



**BRAND RELATIONSHIPS AND CORPORATE BRAND IDENTITY – A
STRUCTURAL MODELING APPROACH**

por

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TESE DE DOUTORAMENTO EM CIÊNCIAS EMPRESARIAIS

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Biography

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Summary

This thesis consists of three distinct essays developed to investigate the influence of the relationships between brands in the brand identity and reputation of the corporate brands in the higher education sector. The three essays involve empirical research; the first essay involves qualitative analysis of interviews and focus groups; the second and third essays involve quantitative analysis of a questionnaire.

The first chapter investigates the characterizing features of the three main concepts involved in this research: Brand Relationships, Corporate Brand Identity and Reputation in a context of higher education by developing two case studies. It was found that the corporate brand identity is influenced by the relationships with the recognized research centres and international universities on the one hand and by the other hand with the recognized companies. It was found that universities are aware of the power of the relationships between brands and use it to attract different audiences: older students to master and doctorate programs and younger students to lower degrees.

The second chapter develops a measure for characterizing the Brand Identity and the External Brand Identity of the corporate brands, using a sample of 235 engineering students from higher education institutions located in a European country. The aim of this research is to measure the Corporate Brand Identity at both overall and dimension levels, for which it was developed a higher-order factor structure for both the Corporate Brand Identity and for the External Corporate Brand Identity by using the dimensions proposed by Kapferer (1986, 2008). Measures were developed or adapted from the literature.

Using a sample of 216 engineering students, the third chapter develops a measure for the Brand Relationships concept and estimates a model that considers the Brand Relationships concept as an antecedent of the Corporate Brand Identity and the Brand Reputation as a consequence of the previously mentioned concept.

The aim is to develop and implement an approach for measuring the Brand Relationships concept as a cause of a well-managed Corporate Brand Identity that results in a positive Brand Reputation.

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Introduction

The purpose of this doctoral thesis is to investigate the influences of the relationships between brands in the management of the corporate brand identity and reputation in a context of high consumer involvement.

The services sector has been recently described as a dynamic environment where consumers have a rising role as co-contributors to brand construction and development (Silveira *et al.*, 2013). This is particularly true in the higher education sector, where students are at the same time external and internal stakeholders (Balmer *et al.*, 2010) and for that reason they have a particular role delivering the brand promise.

Relationships have been traditionally positioned in the theory of networks between companies “e.g.” Ford *et al.*, 2003; Hakansson and Snehota, 1989, 1995; Hakansson and Ford, 2002 and, although literature may acknowledge its influence in the identity of organisations (Hakansson and Snehota, 1989, 1995), there are no empirical studies supporting it. An early indication of the consequent need for scholarly research is the research developed by Keller and Lehman (2006). The authors pointed out relationships and clients’ experience as two areas demanding further investigation.

Existing work falls short of developing a fully articulated measurement of brand identity. Brand managers need to evaluate the brand identity that they manage using measurement tools so that they can compare their brand with others. This came out as an opportunity to measure the brand identity prism developed by Kapferer (1986, 2008) for it has never been measured before, to the best of our knowledge.

We intend to use a brand identity model to test the proposed theory which explains the role of the relationships between brands in the corporate brand identity and reputation. The identity of the brand is traditionally defined as a dynamic concept of the sender that can be run by the management team (Kapferer, 1991, 2008; de Chernatony, 1999; Aaker 2004, Balmer *et al.*, 2010). There are controllable dimensions of identity management (Simões *et al.* 2005). However, several authors defend the existence of external factors which condition the identity of a corporation (Balmer and Gray, 2000; Kennedy, 1975; Markwick and Fill, 1997). This research argues that the management of the corporate brands can be developed under a relational approach by means of the

interaction between the external part of the brand identity prism and the publics. This interaction, if properly managed, contributes to the development of a salient corporate brand identity and a positive brand reputation.

The growing interest regarding the co-creation of brands (Silveira *et al.*, 2013; Hatch and Schultz, 2010; Payne *et al.*, 2009; Madden *et al.*, 2006; Prahalad and Ramaswamy, 2004) suggest a greater sense of urgency for generating research-based knowledge pertinent to study the influences of the relationships between brands in the creation and development of the corporate brand identity. These call for research, as well as prior work developed on the theme, in which the author of this thesis was involved (Barros *et al.*, 2013, 2012, 2011, 2009, 2008a, 2008b) reflect the paths of this research process.

Research problem

The problematic of this thesis is centred in the management of the corporate brand identity. Brand identity is frequently defined as a concept that is stable over time. This assumption has been recently questioned by academics and practitioners and new concepts (“e.g” co-creation of brands) rise in the literature suggesting that brand identity develops taking in account the interaction with consumers. Most brand identity models reveal an internal part that is related with what is central and enduring in a brand and an external part more exposed to interaction with public. We argue that the corporate brand identity is a dynamic concept that can be managed by the choice and selection of relationships with other brands in order to develop a strong brand identity and a positive reputation in all the stakeholders, especially in the consumers.

The core of this thesis is formed by three main issues within current research:

- the definition of the relationships between brands;
- the measurement of the brand identity prism in a context of corporate brands;
- the influence of the relationships between brands in the corporate brand identity and the influence of the later in brand reputation.

Regarding the definition of the relationships between brands, most studies are focused in industrial networks, especially in transactions between goods (Rauyruen and Miller, 2007; Wilson, 1995) whereas little attention has been given to the relationships in the services sector known for its very particular characteristics. Valuable exceptions exist as

the research of Rauyruen and Miller (2007), regarding the quality of the relationships in the context of services in B2B market. Yet, it is still under researched the definition of the relationships between brands in a context of high involvement of consumers.

Regarding identity, much attention has been given to the development of conceptual models to define corporate and brand identity “e.g.” Kapferer (1986, 2008), Balmer (1998); Balmer *et al.* (1999); Cornelissen *et al.*, (2001); de Chernatony, (1999); Meleware, (2003), Silveira *et al.*, (2013) rather than to measure the proposed models. The development of measures is scarce in branding literature. Valuable exceptions exist regarding corporate identity studies “e.g.” Simões *et al.* (2005), Suvatjis and de Chernatony (2005). It is worthwhile to develop measures to brand identity in order to identify what is central to a large sample of consumers in a market demanding a great deal of interaction like the higher education market.

As for the influence of the relationships between brands in the corporate brand identity and consequently in the brand reputation of the corporate brands, it is commonly accepted in the literature that the reputation of a brand is the result of a good brand identity management. This approach demands that brand identity must be managed in order to achieve a positive reputation. Both academics and professionals consider reputation the most valuable asset of an organization - it reduces the stakeholders’ uncertainty about their future performance, strengthens competitive advantages that generate trust in the public and creates value through the capacity of the organization to increase the probability of achieving a prize for its goods and services.

It is urgent to investigate the influences of selecting and choosing relationships with other brands in the corporate brand identity and to investigate if there is an expected positive return towards the brand reputation.

Research scope and purpose

This thesis contains three individual empirical papers that are the result of a research process regarding the management of the corporate brand identity under a relational approach based in the argument that the corporate brand identity is formed for an external part that can be managed by the choice and selection of relationships with other recognized brands so as to develop a strong identity and a positive reputation.

The first study develops an exploratory qualitative research in order to find cues to define the relationships between brands and to test the adequacy of the previously defined frameworks to characterize the corporate brand identity and the brand reputation concept in the higher education context.

The second study deals with the measurement of the corporate brand identity as defined by Kapferer (1986, 2008) for, as far as our knowledge concerns, it is the first time that scales are developed to characterize the brand identity dimensions in a higher education context.

The third study develops a measure to characterize the concept of the relationships between brands and links both previous studies by testing the influence of the Brand Relationships in the development of the Corporate Brand Identity and the influence of the latter in the Brand Reputation.

As for the research purpose of the first study, it is to provide an inductively derived framework that explains key aspects of the management of corporate brand identity under a relational context. For this reason, a research agenda was followed regarding the development and adaptation, to the higher education context, of features to characterize the three constructs involved in this research: relationships between brands, corporate brand identity and brand reputation.

The second study develops a measure to define the corporate brand identity, as it was previously defined. We considered brand culture a nominal variable and adapted it from the research developed by Desphande *et al.* (1993) regarding the organizational culture. We tested if the brand cultures perceived by the students as being performance oriented develop more salient/strong identities than the brand cultures perceived as being less performance oriented. For brand managers in the higher education sector it is important to decide the positioning of the brand towards their most important stakeholders – the students; therefore we consider this matter of great importance.

Apart from measuring the corporate brand identity as described we also measured the concepts that define the external corporate brand identity (as defined by Kapferer, 1986, 2008) using the previously selected variables and the items that characterize each variable according to the conclusions of the interviews, focus groups of students and the opinion of experts. A set of related metrics for students' assessment of their perceptions regarding the proposed concepts were tested and validated.

The research purpose of the third study is to develop and estimate a causal model linking the three constructs. In line with the proposed theory, we aim to explain that the relationships between brands influence the corporate brand identity management. From corporate brands (higher education institutions), that invest and select in powerful brands to develop relationships, it is expected that salient/strong identities are developed and consequently positive brand reputations capable of attracting students.

