage. J.*, 48: 135-152.
- De Carolis DY, Deeds DL (1999). The impact of stock and flows of organizational knowledge on firm performance. An empirical investigation of biotechnology industry, *Strateg. Manage. J.*, 20: 953-966.
- De Kok JMP, Uhlaner LM, Thurik AR (2006). Profesional HRM Practices in family owned-management enterprises. *J. Small. Bus. Manage.*, 44: 441-460.
- Delaney JT, Huselid MA (1996). The impact of human resource management practices on perceptions of organizational performance, *Acad. Manage. J.*, 39: 949-971.
- Delery JE, Doty DH (1996). Models of theorizing in strategic human resources management. *Acad. Manage. J.*, 39: 802-835.
- Dierickx IY, Cool K (1989). Assets stock accumulation and sustainability of competitive advantage, *Manage. Sci.*, 35: 1504-1511.
- Dyer WG (2006). Examining the "Family Effect" on Firm Performance, *Family. Bus. Rev.*, 19: 253.
- Goffin RD (2007). Assessing the Adequacy of Structural Equation Models: Golden Rules and Editorial Policies. *Personal. Individual Dif.*, 42: 831-839.
- Habbershon TG, William M (1999). A resource-based framework for assessing strategic advantages in family firms. *Family. Bus. Rev.*, 12: 1-25.
- Habbershon TG, William M, MacMillan IC (2003). A unified systems perspective of family firm performance, *J. Bus. Vent.*, 18: 451-465.
- Hansson B (2007). Company-based determinants of training and the impact of training on company performance, *Personnel. Rev.*, 36: 311-331.
- Hassan M, Hagen A, Daig I (2006). Strategic human resources as a strategic weapon for enhancing labor productivity, *Strateg. Manage. J.*, 5: 75-96.
- Hernández F, Peña I (2008). The effectiveness of human resources strategies: an integrative model of the theory of resources and capabilities and the theory of behavior in socio-economy entities. *Revesco*, 94: 27-58.
- Hiennerth C, Kessler A (2006). Measuring Success in Family Businesses: The Concept of Configurational Fit, *Family. Bus. Rev.*, 19: 115-134.
- Hoopes DG, Madsen TL, Walker G (2003). Guest editors' introduction to the special issue: Why is there a resource-based view? Toward a theory of competitive heterogeneity, *Strateg. Manage. J.*, 24: 889-902.
- Huselid MA (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Acad. Manage. J.*, 38: 635.
- Huselid MA, Becker BE, Beatty R (2005). The workforce scorecard: Managing human capital to execute strategy. Boston.
- Huselid MA, Jackson SE, Schuler RS (1997). Technical and strategic human resources management effectiveness as determinants of firm performance. *Acad. Manage. J.*, 40: 171-188.
- Ichniowski C, Shaw K (1999). The Effects of Human Resource Management on Economic Performance: An International Comparison of US and Japanese Plants. *Manage. Sci.*, 45: 704-723.

- Kallemberg AL, Moody JW (1994). Human resources management and organizational performance. *Am. Behav. Sci.*, 37: 948-962.
- Kline RB (2005). *Principles and practice of structural equation modeling*. New York.
- Leiblein M (2011). What Do Resource- and Capability-Based Theories Propose? *J. Manage.*, 37: 909-932.
- Liao Y (2006). The effect of fit between organizational life cycle and human resources management control on firm performance, *J. Am. Acad. Bus.*, 8: 192-208.
- Marques DY, Simon F (2006). The effect of knowledge management practices on firm performance, *J. Knowledg. Manage.*, 10: 143-156.
- McDonald RP, Ho MH (2002). Principles and practice in reporting structural equation analyses, *Psychol. Methods*, 7: 64-82.
- Molina JF, Claver E, Pereira J, Tarí JJ (2009). Management and environmental quality and the performance of Spanish hotels, *Revista Europea de dirección y economía de empresa*, 18, 63-78.
- Patterson M, West MA (2004). Integrated manufacturing, empowerment and company performance, *J. Organ., Behav.*, 25: 641-665.
- Peteraf MA, Barney JB (2003). Unraveling the resource-based tangle. *Manage. Decis. Econ.*, 24: 309-323.
- Piñeiro P, García-Pintos A (2009). Environmental practices in the construction sector: the case of Spanish construction companies. *Investigaciones Europeas de Dirección y Economía de la Empresa*, 15: 183-200.
- Powers TY, Hahn W (2002). Skill and resources based competitive methods: impact on firm performance, *J. Serv. Mark.*, 16: 113-122.
- Rutheford MW, Kuratko DF, Holt AT (2008). Examining the Link Between "Familianness and Performance: Can the F-PEC Untangle the Family Business Theory Jungle? *Entrep. Theory Pract.*, 32: 1089-1109.
- Sorenson R (2003). *Family Business Gathering 2001, The Holistic Model: Destroying Myths and Creating Value in Family Business*. *Family. Bus. Rev.*, 16: 224-238.
- Tagiuri RY, Davis J (1996). Bivalent Attributes of Family Business. *Family, Bus. Rev.*, 9: 199-208.
- Uysal, G (2008). Relationship among HR and Firm Performance: A Turkey Context, *J. Am. Acad. Bus. Cambridge.*, 13: 77-84.
- Vallejo MC (2007). What a family business? A discussion of an integrative and operational definition. *Enterprise. Small Bus.*, 4: 473-488.
- Vallejo MC (2008). Is the culture of family firms really different? A value-based model for its survival through generations, *J. Bus. Ethics.*, 8: 261-279.
- Venter E, Boshoff C, Maas G (2005). The Influence of Successor-Related Factors on the Succession Process in Small and Medium-Sized Family Businesses, *Fam. Bus. Rev.*, 18: 283-304.
- Walkers G (2004). *Modern Competitive Strategy*, New York: McGraw-Hill.
- Wang D, Tsui AY, Yichi Zang L (2003). Employment relationships and form performance: evidence from a emergent economy. *J. Organ. Behav.*, 24: 511-529.
- Welsh HY, Klandt H (1997). *International Entrepreneurship and Small Business Biography*, 2nd ed. Chicago: De Paul University.
- Zahra SA, Sharma P (2004). Family Business Research: A Strategic Reflection, *Fam. Bus. Rev.*, 17: 331-345.