Intangibles Versus Financial Performance:

A Study on Mergers & Acquisitions (M&A) in France

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Abstract

Aiming for superior performance, companies need to have and to skillfully use rare, valuable, irreplaceable and inimitable resources, with special emphasis on intangibles, which can be accumulated via Mergers and Acquisitions (M&A). To analyze how financial performance, after 36 months of M&A, is related to the previous existence/disclosure of intangibles, we built textual-based indicators of disclosure and use financial measures of intangibles to compare their explanatory power for growth and corporate profitability. Using Structural Equations Modeling, via Partial Least Squares (SEM-PLS), we find positive relationships among these indicators.

Introduction

The allocation of resources has been a constant subject of research. Since the 1980s, corporate competitiveness has been the subject of several studies to understand the sources of a sustainable competitive advantage; however, the end of the 20th century brought a new scenario, of profound and constant transformations, potentiated by the advancement of information technology, expansion in the services sector, growth and sophistication of markets and by the creation of wealth from intangible resources, such as information [1]. The analytic focus has increasingly shifted towards intangible assets [2].

Two approaches stand out in the reflection on the evolution of corporate strategy [3]: the structural view of the industry, in which above-average returns arise from the firm's participation in a sector with favorable structural characteristics; and the Resource-Based View – RBV (for core concepts, see [4] and [5], among others), which suggests that the superior performance of a firm is essentially derived from its heterogeneity and from the specificity of its resources

In the RBV, strategic factor market [4, p.1231] has fundamental importance to value creation. M&A transactions, as an alternative to internal growth, are seen as competitive movements for retention or acquisition of strategic resources and as a way of shortening the time lag necessary for accumulation of intangibles. This analysis has also been attractive for finance theoreticians, especially with regard to the results for the shareholders of the firms involved.

According to the Organisation for Economic Co-Operation and Development - OECD [6, p.1], intellectual assets have become strategic factors for value creation. Levy and Jouyet [7, p. 10] admit that OECD economies have reached an inflection point, in which growth dynamics and value creation would rest, essentially, on immaterial components. Thus, the role performed by intangible resources for the establishment of a sustainable competitive advantage is stressed in the discussion of several authors.

The growing interest shown by experts in the topic, the variety of opinions issued and the extent of related discussions, in recent years, indicate that the intangibles represent a vast field of research. Hence, in this study, we analyze how firm performance, resulting from

M&A transactions after a minimum period of 36 months from the event, is related to the disclosure and to the nature of intangible assets at the organizations involved.

Theoretical background

Several authors (e.g. [9]; [10]; [11]; [7]) are unanimous about the lack of consensus with regards to the very concept of intangibles and of their constituent constructs and also to the most appropriate measurement or valuation methods. Recent researches (e.g. [11]; [7]; [12]) geared towards the elucidation of the aspects and variables that contribute most to the generation of wealth have highlighted the intangible aspects of organizations, which have been considered a source of sustainable and lasting competitive advantage for the party that holds them (such as a brand or the business reputation and intellectual capital).

In relation to the expressions 'intangibles', 'intangible assets' and 'intellectual capital' and others, OECD [6, p. 7] acknowledges that “there is a general tendency to use the terms as synonyms” and considers that “they refer to the same reality: a non-physical asset with a potential flow of future benefits”. Frederick [13, p. 10], among others, points out the definition of the International Financial Reporting Standard-IFRS: “identifiable non-monetary assets without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes”.

Seeking inspiration in Andriessen [9], we classify 'intangible assets' into three categories of Capital: Human, Relational and Structural, respecting the European Commission’s taxonomy [18, p.10]:

Human Capital – relates to the knowledge, competences and know-how that workers "take with them when they leave at night ". Examples are: innovation capacity, creativity, know-how, previous experience, teamwork capacity, culture, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training and education.

Relational Capital – concerns the resources arising from the external relationships of the company with customers, suppliers and R&D partners. It comprises that part of human capital and structural capital involved with the company’s relations with such stakeholders. Examples are: image [corporate], customer loyalty, customer satisfaction, relations with suppliers, commercial power and negotiating capacity with financial entities.