The research limitations

This study is limited to investigating a particular service - the higher education sector - using only engineering students. Other studies are demanded using samples with different characteristics “e.g.” arts or psychology students. It would be wise to test the proposed theory in other contexts where the consumers are also highly involved like, insurance and medical care.

Literature is scarce regarding the relationships between brands; therefore, it was necessary to adapt concepts and items from different but related fields of study like the relationships in industrial networks. The services sector is characterized by intangibility and relationships are used to fill that gap.

Because, as far as our knowledge concerns it was the first time that the brand identity prism proposed by Kapferer (1986, 2008) was measured, the definitions of the scales were based, firstly, in the author’s statements. Yet, since identity is a holistic concept, many fields of study were consulted to develop the measures for the proposed scales.

Research Methodology

In this section, the methodological choices made in this research are presented. This research adopts two methodological processes: qualitative and quantitative research. The first was used with the aim of assessing the face validity of the construct’s measures and their fit to the specific context of higher education. Therefore two case studies were developed, in paper 1, with the collaboration of two higher education public institutions (corporate brands) that are part of two different universities located in the same European country. Case study methodology has been supported by a great number of prominent scholars (Eisenhardt, 1989; Stake, 1978; Yin, 1984) and it is also

the main pedagogical framework for the Harvard MBA degree and other leading business schools and considered to result in generalizable conclusions (Balmer *et al.*, 2010).

According to Eisenhardt (1989), to minimize extraneous variation, the study was limited to engineering institutions. Engineering higher education institutions are traditionally recognized for their strong brand identities as a consequence of developing excellent scientific publications, having a great number of high quality relationships with business partners, namely research centres, internationally recognized universities and companies that employ the newly graduates. They are also known for their intervention in the society especially building bridges and other infrastructures and providing seminars and disseminating science in seminars and international conferences.

This research (paper 1) was developed in two stages: interviews (senior management and staff: lecturers/researchers) and two focus-groups (students: undergraduate, master and doctoral) for each higher education corporate brands.

The study marshalled insights from a total of thirteen in-depth interviews following a predesigned interview protocol. All the interviews were conducted between June 2011 and February 2012. In addition to interviews, desk research was also conducted (“e.g” faculties’ websites, news in the media). The conclusions of this research were used in the following researches (paper 2 and 3).

Quantitative methodology covers the following two papers (paper 2 and paper 3). A questionnaire was used in order to measure the three main constructs of this investigation: Brand Relationships, Corporate Brand Identity and Reputation. In line with this, we developed an online questionnaire to be answered by engineering students attending degrees in a European country. The data gathering took place between July and October 2012.

From a total of 386 respondents, after evaluating outliers and deleting cases with ambiguous values a final sample of 235 students was used in the second study (paper 2) and 216 in the third (paper 3). The differences of the two samples are related with the fact that only the students that had sufficient knowledge about the brand relationships of their higher education institution were called to answer to the questions regarding the relationships between brands.

The questionnaire was previously refined taking in consideration the comments and judgments of a panel of 10 experts (academics and practitioners). The format and content of the online questionnaire were also pretested in a sample of convenience of 80 higher education engineering students. Based on the identification of problems regarding content, wording, sequence, layout question difficulty and instructions, minor adjustments were made.

The research process began with a clear definition of the constructs involved, as a good measurement theory is a necessary condition to obtain useful and reliable results from the structural relationships between the constructs (Churchill, 1979; Edwards and Bagozzi, 2000; MacKenzie, 2003).

In a previous stage of this research, the preliminary project was submitted to the Marketing Science Institute (MSI doctoral awards) and the comments and suggestions were very valuable to clarify the goals of this research. Also the feedback from the reviewers of the Conferences where this research has been presented (Barros *et al.* 2013, 2012, 2011, 2009, 2008a, 2008b), were very helpful to obtain a good measurement theory and reliable results for structural relationships among the constructs. The construct definitions and items derived from extensive literature review to find scales that previously performed well and adapted them to the context of higher education (Personality in paper 2; Brand Reputation in paper 3). When scales were not available in prior research, we developed new construct measures (Physical, Reflected consumer, Relation, Self-image in paper 2; Motivation and Commitment in paper 3) or substantially modified an existing scale to fit the context (Culture in paper 2 and Trust in paper 3). This process resulted in an extensive initial set of scale items that were submitted to the appreciation of a panel of judges and a pre-test to select the final measures of the research goals.

After data retrieval, the data was subjected to specific quantitative research methods and paper 2 and 3 were developed. As the aim of the research developed in paper 2 and 3 is to analyse multiple dependence relationships, each latent variables, as well as their positioning in relation to each other, structural equation modeling, specifically using AMOS 21 (Arbuckle, 2010) was employed to analyse the data.

We can summarize the following methods:

Paper 1 – This paper used exploratory research by analysing two case studies with the purpose of providing a preliminary framework to explain the key aspects of the management of corporate brand identity under a relational context. This exploratory research permitted us to find features to characterize:

- the relationships between the universities and other brands that students consider attractive (Brand Relationships);
- the Corporate Brand Identity as defined by Kapferer (1986, 2008) for each university;
- the Brand Reputation of each university.

It was also of great help to distinguish each university in study according to its age, location, scientific development, connections to industry and consequently, its response to the environment in order to characterize the relationships between each university and the other brands, the corporate brand identity and reputation.

Paper 2 –This paper aims to develop a measure to the corporate brand identity as defined by Kapferer (1986, 2008). Based in the research by Desphande *et al.* (1993), variations between groups (more performance oriented cultures vs less performance oriented cultures) were also assigned. A second-order measurement model was also tested showing that the constructs defined by Kapferer (1986, 2008) and characterized in the first research provide a full understanding of the corporate brand identity in a higher education context. The second-order confirmatory factor analysis is a suitable technique to represent a second-order latent factor that causes multiple first-order latent factors.

Due to the importance of the external brand identity (as defined by Kapferer, 1986, 2008) in the context of corporate brands we developed a measure to this concept. A second-order measurement model was also tested showing that, the three constructs (physical, relation and reflected consumer) provide an autonomous measure more exposed to interaction with the corporate brand public.

Paper 3 – This paper aims to propose a concept to define the relationships between brands in the higher education services sector and to study its influence in the external corporate brand identity and reputation. Therefore a model is proposed which integrates the specificities of brand relationships in the management of corporate brand identity and consequently, reputation. This research suggests that the management of the corporate brand identity develops under a brand relationship approach.

Summary and contribution of the papers

In this section are summarized the three papers included in this thesis.

Paper 1 – “The role of the relationships between brands in the corporate brands’ identity and reputation: a study of university brands”

This exploratory research aims to find cues to design a preliminary framework that relates the relationships between brands with the corporate brand identity and with brand reputation. Therefore it contributes to the fulfilment of a gap in the literature of corporate branding management by arguing that brand relationships influence the corporate brand identity, presents the concept of brand relationships in a higher education context; adopts the perspective of students as particular stakeholders that transcend the internal/external boundaries; introduces a model of corporate brand identity management for universities and finally reports two studies of two different engineering faculties with different features and inserted in different contexts.

Paper 2 – “Corporate brand identity measurement in higher education – an internal and external perspective”

The second study measures the concept of corporate brand identity as proposed by Kapferer (1986, 2008) and provides a second-order factor for this concept and for the external part of the corporate brand identity.

It also contributes to the fulfilment of a gap in the literature of brand identity management by producing a measurement of the concept of corporate brand identity in higher education; it integrates several concepts in literature that are related with brand identity by adapting and creating new scales connected to the dimensions of corporate brand identity in the context of higher education and finally, it stimulates higher education brand managers to rethink the perspective about brand identity as a dynamic construct with students having an important role as co-creators of the brand.

Paper 3 – “The influence of brand relationships on corporate brand identity – a model proposition”

The purpose of this paper is to study the influence of the relationships between brands in the external part of the corporate brand identity and in brand reputation. This research contributes to the fulfilment of a gap in the literature by developing measures to the concepts of brand relationships in higher education; it integrates the concept of brand relationships in the management of the external corporate brand identity and reputation

in higher education; it adapts a measure of the corporate brand reputation and uses this concept as a consequence of the management of the corporate brand identity in the higher education context; it stimulates higher education brand managers rethinking the perspective about the management of brand identity as a dynamic construct that develops under a brand relationship approach.

We believe that measured models can be easily adopted for brand managers in higher education in order to develop strategies to decrease the gap between the ideal identity and the experienced one.

Table 1 summarizes the contribution of each paper.

Table 1 – Contribution of the papers

Paper	Purposes	Theoretical contributions	Managerial implications
Paper 1	The aim of this research is to explain how students, researchers, lecturers and managers value the important stakeholders (students: undergraduate, master and doctorate) and characterize the relationships between their faculty and other brands.	It provides a preliminary framework that integrates the specificities of corporate brand identity management in a particular service sector where consumers are highly involved – the higher education sector. It characterizes, from the theoretical point of view, the features of the process of corporate branding management in universities, under a brand relational approach. The research suggests that the relationships between brands influence all the dimensions of the brand identity prism. Yet, “personality” and “self-image” also influence the relationships between brands.	In a managerial perspective, corporate brand managers have to choose, design and invest in brand relationships that make for the value of the corporate brand and consequently increase the reputation of the most important stakeholders, the students. Big, international higher education brands must think global to attract the best students, lecturers/researchers, financial resources... and they must invest in additional emotive relationships, strongly linked to intangible features in order to empower the corporate brand internationally. Small, regional universities brands should think in regional terms for they have a very important role in the regional dynamism and innovation.
Paper 2	The aim of this research is to measure the corporate brand identity and the external corporate brand identity in a very specific context like the higher education context.	The measurement of the brand identity prism as defined by Kapferer (1986, 2008) is, as far as our knowledge concerns, the first time that it is measured and therefore it is an innovative research. This research resulted in the development of new measures to characterize Physical, Reflected consumer, Relation and Self-image and in the adaptation of others: brand Personality and of the brand Culture. The external brand identity (as defined by Kapferer, 1986, 2008) was also measured due to its particular interest in the context of corporate brands.	Conceptual frameworks, although they produce very relevant discussions, are more often than not difficult to interpret and manage by brand managers. Therefore, the proposed measurement of the brand identity construct is very helpful for the brand managers of the corporate brands. The findings regarding the relation between the perceptions of the students regarding the performance orientation of the higher education brands and the identity salience help managers to decide the positioning of the corporate brand towards their most important stakeholders – the students.
Paper 3	This paper aims to propose a concept to define the relationships between brands in the	This research resulted in the development of a new construct to define the relationships between brands named Brand Relationships, its dimensions and	The management of the brand identity, especially in the case of the corporate brands, is highly motivated by the publics with whom the brands are

	higher education services sector and to study its influence in the external corporate brand identity and reputation.	corresponding items. At the same time it was proposed a model integrating this construct as a second-order factor. The later was tested as the cause of the development of salient Corporate Brand Identities (measured by the external part of the corporate brand identity developed in paper 2), having as output variable, the Brand Reputation.	exposed to interaction. Therefore the management of the corporate brand identity should be carried out from a relational perspective, so as to create positive reputations in all the stakeholders. This model highlights for the necessity of managing the external part of the corporate brand identity according to the expectations of the main stakeholders of a higher education brand – the students.
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Structure of the thesis

Presented the background of this thesis and explained the motivation and the research goals for taking up this research, follows the first chapter which presents study 1 - “The role of the relationships between brands in the corporate brands` identity and reputation: a study of university brands”. The second chapter presents study 2 - “Corporate brand identity measurement in higher education – an internal and external perspective”. The third chapter presents study 3 - “The influence of brand relationships on corporate brand identity – a model proposition”. The last chapter “Conclusions” integrates and additionally presents the contribution to the research community. Managerial implications are also discussed. The summary concludes with the limitations of this research and directions for future research as well are provided.

Chapter 1

1. The role of the relationships between brands in the corporate brands' identity and reputation: a study of university brands

Abstract

Relationships have been studied in different sciences like psychology and management. Although literature may acknowledge its influence in the identity of organizations, there are no empirical studies to assess any influence in the identity of corporate brands. This research argues that the management of the corporate brand identity should be carried out from a relational perspective, by means of relationships of the corporate brand with other brands so as to create positive reputations in all the stakeholders.

A framework is hereby designed and case study methodology selected to analyze two engineering faculties (brands). We conducted in-depth interviews with lecturers/researchers and focus groups of students. This research suggests that in contexts of highly consumer involvement, the relationships of a corporate brand with highly recognized brands have a definitive impact on the identity and reputation of the corporate brand by influencing the perceptions of the stakeholders and the offer of educational services.

Keywords: consumer involvement, corporate brands, brand identity, relationships between brands

1.1 - Introduction

The identity of the brand is traditionally defined as a dynamic concept of the sender that can be run by the management team (Kapferer, 2008; de Chernatony, 1999; Aaker 2004, Balmer *et al.*, 2010). Brand identity precedes brand image and represents the basis of brand knowledge (Kapferrer, 2008). In contrast, brand image is a static concept focused on the receiver side of the brand and, when analyzing how external stakeholders perceive it, brand identity analyzes the role of internal stakeholder groups first (Burmam *et al.*, 2009). This approach implies that the active management of the brand is only possible through the management of brand identity. However, several authors defend the existence of external factors which condition the identity of a corporation (Balmer and Gray, 2000; Kennedy, 1977; Markwick and Fill, 1997;).

Literature in this area is scarce on the matter, which turns the management of identity into a topic with growing importance in literature. An exception is the recent research in the area of branding in dynamic environments carried out by Silveira *et al.* (2013), which re-conceptualizes brand identity as dynamic and emanating from multiple actors and highlights the role of consumers as co-creators of brands. Yet, no research is pursued regarding the influences of the relationships with other brands in identity management.

The interest concerning identity management takes larger proportions when one deals with corporate brands. According to Aaker (2004) the number, power and credibility of corporate associations are greater for brands that clearly stand for an organization. The corporate brand, in particular, has a major content in what concerns heritage, assets and capacities, personnel, values and priorities, programs of citizenship and performance. Such content demands a special care from the management for external influences, namely relationships with other brands, so that the identity and reputation of the brand may be affected positively.

Based on previous research in relationship management, brand identity and reputation this research argues that the management of the brand identity should be carried out from a relational perspective by means of relationships of the corporate brand with other

brands so as to create positive reputations in all the stakeholders. Selection, design and investment in relationships with powerful corporate brands are tasks that should be carried out internally by the sender, i.e., by the corporate brand management team.

Relationships have been traditionally positioned in the theory of networks between companies (Ford *et al.*, 1998, 2003; Hakansson and Snehota, 1989, 1995; Hakansson and Ford, 2002, among others) and, although literature may acknowledge its influence in the identity of organisations (Hakansson and Snehota, 1989, 1995), there are no empirical studies to support it. From a branding perspective, Keller and Lehman (2006) pointed out relationships and clients' experience as two areas demanding further investigation. Such statements offered us a basis for empirical investigation about the influence of the relationships between brands in the identity and reputation of the corporate brand.

The aim of this research is to provide an inductively derived framework which integrates the specificities of corporate brand identity management in situations of high consumer involvement.

We considered important to select brands in the services sector because of its particular characteristics regarding intangibility that demand for relationships and particularly higher educational services due to its higher consumer involvement.

Consumers are active choosers of faculties/universities because they are investing in an individual's long term education project which will mean something for life. So, the decision process is complex and demands a great deal of research to get useful information. The word of mouth is a privileged form of communication. Indeed, in the academic field, advice from colleagues or other opinion makers is much more important than media communication.

Case study methodology is used and two engineering institutions that belong to different universities are analyzed. Two exploratory case studies were developed with

two corporate brands acting in higher education in the engineering context of a European country.

We conducted in-depth interviews with heads of external relations, lecturers/researchers, and focus groups of students with the purpose of clarifying the concept of relationship between brands and determining its influence in the identity and reputation of the corporate brand. Internal and external stakeholders were selected to participate in this research, in line with Balmer and Gray (2003), de Chernatony (1999) and Harris and de Chernatony (2001) who contend that corporate brands have a focus on external stakeholders, but internal stakeholders are also important (Balmer, 2005). The Deans, Heads of External Relations and Lecturers/researchers are considered internal stakeholders, but Students are not so easy to qualify (Freris 2003, 2002). Literature has generally revealed that students are, more often than not, viewed as customers (Barret, 1996). In this research students are considered internal and also external stakeholders. They are internal because they participate in the universities' activities; they are the main reason for the existence of universities and they contribute to deliver the brand promise. However students are also external stakeholders because they have a long association with the university and they pay their fees to attend the selected university program. According to the procedures followed by Balmer *et al.* (2010), we decided to organize focus-groups by joining together, on the one hand, undergraduates with master students and on the other, doctorate students. This procedure was expected to reveal differences between students. The necessary arrangements were made to meet the research design.

In theoretical terms, the purpose of this research is twofold. First, it is to explain how the most important stakeholders (students: undergraduate, master and doctorate) value the relationships between their faculty and other brands and how they characterize the identity and the reputation of their faculty. Second, it is to characterize, from the theoretical point of view, the features of the process of corporate branding management in universities, under a brand relational approach.

This paper also endeavors to give policy advice to general managers and to those having responsibility in university brands, for it is distinctive in that it:

- contributes to the fulfilment of a gap in the literature of corporate branding management by arguing that brand relationships influence the corporate brand identity;
- presents the concept of brand relationships in a universities context;
- adopts the perspective of students as particular stakeholders that transcend the internal/external boundaries;
- reports two studies of two different engineering faculties with different features and inserted in different contexts - one is bigger and older while the other is younger, smaller and located in a smaller town away from the decision centers;
- introduces a model of corporate brand identity management for universities.