Structural Capital – refers to the knowledge that stays with the company "after the staff leaves at night". It comprises organizational routines, processes, systems, databases, the documentation service, the existence of a knowledge center, the general use of information technologies and organizational learning capacities.

At the same time as these investigations on intangibles, there is growing interest worldwide in the enhancement of the degree of disclosure and transparency of information of companies operating in the capital market. There is considerable number of studies that evidence the important role of financial reports in providing information to the stakeholders on the value of a company, but, “the evidence suggests there is a significant lacuna of reports related to intangible resources” [19, p.2]. The attempts to measure and to assess the value of intangibles in surveys (on their existence and/or their disclosure) are incalculable and diversified, focusing on different dependent and independent variables, and on different levels of aggregation

Existence of intangibles – financial proxies

Scholars have looked into the various methods to measure and estimate the value of intangibles in an organization. Andriessen [9] lists and discusses 25 techniques for the

valuation of intangibles and Sveiby [15] lists 34 different methodologies, aiming to establish one that will achieve widespread recognition. OECD [18; 6] and others agencies have made effort to establish a form of standardization that is acceptable to the majority of countries, organizations and companies.

Researchers (e.g. [16]; [17]; [18]) use financial metrics as a general indicator of global intangibility or presence of intangibles in the organization. Tobin's q is one of the most widely used indices in studies of intangibles, despite its limitations [9]. The use of a global indicator, however, does not allow us to envisage the true source of value creation, requiring an evaluation of the nature of intangibles present at the company [18].

To assess the value of intangibles, Low [8], among others, modeled a value creation index, highlighted different weights for the factors, according to the type of economic activity developed by the organization. In Europe, recently, among others, it was been developed a methodology called *"Baromètre du Immatériel"* [19], that organizes the measurement, comparison and evolution of 10 fundamental assets, 71 analysis criteria and 175 measurement indicators for the studied firms.

In the present investigation, we use various numerical proxies derived from financial accounting reports of the companies that made up the sample group. Based on the academic literature (Table 1), proxies were tested by type of intangible asset and in an overall manner.

Disclosure of intangibles - textual indicators

Researchers in the field of intellectual capital need to be capable of justifying the specific research methods that they use to collect empirical data, which is examined in order to provide support and to test opinions in relation to different management approaches. Accordingly, scholars (e.g. [2]; [13]; [14]) examined the disclosure of intangibles by companies from several European countries. Wyatt [18] shows the insights resulting from the Australian experience in the structuring of financial reports on intangibles.

Among the methods available for researchers to be able to examine and understand intellectual capital, content analysis of annual reports of companies is the most widely used tool [20]. A list of words, with adaptations, was validated and used in the present study, reflecting, for instance, the OECD classification (2006). Intangible asset disclosure indicators were built for the various natures of these assets, through the application of the content analysis technique [21] to the financial accounting reports of the firms studied, prior to the M&A. The word was the chosen unit of analysis, using automated detection and relative importance to words in the categories of intangible assets. The indicators built can be found in Table 1.

Corporate financial performance

Lock Lee, Guthrie and Gallery [17] linked corporate capital and its components to firm performance, at 155 companies in the information technology sector. They revealed that human capital is the best predictor of corporate performance. Glick, Muller and Washburn (2005)'s model, with seven dimensions: growth, profitability, market value, satisfaction (customers and employees), social and environmental performance. Carton and Hofer [22] also studied the conceptualization and measurement of corporate financial and economic performance and maintain that, as this is a multidimensional construct, it should be analyzed and evaluated from more than one perspective and at different moments in time.

In this study, we analyze financial performance of firms resulting from M&A operations, with at least three years after the event. The study covered more than one performance perspective, as recommended by [22] Profitability and Growth were chosen as the analytical dimensions of the Corporate financial performance construct, measured through financial indices (see Table 1).

Methodology

The cornerstone of the study was the adequacy and validity of the use of publicly available information. Based on the theoretical background we suggest the existence of a positive relation between the retention, use and disclosure of intangible assets by the firms involved in M&A and corporate performance. We propose the following hypotheses:

Central hypothesis - H_0: The Profitability and the Growth of the company resulting from an M&A, after the minimum interval of 36 months subsequent to the event, are related to the level of intangibility of the companies involved and to the disclosure by these companies of their intangible assets.