In the next section we introduce the preliminary model derived from available literature and from desk research which constituted the first step of our research. We expect to get insights from the case studies to improve it. According to Churchill (1979) the procedure to develop better measures begins by reviewing literature to specify the domain of construct. Following Yin (1989), who argued that case studies should start with theoretical propositions, this research begins with a preliminary theoretical framework that connects brand relationships, corporate brand identity, and brand reputation.

1.2 - Theoretical background

The rise of corporate brand management and reputation management provides opportunities to find new perspectives in branding. Management plays a key role in the development and maintenance of corporate brand identity, including paying particular attention to the internal and controllable aspects of the process and to the impact of the choice and development of congruent relationships. This research investigates the influence of the relationships in corporate brands and its effect on brand identity and reputation management.

Previous research has established links between corporate brand and reputation (de Chernatony, 1999), the congruency between brand identity and reputation (Harris and de Chernatony, 2001) and between reputation, satisfaction and loyalty (Helm, 2007). Yet, never before were links established between brand relationships and the impact of those relationships on corporate brands` identity and reputation.

Below, we develop the meaning of the constructs involved in the proposed framework in a context of corporate identity management.

1.2.1 - Brand Relationships

Most studies regarding relationships are focused in industrial networks, mainly in transactions between goods (Wilson, 1995) whereas little attention has been given to the relationships between brands in the services sector known for its very particular characteristics. Valuable exceptions exist as the research of Rauyruen and Miller, (2007) regarding the quality of the relationships in the context of services in B2B market.

Brand relationships, between the corporate brand (faculties) and other recognized brands, are expected to motivate the students and the other stakeholders. This research uses dimensions adapted from relationship marketing to investigate whether the internal

and external stakeholders value the relationships of the selected brands with other recognized brands. The selected dimensions are: trust, commitment, motivation, and emotions. The following considerations justify this decision.

After reviewing relevant literature regarding the concept of trust in a relationship (Moorman *et al.*, 1992; Gurviez and Kotchia, 2002) we decided to adapt it taking in account the dimensions proposed by Gurviez and Korchia, (2002) and defined as a psychological variable mirroring a set of accumulated presumptions involving the credibility, integrity and benevolence that a stakeholder group attributes to the brand relationship. According to Hardwick and Ford (1986), the existence of commitment (Morgan and Hunt, 1994) assumes that the relationship will bring future value or benefits to the partners. This definition was also adapted to the context. Commitment between brands influences the internal and external stakeholders' perceptions about the future value or benefits for them. The concept of motivation is based on the reasons that the internal and external stakeholders refer when choosing an educational institution, based on its brand relationships.

After several discussions with selected national and international academics and practitioners related to educational services, it was decided that the emotions caused by brand relationships in the internal/external stakeholders of a brand should be included in the research. Most of the arguments were related to the fact that many students usually claim they attended a certain university/faculty because they expected to take advantage of the relations that it had with some employer institutions (protocols, placements...). This decision was supported by literature. Emotions are affective reactions to the perception of situations (Ortony *et al.*, 1988) and are characteristic of brand managers but also of relationships (Gergen, 1997). Authors like Allen *et al.*, 2005; Carrus *et al.*, 2008; Tahtinen and Blois (2010), keep defending the inclusion of emotions in attitude models. The latter concluded that basic emotions (positive and negative) and social emotions are produced by interactions that occur in relationships and play an important role in the relationship development.

In a branding context, Aaker (1996) and Zaltman (1997), advocate that emotions are important to understand the consumers' motivations. The power of emotions has also been demonstrated by Aaker *et al.*, 1986; Burke and Edell, 1989 in a context of publicity and attitudes towards brands. In line with this we decided to investigate which emotions (positive and negative) can be included to measure how the internal/external stakeholders value the relationships of the corporate brand (faculty/school).

These reasons justify our decision to define the concept of brand relationships with trust, commitment, motivation, and emotions (positive and negative) in the eyes of the stakeholders.

1.2.2 - Corporate Brand Identity

It is necessary to differentiate the concept of corporate brand identity from brand identity, corporate brand and corporate identity. They are different but related concepts, which determine different approaches to management, as will be discussed below.

Corporate brand identity is the specific identity of a corporate brand, that is, the alignment between the brand identity facets and the specific promise of the brand, not only to its consumers but also to other stakeholders (because it is a corporate brand). Brands that stand for corporations have great power and great responsibilities towards all stakeholders. According to Balmer (2002) this requires a broad alignment between the identity elements and the brand promise.

Balmer and Greyser (2006) consider brand identity a form of group identity expressed by a set of shared values, characteristics and behavior. The focus of brand identity is on consumers. Kapferer (2008) states that it is the cultural content of the brand identity that enables the transfer from corporate identity to brand identity, in the case of corporate brands. Brands like Sony, BMW and McDonald's are corporate brands. Their brand identities are much connected to their corporate identities and to all stakeholders.

According to Balmer (2001), corporate identity provides the grit around which the pearl of a corporate brand is formed.

In the relationships between two parts, interaction uses the capacities of a corporation but it may also lead to its change or development (Ford *et al.*, 1986). Such changes/developments act strongly in the identity of the corporate brand and in its management. Balmer (2002) is one of the most prolific authors in the area of the corporate brand and has been the first to distinguish the corporate brand from its management. In his opinion there are components which are more strongly linked to the internal part of the organization (structure, culture, strategy). According to this author, the promise of the brand is what makes the bridge, through communication, between identity (internal part) and the target public of the corporate brand. Balmer (2002) also emphasizes the importance of the stakeholders, reputations and environment in the management of identity and corporate brand.

Balmer and Gray (2003) state that one difference between corporate identity and corporate brands is the fact that the former is normally applicable to one corporate identity but the latter can be multiple (applied to multiple corporate identities). Kapferer (2008) and Balmer (2002) state that corporate brands derive their values and culture from the corporate identity.

The identity of the organization has not traditionally been studied by marketing; it has actually been object of organizational studies concerning the sociology of organizations. Literature about the brand has been studied by marketing, from the point of view of the external communication of the product (Simões *et al.*, 2005). As a matter of fact the model of Kapferer known as the brand identity prism (1986, 2008), which is the basis of most literature on identity associated with the brand, is based on the constructivist school of the theory of communication, according to which when someone communicates they build a representation of the receiver and of the relationship between sender and receiver.

The importance of corporate brands reinforces the necessity of an effective management of the corporate brand identity in the context of relationships.

1.2.3 - Management of Corporate Brand Identity

Only recently has the management of the brand been considered a process integrated in the organization (Simões *et al.*, 2005). Balmer is one of the most prolific authors in the area of the corporate brands and has been the first to distinguish the corporate brand from its management. For this author the management mix of a corporate brand requires alignment between internal and external elements. Internally the author defines the corporate identity and the brand promise and externally, the environment, stakeholders and reputations. Also Kapferer (2008) distinguishes the internal part and the external part of his brand identity framework known as “the identity prism”.

The management of corporate brand identity implies a deep knowledge of the brand identity and of the factors that may influence it. Silveira *et al.* (2013) suggest that brand identity management ought to be a dynamic process and, consequently, that managers need to reshape brand identity over time according to environmental changes and inputs from other social constituents (e.g., consumers).

The growing interest regarding the co-creation of brands (Silveira *et al.*, 2013; Hatch and Schultz, 2010; Payne *et al.*, 2009; Madden *et al.*, 2006; Prahalad and Ramaswamy, 2004) suggest a greater sense of urgency for generating research-based knowledge pertinent to study the influences of the relationships between brands in the creation and development of the corporate brand identity.

This research argues that the line that separates the decisions which depend solely on the brand managers from the ones that depend on external factors is very thin. Corporate brands are focused on the long run and on the various publics (stakeholders) and for that reason they are more dependent on reputations.

According to literature, the management of the corporate brand depends on:

- the congruence between the facets of the brand identity and the corporate values (Kapferer, 2008);
- the congruence between brand identity and reputation (de Chernatony, 1999);
- the balance between the elements that make for the mix of the management of the corporate brand (Balmer, 2002);
- the balance between strategic vision, corporate culture and corporate image (Hatch and Schulz, 2001, 2003).

It is the purpose of this research to add a new perspective to the management of the corporate brand, by relating the relationships between brands and the brand identity in a context of corporate brands.

1.2.4 - Reputation

Corporate brands were created to stress the actions, values and the goals of the corporation and to expand their specific added values (Kapferer, 2008).

Fombrun (1996) defines corporate reputation as the net perceptions of an organization's capability to meet the expectation of all its stakeholders. In a context of corporate branding, it is recognized that corporate reputation is strengthened when the corporate brand promise is kept, so, companies should focus on managing their corporate brand as a means of managing corporate reputation (Argenti and Druckemiller 2004)

The reputation of an organization may vary according to the groups of stakeholders involved (Bromley, 2002). It is a global perception of the esteem (praise, affection and consequent preference) which an institution awakens in its stakeholders.

Both academics and professionals consider reputation the most valuable asset of an organization: it reduces the stakeholders' uncertainty about their future performance, strengthens competitive advantages that generate trust in the public and creates value through the capacity of the organization to increase the probability of achieving a prize for its goods and services.

Many authors discuss the differences between reputation and image. Reputation is generally accepted as a long run concept (distillation of images over time...) and image as a short run concept. Yet, most of the authors agree that both should follow identity, i.e., identity is an antecedent of image/reputation, therefore, a good reputation exists only if it is preceded by a well-designed identity in order to obtain congruence between identity and reputation as stated by de Chernatony (1999).

This is even more important in the case of corporate brands. Corporate brands were created to stress the actions, values and the goals of the corporation and to expand their specific added values (Kapferer, 2008).

According to Fombrun and van Riel (1997), managers must focus on the reputations, which are more stable than image, this one may present many faded faces over time. On the other hand, since identity comes before reputation and the latter is particularly important where corporate brands are concerned owing to its focus on the long run, we consider relevant to design a study that may define and assess the concept of relationship between corporate brands and its impact on the identity of the corporate brand and on its reputation.

There are nowadays global assessments of the quality of universities, which generate national, European or even world rankings. Higher education institutions are fighting a war and we consider that relationships between brands may play an important role. According to Kapferer (2008) Universities and research centers are also service brands that account for the dynamic power of a country (intellectual power). The name of a country is more and more linked to the prestige of its universities and other institutions

of further/higher education, its research centers, its innovative companies... Every country has its star brands demonstrated by the rankings: the US has Harvard and MIT, the UK has Oxford and Cambridge, France has HEC and Insead, for example. However, only some of these have additional emotive value, strongly linked to intangible components, the vague feeling of entering into more than simply a university or school, but into a very exclusive and global club. The author argues that if the state cannot give European universities the financial resources to shine internationally, then companies must, and therefore it is necessary to change the relationships between companies and the university.

The impact of the universities/higher education institutions is also studied in regional terms. The role of universities in regional innovation has evolved over the last twenty years. Their initial role was strictly connected to teach and to research but now universities are adopting a third role in regional economic development (Etzkowitz and Leydesdorff, 1999). The presence of a strong research university in itself is no guarantee of regional economic growth. Bramwell and Wolfe (2008) found that the potential to contribute to local and regional economic development is combining a world-class academic reputation for teaching and research with the nurturing of an entrepreneurial attitude of mind among faculty and students. They argue that there are many examples of entrepreneurial universities regardless of its age (old/new), resources (much/few), or location (peripheral/central) like: the big and dynamic University of Waterloo, located in the Waterloo region, one of the most dynamic and the new poorly endowed University of Twente located in a peripheral region of the Netherlands.

This research also investigates the importance of the reputation of the universities in the eyes of their students taking in account the relationships that the universities have with the international, national and regional stakeholders. For this purpose, it is used the model of reputation defined by Vidaver-Cohen (2007) because it is based on the Rep Trak model (Fombrun, 2006) and it was successfully applied to a business school. The original dimensions (predictors from Rep Trak) were adapted to the context (see Table 1.1) and separated from the reputation perceptions (trust, admiration, good feeling and perceived public esteem).

TABLE 1.1 - The Vidaver-Cohen reputation framework (2007)

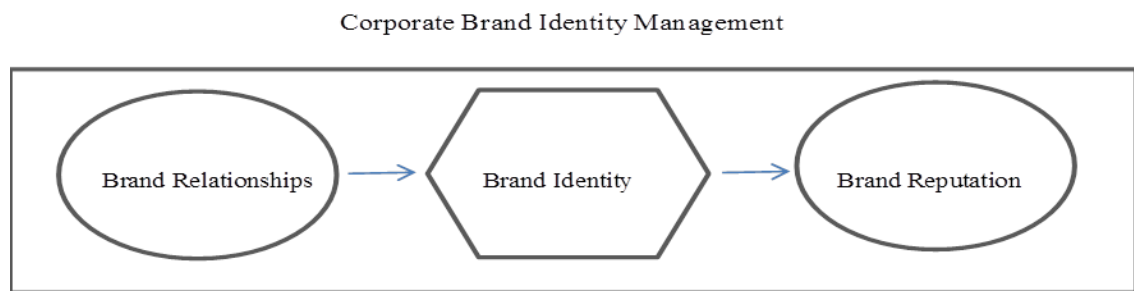
performance (intellectual, network, financial)
product
service
leadership
governance
workplace climate
citizenship
innovation

Next, there is a description of the methodology proposed to investigate how brand relationships influence the brand identity and the reputation of a corporate brand.

1.3 - Methodology

The main purpose of this empirical research is to provide an inductively derived model that explains key aspects of the management of corporate brand identity under a relational context.

Figure 1.1 – Corporate Brand Identity Management



1.3.1 - Selection of the units of analysis

Two public institutions that are part of two different universities were selected for four main reasons. First, they are located in the same, relatively small, European country, at about 60 Km away from each other. One of them is older and bigger and more prestigious internationally and, for that reason, it has a great number of candidates for undergraduate, master and doctorate programs. The other one is smaller (fewer students) and, although it enjoys national recognition, it is placed in a lower position in the national and international rankings. Secondly, both have strong relations with other brands, namely companies and other business partners. Third, the proximity of the author of this research was also very important in order to facilitate the process. Finally, according to Eisenhardt (1989), to minimize extraneous variation, the study was limited to engineering institutions.

In the following pages the older and bigger engineering faculty will be addressed as F1 and the younger and smaller as F2.

1.3.2 - Case study approach

The research question is set as follows: “How relationships between brands act on the management of identity and on the reputation of the corporate brand.”

The methodology selected to meet the question of research was a case study approach. Case study methodology has been supported by a great number of prominent scholars (Eisenhardt, 1989; Stake, 1978; Yin, 1984) and it is also the main pedagogical framework for the Harvard MBA degree and other leading business schools (Balmer *et al.*, 2010). Case studies are very useful for studying processes in companies as well as for explanatory reasons (Gummesson, 1991). They are also adequate when multiple sources of data are used and when comparisons are being made (Perry, 1998). For these reasons Balmer *et al.* (2010) and Balmer and Liao (2007) consider that case studies can result in generalizable conclusions.

1.3.3 - Data collection and coding

This research is developed in two stages: interviews (senior management and staff: lecturers/researchers) and focus-groups (students: undergraduate, master and doctoral). Before the interviews, there were several previous procedures such as a discussion with experts – academics and practitioners, national and internationally recognized in higher education (Barros *et al.*, 2011, 2009, 2008a, 2008b). This procedure, as well as our own reflection, brought about the necessity to have a protocol to use in the interviews and focus groups. The study marshaled insights from a total of thirteen in-depth interviews following the predesigned interview protocol. Each interview lasted for about two hours and some informants were interviewed more than once. All interviews were recorded after permission of the interviewed. To assure the accuracy of the interview data, we conducted member checks (Lincoln and Guba, 1985). All the interviews were conducted between June 2011 and February 2012. In addition to interviews, desk research was also conducted (faculties’ websites, news in the media...).

According to King (1991), Balmer (2001) and Aaker (2004) senior management members were selected as informants because they are important in terms of corporate brand management. Also, informants who had day-to-day strategic management responsibilities were selected.

It was our intention to interview Deans but unfortunately that was not possible. Therefore, interviews were carried out with Heads of external relations, Directors of undergraduate, master and doctorate levels and Lecturers/researchers, owing to their proximity to students and their importance in the process of delivering the brand promise. Interviews were held with eight individuals in F1 and five in F2. Details about the profile of these informants are provided in Table 1.2.

TABLE 1.2 - Informants

Institution	Informant/position
F1	(1) Head of External affairs (3) Directors of programmes (undergraduate, master, doctoral) (4) Lecturers/researchers
F2	(2) Directors of programmes (undergraduate, master) (3) Lecturers/researchers

The other part of this study is derived from four focus group discussions, two in each institution. Details about the profile of these students are provided in Table 1.3.

TABLE 1.3 - Focus groups

Focus-groups	Institution	Number of participants	Gender
Undergraduate (4) Master (2)	F1	6	Male: 3 Female: 3
Doctorate (8)	F1	8	Male: 7 Female: 1
Undergraduate (4) Master (3)	F2	7	Male: 4 Female: 3
Doctorate (6)	F2	6	Male: 5 Female: 1

These meetings with students were not easy to achieve because of schedule problems. Yet, owing to the intervention of the Directors of programs and of one research center that was very active in engaging students, the first focus group took place in July 2011 and the last occurred in March 2012.

Data were coded first by hand, for we considered that this would bring us closer to the data and both stages were coded separately. According to the general protocol of qualitative research, data collection, analysis and interpretation took place simultaneously and generated some tables that synthesize the data. At the same time several long meetings were held between the authors to provide an in-depth understanding of the phenomena. The findings of the research led to the development of propositions and to the refinement of the proposed conceptual model.