Relating to the Existing Intangible Assets and Financial performance constructs:
H_{1a}: The Existence of intangible assets is positively related to Profitability.
H_{1b}: The Existence of intangible assets is positively related to Growth.

Referring to the Disclosure of Intangible Assets and Financial performance constructs:
H_{2a}: The Disclosure of the intangible assets is positively related to Profitability.
H_{2b}: The Disclosure of the intangible assets is positively related to Growth.

The sample consisted of M&A events between 1997 and 2007, listed on the website of *Autorité des Marchés Financiers* - AMF, the monetary entity in the French market. An investigation was conducted with 118 companies, related to 59 cases of M&A occurred in France in the period, in a multi-method, pluralistic, qualitative and quantitative research.

The time interval was chosen based on convenience and judgment, as it was a recent period of greater economic stability with availability of reliable data, and encompasses the possible results of the events in the desired timeframe [23] with an impact on financial performance [22]. Table 1 summarizes the main variables used in the study.

	Variables observed and Theoretical basis	Constructs (Latent Variables)		
		1st order	2nd order	3rd order
DEPENDENT	**Return on assets-ROA_i – Return on equity-ROE_i** **Operating return on assets – $R\_Op\_A_i$ – Operating Margin – MOp_i** [Carton and Holfer (2006), Kronmeyer Filho and Kliemann Neto (2005)]	Profitability$_i$	Financial performance of the resulting firm, after at least 36 months of M&A – $DES\_F\&A_i$	!
DEPENDENT	**Variation in gross sales -$Cresc\_Vendas_i$ – Variation in total assets-$Cresc\_Ativos_i$** [Carton and Holfer (2006), Kronmeyer Filho and Kliemann Neto (2005)]	Growth$_i$		
INDEPENDENT (numerical proxies for existence of intangibles)	**Number of employees** [Edvinsson and Malone (1997), Liebowitz and Suen (2000), Gandia (2003), Marr and Adams (2004), Herman and Kauranen (2005), Huang and Wang (2008), Wang (2008), Liu, Tseng and Yen (2009)]	Hum an Capital (CH_A_ prox and CH_c_ prox)	Indicators of the existence of intangible assets of the acquiring company and of the acquired company (quantitative basis – accounting proxies)	Intangi ble assets invol ved in the M&A opera tion AT_INT_F&A
INDEPENDENT (numerical proxies for existence of intangibles)	**Sales per employee** [Liebowitz and Suen (2000), Stewart (2001), Koka and Prescott (2002), Tsan (2002), Wu (2003), Chen (2004), Huang and Wang (2008), Wang (2008)]			
INDEPENDENT (numerical proxies for existence of intangibles)	**Net income per employee** [Brennan and Connell (2000), Dzinkowski (2000), Tsan (2002), Wang (2008), Huang and Wang (2008), Liu, Tseng and Yen (2009)]			
INDEPENDENT (numerical proxies for existence of intangibles)	**Operating income per employees** [Lacroix and Zambon (2002), Huang and Wang (2008)]			
INDEPENDENT (numerical proxies for existence of intangibles)	**Personnel Expenses Intensity** [Lacroix and Zambon (2002)]			
INDEPENDENT (numerical proxies for existence of intangibles)	**Growth rate of sales** [ASTD (1999), van Buren (1999), Brennan and Connell (2000), Dzinkowski (2000), Tsan (2002), Chen (2004), Marr and Adams (2004), Huang and Wang (2008), Wang (2008), Liu, Tseng and Yen (2009), Camargos and Barbosa (2008)]	Struc tural Capital (CE_A_prox and CE_c_ prox)		
INDEPENDENT (numerical proxies for existence of intangibles)	**Firm longevity [**Florin, Lubatkin and Schulze (2003), Herman and Kauranen (2005), Huang and Wang (2008)]		At_Int_A_ prox	

	Dilution of shareholding structure [Cerbioni and Parbonetti (2006), Schadewitz and Blevins (1998)]		and At_Int_c_ prox	
	Growth Rate of Operating Income - Marketing exp. per share [Huang and Wang (2008)]			
	Net income per share [Huang and Wang (2008), Wang (2008)]			
	Net income/sales [Koka and Prescott (2002)]			
	Selling and administr. expenses / employee [Edvinsson and Malone (1997), Roos *et al.* (1997), ASTD (1999), van Buren (1999), Stewart (2001), Tsan (2002), Wang (2008)]	Relational Capital (CR_A proxy and CR_c_ proxy)		
	Degree of stability of the company in the period studied [Huang and Wang (2008), Herman and Kauranen (2005)]			
	R&D expenses/net income [Huang and Wang (2008), Gandia (2003), Lacroix and Zambon (2002)]			
	R&D expenses / share - Assets/share - Selling and administr. expenses/sales [Wang (2008)]			
INDEPENDENT (textual proxies for disclosure of intangibles)	**Human factor - Corporate culture - Competence** [OECD (2006), Guthrie et al. (2004), Yardimcioglu (2008)]	Human Capital (CH_A_ text and CH_c_text)	Indicators of disclosure of intangible assets of the acquiring and the acquired company (textual basis Content analysis) At_Int_A_text and At_Int_c_ text	Intangible assets of the M&A AT_INT_ F&A
	Intellectual Property - Research & Development and Innovation - Process management - Information systems and networking [OECD (2006), Guthrie et al. (2004), Yardimcioglu (2008)]	Structural Capital (CE_A_ text and CE_c_ text)		
	Brands, Reputation, Image and Corp. social responsibility - Customers Financial relations - Fundraising facilities and Governance - Partnerships in the productive chain networking [OECD (2006), Guthrie et al. (2004), Yardimcioglu (2008)]	Relational Capital (CR_A_ text and CR_c_ text)		

Note: the suffix ***i*** is the M&A event and *j* relates to each company analyzed.
Source: prepared by the authors, based on Wang [23]

To carry out the research, we studied correlation and use factor analysis, multiple regression and structural equation modeling, with the use of partial least squares-SEM-PLS. The main findings, for the 59 cases of M&A analyzed, are summarized in the next section.

Results and Discussion

The understanding of Carton and Holfer [22], regarding the separate treatment of the chosen dimensions of the construct representing Financial Performance: Profitability and Growth, was tested and. The variable "Profitability" was subdivided, by factor analysis, into two branches: Profitability for Shareholders, evaluated by the Rate of Return on Invested Capital (ROE*i*); and Corporate Profitability, measured jointly by the indicators Rate of Return on Assets (ROA*i*), Rate of Operating Return on Assets (R_Op_A*i*) and Operating Margin (M_Op*i*). Growth, in turn, remained a single construct, observed through the indicators Growth of Assets and Growth of Sales of the companies resulting from the M&As examined,.

Regression analyses carried resulted in five models, all with 5% of statistical significance. They indicate that:

a) **Growth** of the companies resulting from the M&As is related to the following variables, relating to the Relational Capital of the acquiring companies: Growth Rate of Sales and Firm longevity, Marketing Expenses per share and Dilution of the Shareholding Structure (both of the acquiring firm), Previous profitability of the acquired company.

b) **Corporate Profitability** of the resulting firms are influenced by Previous experience in M&A.

c) **Profitability for Shareholders** of the companies resulting from the M&As has its variance explained by the quantity of Employees.

Besides the models established by multiple regression analysis, diagrams of relationships among the examined constructs were built using SEM-PLS. SEM, particularly through the use of PLS, is a powerful statistical technique for obtaining better and more reliable results, even with samples of reduced size, allowing a more accurate analysis of the relations between the variables studied [33].