1.4 - Findings

After literature review, desk research and the analysis of the interviews and focus groups, this research concludes that the brand relationships selected by the informants as influencing the corporate brand identity are as follows:

- 1 – relationships with the interface institutes, associated laboratories and/or other institutions that aim at increasing the development of research and interaction with companies;
- 2 – relationships with other recognized universities institutions like MIT or Carnegie Mellon University, with which both brands share some educational offer (namely doctoral programs);
- 3 – relationships with recognized companies (national/international) with which both brands have protocols regarding students/graduates placement or with which they develop doctorate programmes.

As for the relationship with the interface institutes/associated labs/other research institutions, the interviewed acknowledged the existence of very functional characteristics such as *formatted finances and a determination of the lecturers – investigators to develop applied quality research*, as referred by one of the senior managers. These facts brought about a motivation for the connection between the faculties and the interface institutions. Some of the interviewed referred a marriage-like relationship – *there are some research units situated in the campus of F1 (though in private property) and this enables the lecturers-investigators and the students working in projects to move about easily*, as stated.

About the second type of relationship, the so-called institutional relationships with universities, the interviewed agreed that it is meant to attract more advanced students (the ones intended for doctorates) and international students, promoting the reputation of the corporate brands in study by connection with institutions of undeniable reputation

like the North-American MIT and Carnegie Mellon University (partnerships where both institutions are involved).

As for the relationships with recognized companies, results show that they favor the employment capacity, which is considered high in the two corporate brands in study. However there is a difference between the faculties (corporate brands) in study – while F1 is generally more related with big companies (multinational companies) F2 is generally more involved with smaller companies (SME's), regional ones, most of them created by spin-offs born inside the faculty.

These relationships between academy and companies may be the reason why the interviewed mentioned them as the most attractive factor for new students in both corporate brands.

As students were defined as internal and external informants it was useful to synthetize the triangulation across different data sources. This process revealed a high level of consistency as can be seen in Table 1.4.

TABLE 1.4 - Resume of the triangulation across different data sources

	DATA SOURCES	CROSS-SOURCE AGREEMENT
Proposition 1	<u>Desk Research</u> <u>Interviews</u> : senior management + lecturers/researchers <u>Focus-groups</u> : doctoral students <u>Focus-groups</u> : undergraduate and master students	Very High
Proposition 2	<u>Interviews</u> : senior management + lecturers/researchers <u>Focus-groups</u> : doctoral students <u>Focus-groups</u> : undergraduate and master students	Modestly High
Proposition 3	<u>Interviews</u> : senior management + lecturers/researchers <u>Focus-groups</u> : doctoral students <u>Focus-groups</u> : undergraduate and master students	Very High
Proposition 4	<u>Desk Research</u> <u>Interviews</u> : senior management + lecturers/researchers <u>Focus-groups</u> : doctoral students <u>Focus-groups</u> : undergraduate and master students	High

The research conducted to four propositions.

Proposition 1

The perception that there is a relationship between a corporate brand and recognized brands generates trust, commitment, motivation and emotions in the stakeholders of the corporate brand.

We decided to collect opinions from the internal stakeholders (lecturers, directors of programs, senior management) to find out whether the selected relationships were designed to generate trust, commitment, motivation and emotions in students. Students were also, in turn, questioned whether they felt that brand relationships inspire trust, commitment, motivation and emotions.

Senior management members consider that the relationships with reputed universities *were one of the reasons for the development of doctoral programmes with MIT or Carnegie Mellon or even with a famous multinational... That will improve our students' curricula and will motivate them and also the lecturers to develop research* – Head of External Relations at F1.

This research suggests that brand relationships generate trust, commitment and emotions in students in different ways. Younger students feel proud and important just for being able to name the powerful brands with which their faculty relates, but older students are not so easy to convince... Although they consider important to be related with a reputed university because of the sharing of good practices, they are more interested in the certificates they can obtain in order to be able to find a better position when they finish their studies. The selected relationships are analysed. The following quotes are related to the above.

The research centres/associated labs are regarded with confidence by the lecturers. Most of the buildings are located in both universities' campus or nearby, although, eventually, in private property... *In fact, investigation has been much requested by lecturers more*

recently, but, there always has been a culture of entrepreneurship, trust and common goals between F2 and research centres - Lecturer/investigator at F2.

Generally, older students (master and doctorate) feel motivated to investigate; thanks to the conditions they get in the research centers and to the fact that they are contacted to develop projects for companies. The following quotes are related to the above mentioned: *Generally, doctoral and master students are very pleased to carry out research in investigation units related with F2* - Director of a master program at F2; *In F2 we really stimulate master students to develop research projects with companies... most of the companies are regional and have owners or employers that are F2s' lecturers. We do cooperate with companies and research centers* - lecturer in a master program in F2. Students are regarded as feeling very motivated towards brand relationships: *Older students are highly motivated to investigation in research centres related with F1, especially doctoral students* - Lecturer at F1 and the discourses of the doctoral students agree with this statement for they feel highly motivated because they can develop projects. A lecturer stated that engineering students are usually recognized for some lack of social competences, while possessing highly developed scientific and technical skills. The interaction with research centres and companies also increases the student's social competences.

Concerning the relationships with recognized companies, we mentioned previously the good example of the relationship between F1 and a famous multinational sharing a doctorate program. However, some of the interviewed revealed that this commitment hasn't always been the same: *For some time the academy turned its back on the real necessities of companies, as if they lived in two different worlds* (Head of external relations at F1)... That may be the reason why someone stated that *only recently do companies acknowledge F1 as a professional relationship, and a good example of that trust is the recent establishment of a protocol between F1 and the Confederation of the Industry* - Director of a Master Program at F1. About this matter the informants selected in F2 expressed the same opinion: *In the beginning we used to contact the companies, but now they are the ones who contact us to propose projects to be developed by our students... we have already some good examples of projects developed with companies*

in several courses of master programs and doctoral programs...and we consider this to be very attractive to master and doctoral students - Director of a Master Program at F2. As for emotions caused by brand relationships, the discourses reveal that lecturers consider them very important and most of the informants underline the importance of students delivering the brand promise as stated by Balmer and Gray (2003). This conclusion is congruent with the younger students' statements. We collected positive emotions like, happy, proud, self-confident, optimistic as well as negative emotions reflecting how the students would feel if their institution had no relationships with recognized brands...: sad, frustrated, fearful, worried... were the emotions most pronounced. Older students are more interested in tangible features like *the power of a certificate provided by a recognized institution* in order to get a new/better position.

Proposition 2

The relationships between brands influence the behaviors of the internal and external stakeholders

As for the influence of the selected relationships (in general) in the internal/external stakeholders, there is indeed a general internal perception (senior management/lecturers) that the relationships with other institutions linked to learning/research have a positive impact on older students (master and doctoral students). This is due to the fact that more advanced students consider relevant that Professors indulge in research and in projects useful for society. They fulfill such projects through the relationships of the corporate brands (F1 and F2) with the institutes of interface/research and with the reputable universities (with which they have partnerships) and also with the partner companies that provide employment or acquire services.

As for the younger students, the discourses provided by the interviews reveal that there is an internal perception that brand relationships are viewed positively by younger students but they are not determining for the choice of the institution or the program to attend. The results are in line with the ones issued from the focus groups. It seems that the prestige awareness, as well as the fact that the faculty/school is placed in the same

town where the students live, have a bigger weight in the choices of younger students. The older students (master and doctoral students) consider that although brand relationships have impact on their choices the most important reasons for them to choose F1 or F2 are the certificates and the type of opportunities that the faculty will offer them.

The following quotes are related to the above:

Most of the research units and all the reputable research centers, recognized by the national agency responsible for the research and development grants are a sort of ticket for a good job or for a doctorate scholarship, as it was my case - Doctoral student at F1; such research centers certify the knowledge acquired at F2 - Director of a Master Program in F2; Of course the brand relationships are important to F1, especially with the companies because, if we succeed, we will be working with them, but my submission to F1 was more related with its prestige - Undergraduate student at F1; When I was an undergraduate, I didn't value brand relationships as I do now... I just wanted to enter the University... Now it's different, I feel that I am closer to research units and companies and I find that connection very useful for my future career - Master student at F2.

It appears logical to conclude that the selected relationships are more praised by advanced students, closer to the labor market, as they think that such relationships facilitate the access to a position in a company, to professional networks and to financial resources, namely doctorate grants.

Proposition 3

The relationships between brands have an impact on the corporate brand identity.

Identity involves distinguishing central and enduring attributes (Whetten, 2006). According to Goffman (1959, 1967) what social constituents want the brand to be and what the brand is are two notions that tend to get mixed. In Goffman's view, in order to be enduring, brand identity should be dynamic in order to sustain, over time, both the

brand and the consumers. Kapferer (2008) states that brand identity may maintain long lasting references and still be dynamic. Bearing in mind that some brand identity dimensions may be more enduring than others (Whetten, 2006) this research investigates the impact that brand relationships have on the corporate brand identity. Therefore it is necessary, in the first place, to characterize the brand identity of each faculty. It should be stressed that this characterization is new in literature.

We decided to triangle the data gathered from the interviews and the focus groups, in order to be able to characterize the brand dimensions of each corporate brand – F1 and F2 (see tables and figures - Table 1.5) and then assess the influences of brand relationships in the corporate brand identity.

As for the influences of the brand relationships in the corporate brand identity, the analysis suggests the following considerations:

- regarding the tangible features, colors, forms and qualities of the brand, i.e., the logo, buildings, labs, quality of the lecturers, employability, contents of courses... this research suggests that the tangible features that characterize F1, as suggested by the interviewed and the focus groups, were: the high national and international employment rate and the quality of the lecturers/researchers, graduates and buildings. The employability was also referred by F2, but in regional terms. The buildings are considered a very important part of F2. Someone stated that *the campus is a very visible part of F2's identity*. The sharing of resources (buildings and lecturers/researchers) between F1 and some of the research units (especially those that have a physical proximity) were considered to contribute to the improvement of the quality of the lecturers by means of developing research, as stated: *the lecturers are 'the glue' that keep the research units and F1 together because they may use the results of their research in their classes* - Director of a master program at F1. The interviewed (lecturer-investigators) connected with F1's relationships referred that sometimes the companies take the initiative of requiring ex-students who took part in a certain project: *if the companies are pleased with the projects developed by me and my students, they will most certainly try to employ some of the students, and that is a good motivation for*

them. This is easy to occur because F1 is located in a very dynamic town next to most of the multinationals represented in the country and with which it has many links.

The fact that F2 has a great number of professors that create/manage regional SME's is seen as contributing to the high regional employability of students and to improve the quality of the physical traits of F2 (buildings, labs, professors, graduates...). F2 has a focus on the northern region and this fact contributes to increase links between the brand and the institutes of interface/research and the recognized regional companies with which students are stimulated to interact. F2 is smaller than F1 and that fact was also mentioned as facilitating the management of its identity and making the students feel protected. It was stated that *bigger institutions are more impersonal and contribute for a less personal treatment of students* - Lecturer at F2.

The Lecturers and Directors of programs of both institutions referred that contents are sometimes altered, based on investigations carried out by lecturers, yet there was more evidence of this in F1: *Professors who lecture advanced studies may (re)structure subjects according to the investigation they are developing. Students themselves are attentive and demand updating of matters and try to enroll in curricula that follow the research carried out by certain lecturers* - Director of a master program in F1; *a high percentage of lecturers are active in industry and that inspires them to add/emphasize the curricula topics they consider relevant for industry*; (Lecturer in F1).

The relationships with reputable institutions are attractive and influence the courses positively; otherwise we would not share doctorate programs with MIT or Carnegie Mellon University - Director of a doctoral program at F2. *Our students have a good preparation in theoretical and practical terms... we can see the differences when we interact with students that concluded their degrees in different institutions* - Lecturer at F1;

- regarding the way the brand interacts with consumers (Kapferer, 2008; Fournier, 1998), this research reveals evidence that both corporate brands (F1 and F2) develop mainly three categories of relations with students namely: "parental relation"

(mother/father) in the case of F1, and “friendship” in the case of F2. “Distant” was also a term used to describe the relation that students have with the brand. It seems clear that “distant” is not related to the other two expressions. Yet, “distant” was mentioned only by some of the doctoral students at F1 who chose to develop their doctoral program there after concluding their previous degrees in another national concurrent. Although this feature was also mentioned by several students at F2, it became clear that the meaning was not the same... in this case the students meant a certain respect for hierarchy, without a negative connotation, while the mentioned doctoral students at F1 were referring to the fact that they felt that the brand considered them outsiders...

The following quotes are related to the above:

“There is a certain trend in F1 to consider me and my colleagues that were not “born” here as second rate people... but I have a feeling that it would be different if my previous studies had been at MIT... - Doctoral student at F1. These statements reveal the importance given by F1 to the relationships with other recognized brands like MIT; I am very disappointed with the doctoral program here... in the first year they (the lecturers) mixed me and my colleagues developing doctoral projects with master students from several areas... It didn’t work... there were too many differences between us... (Doctoral student at F1). However there are also different opinions issued from the “outsiders”: I like to attend the doctoral program at F1 and I don’t feel disappointed with it although I was also a student in another faculty (in another set of studies)... the main difference between me and my colleagues is that my previous faculty was also integrated in the same University although not in the same Faculty, I wasn’t an engineering student... - Doctoral student at F1.

Most of these students mentioned that they will continue to develop their doctoral program at F1 because of the prestige it means to obtain a certificate provided by it in the eyes of the their peers and of the employers.

Most of the students who consider they have a close relation with F1, are attending lower graduations (under or master).

From the analysis of the data sources, one can conclude that, although F1 is influenced by relationships with other universities, by the proximity between the institutes of interface/research and the business world, the major influence in the relation that the students have with F1 is its prestige.

Although less enthusiastic, F2's students considered they have either a close or a hierarchical/respectful relationship with the brand. We did not find evidence here of what was mentioned in the case of F1 regarding doctoral students graduated elsewhere... *Students consider that they maintain a relation of respect with their superiors at F2. There is a certain distance between the several engineering courses (institutional) and a friendship relation among students, partly owing to the annual reception ceremony of the new students* - Master student at F2.

Probably because F2 is a younger institution, it is more dependent on the recognition derived from brand relationships, in order to attract national and international students. Apart from Erasmus students, F2 is not so successful in attracting international paying students as F1 is. The communication of F2's relationships is highlighted in the media as well as its projects with companies and prizes won by its investigators in some of the most recognized research units.

The following quote is related to the above: *we have good investigators that win international prizes... of course we have to communicate this abroad, and we use the media... even with the developments in motorways and highways, we are very distant from the decision and power centers* (Lecturer at F2);

- regarding the way the consumer wishes to be regarded by peers for using a brand (Aaker, 1996, 2004; Kapferer, 1991, 2008; Keller, 2003), this research suggests a positive influence based on the excellent research carried out by the lecturers/researchers and on the connections between the research units and the business world. This contributes to make the students feel like future professionals of success, the best engineers, people who act on society, intelligent people... The following quotes are related to the above: *students that are closer to graduation consider these institutes*

as highly contributing for their being reputed the best in engineering... for being in the forefront of science - Director of a master program at F1.

The students wish to be considered future professionals of success, with influence in society, the best engineers... The relationship F1/companies makes for this positive image, owing to the reputation of the companies and also to a good communication of events: visits to companies, seminars with successful business men who are ex-students of F1 (one of the most famous is someone that was considered one of the richest man in the world in 2011, by Fortune, who may set an example for whoever is willing to follow in his footsteps) and to the good internal information about ex-students' posts in large companies/multinationals. Someone responsible for the management of F1's relationships stated that *the fact that graduates find immediate employment in companies has a very positive impact on F1's image. Not long ago, a manager of a multinational. responsible for the acquisition of personnel, told me that the newly graduates of F1 possess very desirable characteristics, they are great entrepreneurs; some people say that our students have a certain high minded ego... I believe that they are very enthusiastic* - Director of a Doctoral program at F1.

Regarding F2 the influences of brand relationships in the way the students wish to be seen by their peers are most highlighted in older students and contribute to the image that they want to send to society. The relationships between F2 and the regional companies are regarded as a potential contributor to extend the image of recognition and credibility. The students have a great respect for these relationships, for they expect to develop bonds while students that will permit them to find a position as professionals, in the near future.

- regarding the inner thoughts that connect personal inner relationship with the brand (Aaker, 1996, 2004; Kapferer, 1991, 2008; Keller, 2003) , this research suggests that the most visible brand builders (students) consider themselves very proud and prestigious for studying at F1. They are self-confident and regard themselves as members of a clan – the prestigious F1 club... At F2 the students' statements highlight the pride and prestige of being university students' instead of students of that specific faculty (F2)...

The influences of brand relationships are more deeply felt in what concerns the prestige of F1 and its close links with big multinational companies and with recognized universities. Those brand relationships nourish the feelings of the students about a future international career.

The following quotes are related with the above:

F1 is the best faculty... I could choose another one, but I would like to have access to other opportunities abroad and F1 can offer me that chance... (undergraduate student at F1); *even professors that we don't value much, are surprisingly recognized abroad...* (Master student at F1); *Students consider it is a privilege to be accepted by F1. They feel very proud. We have a specific Project in this faculty to integrate 1st year students and to make them feel part of the faculty and to make them proud for being here...* (Director of a program at F1);

- regarding the personality of the brand that is, traces of human personality that are associated (Aaker, 1997), relevant (Kapferer, 2008) and likely to be applied to brands (Azoulay, 2009), F1 was described as being entrepreneur, competent/professional, somewhat proud and committed to success. Also F2 was characterized as having a high-minded ego, entrepreneur, committed to success. Two features were additionally recognized in F2: a male character and a certain irreverence that can perhaps be explained for being a younger regional faculty. F2 is often involved in innovative projects with companies, mostly with regional companies. Some are internationalized companies with a considerable reputation. Whenever there are projects involving engineering faculties and companies, F2 is usually presented and capitalizes its success in the media.