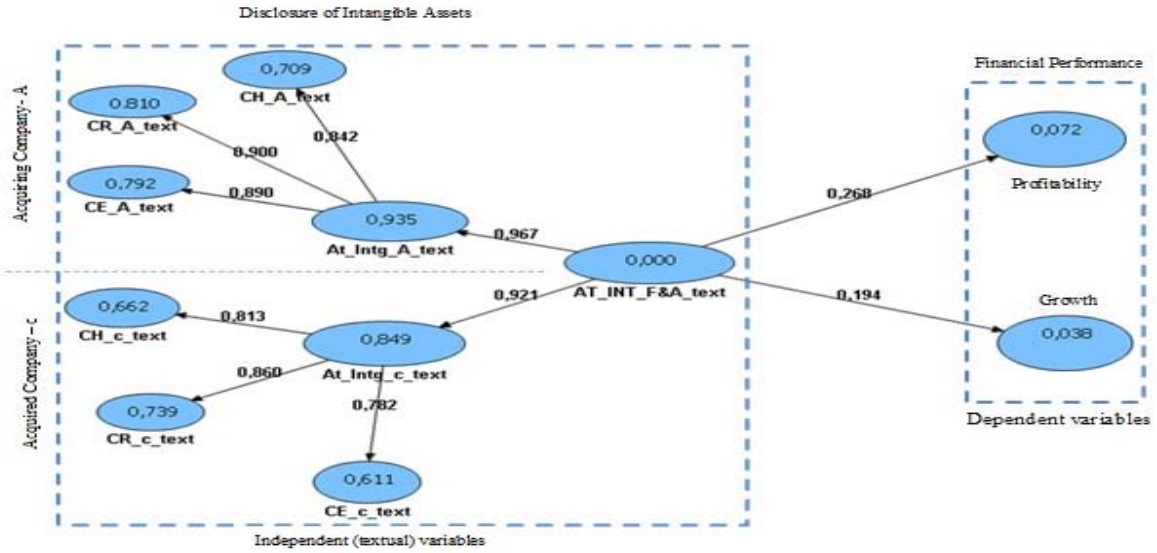
Table 2 – Synopsis of the significant results of the Structural Models built

Structural model	Structural relation between				Explanatory power R^2	Significance of the structural coefficients
	Dependent VL	Independent VL regressor				
		Acronym (Constructs)	Order	Nature		
1	Corporate Profitability	AT_INT_F&A_text (Disclosure of Intangible Assets)	3rd	Semantic	7.2%	**Sig. at 1%**
	Growth				3.8%	Sig. at **5%**
2	Corporate Profitability	At_Int_A_proxy (Existing Intangible Assets)	2nd	Financial	4.4%	Sig. at **5%**
2A	Corporate Profitability	At_Int_A_proxy (Existing Intangible Assets)	2nd	Financial	4.6%	Sig. at **5%**
	Growth	At_Int_c_proxy-direto (Existing Intangible Assets)	1st		5.2%	Sig. at **5%**
3	Corporate Profitability	AT_INT_F&A (1) (Existing Intangible Assets and Disclosure of Intangible Assets)	4th	Semantic and Financial	6.8%	**Sig. at 1%**
	Growth				3.5%	Sig. at 10%
3A	Corporate Profitability	Ind_At_Intg_F&A (1) (Existing Intangible Assets and Disclosure of Intangible Assets)	1st	Semantic and Financial	7.9%	**Sig. at 1%**
3B	Corporate Profitability	Indictors_ AT_INT_F&A (1) (Existing Intangible Assets and Disclosure of Intangible Assets)	1st	Semantic and Financial	7.1%	Sig. at **5%**
3C	Corporate Profitability	Indictors_At_Int_Exist_F&A (Existing Intangible Assets)	1st	Financial	4.5%	Sig. at 10%

In examining Table 2 this aspects merit special emphasis: a)The dependent VL Corporate Profitability had its variance explained, with statistical significance, in the seven structural models developed, three of them at 1%; b) In all the models, the dependent variables, Corporate Profitability and Growth, were designed as 1st order VLs; c) The dependent VL Corporate Profitability had its variance explained by five different constructs of the independent variables, in the seven models; d) In only three of the seven structural models, the variance of the dependent VL Growth was explained with statistical significance, at 5% and at 10%; e) Three models concomitantly combined greater explanatory power and better significance level (at 1%), all referring to the VL Corporate Profitability, where Structural Model 1was based on semantic indicators and Structural Models 3 and 3A were of a mixed data nature (textual and financial origin); f) The models that used constructs consisting entirely of financial proxies exhibited lower explanatory power and significance level at 5%, with intermediate complexity level.

Structural Model 1 - Intangible assets disclosed x Profitability and Growth was the second most complex model, with one 3rd order VL, two 2nd order VLs and six 1st order VLs, adding up to 11 constructs, two of which refer to the dependent variables. The indicators manifested in this configuration, are of semantic origin, “textual”, relating to the disclosure of intangible assets. Results are presented in Figure 1.

Figure 1 – Structural Model 1: Intangible Assets Disclosed *x* Profitability and Growth



Note: Significance estimated by bootstrap, with 1000 repetitions, in the SmartPLS 2.0.M3 software [35]; only the coefficient of the variable M_Op appeared non-significant; the other coefficients appear highly significant ($p < 0.01$); the structural coefficient of the VL Profitability appeared highly significant ($p < 0.01$) and the VL Growth was significant at 5%.
Source: Data from the research.

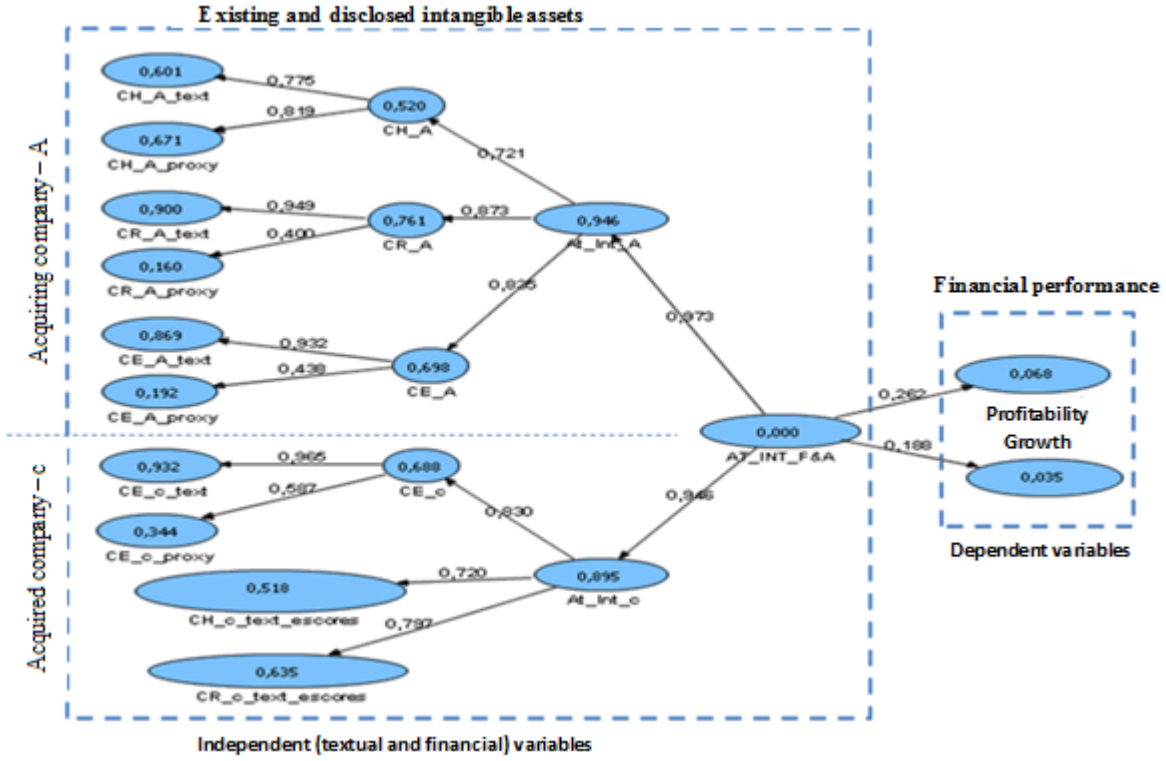
Structural Model 2 - Existing Intangible Assets x Profitability and Growth refers to the existence of intangibles at the merged organizations and it is composed of proxies, respecting the types of intangible capital assets and grouping them in 2nd order VLs. In this model it was not possible to form a variable gathering the financial indicators of the acquiring and acquired companies. With statistical significance at 5%, the intangible assets existing at the acquiring companies account for 4.4 % of the variance of Corporate Profitability; the other structural or path coefficients appeared non-significant, according to a bootstrap estimation with 1000 and with 5000 repetitions, via SmartPLS 2.0.M3 [25].

Structural Model 3 - Intangible Assets in M&As x Profitability and Growth was prepared with a higher level of complexity and abstraction, involving one 4th order VL, two 3rd order VLs, four 2nd order VLs and twelve 1st order VLs, adding up to 19 constructs, two of which refer to the dependent variables. This model can be seen in Figure 2. This configuration uses manifest variables originating from data of a semantic and financial nature, in an exploratory manner, that is: using relaxation of the limits of factor loadings, AVE and CC, with a theoretical basis on Hulland [34, p.198]. All the variables present in this configuration were gathered in the 4th order VL AT_INT_F&A, which succeeding in forming significant relationships with the Corporate Profitability construct (it can be held accountable for 6.8% of the variance of this VL, with statistical significance at 1%) and with the Growth construct (explaining 3.5% of the variance of the VL, with statistical significance at 10%).

Aiming to obtain the highest content validity, respecting the categories of intangible assets, considering both the "textual" variables relating to the Intangible Assets Disclosure (of the acquiring and acquired firms) and in the "numerical" financial proxies referring to the Existing Intangible Assets (of the acquiring companies only), we developed **Structural Model 3A: Indicator of Intangibility prior to the M&A *x* Profitability and Growth**. Thus we obtained the highest explanatory percentage (7.9%) on Corporate Profitability, with a significance level of 1%. Considering the exploratory nature of Structural Model 3A, textual

variables with minimum factor load of 0.4 were allowed [34, p.198]. Although the minimum parameters of AVE and CC were met, we considered a methodologically weaker model.

Figure 2 - Structural Model 3 - Intangible Assets in M&As *x* Profitability and Growth



To minimize this issue, variables with loads below 0.5 were discarded, arriving at **Structural Model 3B: Intangible Assets in M&A x Profitability and Growth**. This presents lower content validity, as it does not encompass all the categories of capital of intangible assets, in the "textual" variables. The results show explanatory power of 7.1% of the Indicios_AT_INT_F&A construct only over the variance of the Corporate Profitability construct, at 5% of statistical significance.

Finally, only the indicators with loads above 0.7 were taken into account again in **Structural Model 3C: Indicia of Existing Intangible Assets in the M&A**, originating from the Acquiring Company *x* Corporate Profitability. In this model, only the variables of the proxy type observed in allusion to the existence of Intangible Assets at the acquiring company remained, forming the 1st order construct Indicios_At_Int_Exist_F&A, which accounts for 4.5% of the variance of Corporate Profitability, with path coefficient significant at 10%.

Conclusions

We find statistically significant positive relationships among the main constructs examined of our study. Comparing Structural Model 1 with Structural Model 3, the two that offered the best and most comprehensive results in terms of explanatory power and significance, we perceive the superiority of Structural Model 1, which offers a lesser degree of complexity, with methodological robustness. Using this model, we find evidence that disclosed intangible assets are related to both profitability and growth.

The analysis via SEM-PLS yielded better results, in terms of explanatory power of the dependent variables and of the level of statistical significance, when using models with

indicators of semantic origin (created by the content analysis technique, applied on the documents published by the companies involved in the M&A operations studied), in comparison to the results obtained from models that used only financial indicators.

The results suggest that information of a textual nature (semantic), converted into intangible asset disclosure indicators, has greater relationship with corporate profitability and growth, the two dependent variables, in comparison to information based on proxy independent variables from a financial and accounting perspective.

Due to the use of an intentional sample, results cannot be generalized, representing a strong restriction on this study. For further studies, we suggest more extensive research on the intangible assets that imply relational capital of merged companies. The authors also suggest, as natural ramifications: the use models of 3rd and 4th order formative constructs, with the actual variables from the database analyzed; the incorporation of intervening or moderating variables into the modeling.

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