Both brands have an enduring personality formed by all the direct brand builders (senior management, students, lecturers and staff) but the influences of the context make for the flexibility of both brands. They adapt easily to changes in the context of higher education and that can be explained by analyzing the recent developments in that area. The engineering faculties were the first faculties in the country to redesign their

programs in line with the Bologna Process, to find partners in research centers and to develop a different approach to research. The following quote is related to the above: *F1 is over a hundred years old, and things were never easy in this town... engineers were always involved in great society constructions: bridges, big projects... and even in humanitarian causes from earthquakes to human rights. This, according to the Head of External Affairs of F1, gave F1 a sense of resilience that has characterized it until today;*

- regarding culture associated with the corporate brand both faculties were mentioned as having: a hierarchy, a departmental culture, sometimes even bureaucratic. F1 revealed an additional focus on values (ethics, work and responsibility). The above quote is also related to this. *These values (ethics, work and responsibility) came directly from the industry that contributed highly to the creation of an engineering school over a hundred years ago in this town. This faculty was created by the necessity that the industry felt to be in line with the best practices* (Head of the External Affairs of F1).

Proposition 4

The reputation of the corporate brand is increased by the choice of brands with a positive reputation to relate with.

We characterized the facets of the corporate brand identity based on the discourses of the internal stakeholders and the reputation on the ones of the external stakeholders (students) and concluded that they are congruent as defined by de Chernatony (1999) and Harris and de Chernatony (2001).

Higher education is a very particular field of the services sector, where the decision process demands one of the highest consumer involvements. A higher education institution that tries to improve its image through new facilities is considered less attractive than the ones which have many applicants, regardless of these “tangible” aspects of the institution. For example, an “old” university may continue to receive three or four times as many applications as the places in programs; thus many potential clients are rejected – but this only serves to improve the reputation and image of that university. In most services industries, however, if customers were repeatedly unable to

purchase the service, this would tend to reduce the reputation of that company, unless prices were raised to control demand.

We decided to question the consumers (students) about the reputation of the faculty they attend for their studies.

According to the framework developed by Vidaver-Cohen (2007) the factors which the interviewed considered most relevant to contribute for the reputation of the brands in study were: the quality of the graduates (revealed by the feedback that the faculties get from the companies where graduates are employed); the quality of the lecturers and investigators (assessed by the number and quality of their publications and by their connection with the business world); the actions of citizenship, namely the acts of positive influence in society, from its main responsibility, which is providing the market with competent graduates, to the cooperation with public entities, exhibitions in the library open to the public, the organization of events of solidarity, blood donations to name a few. Innovation was also focused, regarding the fact that F1 is usually the first in the market and adapts quickly to change. Leadership was also considered an important feature of F1's reputation, by emphasizing the fact that the institution is well managed and has a strong appealing leader who increases the prestige of the brand. Performance was regarded as the last feature to characterize F1, which is probably related to the fact that the Vidaver-Cohen framework was previously tested in private business schools with very high fees, where students were expected to have an idea about the brand financial performance. The two brands in study here are public brands, so the fees are not very high (in comparison with private institutions) and are similar in F1 and F2.

The results were close to the expected, yet, the actions of citizenship were not expected to be rated as important as they were. Anyway this result is in line with the findings of Arnett *et al.* (2003) for they claim that success in higher education institutions not only requires focus on economic rewards, but also highlights the social benefits, including emotional satisfaction, spiritual values and the sharing of humanitarian ideals (Arnett *et*

al., 2003, p. 91). Also Argenti and Druckenmiller (2004) state that corporate brands that embody or otherwise incorporate social responsibility can enhance reputation.

This was the main difference between F1 and F2. In F2, performance was the last feature to be referred and citizenship was placed after innovation.

Regarding the influence of brand relationships in F1 and F2's reputation, there is a common perception that those relationships with innovative and recognized brands are important, but they are more likely to have a bigger impact on the reputation of the younger brand (F2) than on the older brand (F1) because the latter is already very prestigious.

1.5 - Concluding Discussion

This research was pursued to explore how the relationships between brands influence the corporate brand identity and how they can be managed in order to get the desired reputation. Therefore, we analyzed how the students value the relationships between their faculties and other brands by exploring the relationship concept in higher education and its influence in each of the brand identity facets as well as in the reputation of the corporate brands

Engineering faculties are recognized for developing very salient brand identities due to their intervention in the society, developing innovative processes and technology to industry that are frequently granted by national and/or international research centers, or other institutions recognized for developing science.

In-depth interviews were made to thirteen lecturers/researchers/senior managers and four focus groups were developed with students (undergraduate, master and doctoral students). The main task of this procedure was to explore how brand relationships influence brand identity and brand reputation.

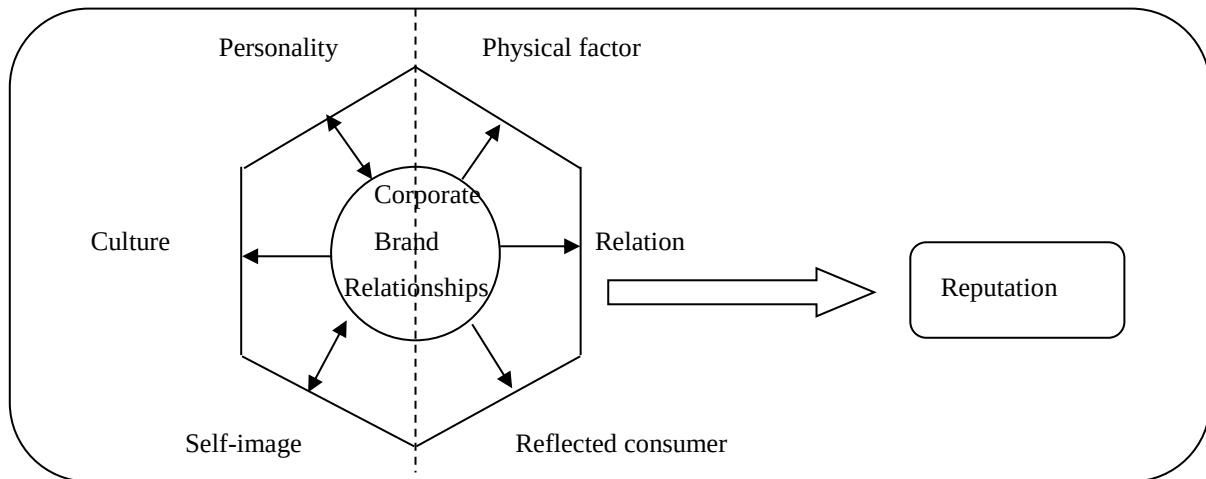
As we intended to analyze the visible way of the relation between brands and also the way how the stakeholders live and feel the brands, we used in this research the six facets of the brand identity prism by Jean Noel Kapferer (2008).

The results suggest that the relationships of the selected brands (with recognized research centers/universities/companies) influence the internal/external stakeholders by means of: trust, commitment, motivation and emotions (positive and negative) towards brand relationships. There is enough evidence that relationships between brands do influence the internal and external stakeholders and the features of the corporate brand identity through Trust, Commitment, Motivation and Emotions.

The relationships between brands influence the corporate brand identity features but they also are influenced by two of them: “brand personality” and “self-image”.

The proposed model was refined accordingly (Figure 1.2).

Figure 1.2 – Integrative model to manage brand identity (redefinition)



There is also enough evidence that universities are aware of the power of the relationships between brands and use it to attract different audiences: the relationships with the recognized research centers promote research and attract the older students (master and doctorate programs), the protocols with recognized universities attract advanced students (doctorate students), and the relationships with recognized companies attract younger students by means of employability.

1.6 - Managerial Implications and further research

The main managerial conclusion of this research is that in a context of highly consumer involvement like education, where self-evaluation cannot be done before its consumption, brand relationships are crucial because they influence the corporate brand identity and brands' reputation by influencing the perceptions of the particular internal and external stakeholders. In a managerial perspective, corporate brand managers have to choose, design and invest in brand relationships that make for the value of the corporate brand and consequently benefit all the stakeholders.

There is also enough evidence that universities are aware of the power of the relationships between brands and use it to attract different audiences: the relationships with the recognized research centers promote research and attract the older students (master and doctorate programs), the protocols with recognized universities attract advanced students (doctorate students), and the relationships with recognized companies attract younger students by means of employability.

Additionally we found that:

- Big, international higher education brands think global to attract the best students, lecturers/researchers, financial resources... and they invest in additional emotive relationships, strongly linked to intangible features in order to empower the corporate brand internationally.
- Small, regional universities brands think in regional terms for they have a very important role in the regional dynamism and innovation. As stated by (Bramwell and Wolfe, 2008), besides generating commercializable knowledge and qualified research scientists, universities produce other mechanisms of knowledge transfer, such as generating and attracting talent to the local economy, and collaborating with local industry by providing formal and informal technical support.

Bearing in mind the differences between F1 and F2, we consider that both brands are capable of increasing strong entrepreneurial visions, facilitating academic spin-off activity, generating local and international dynamics as well as developing research excellence in several emerging areas of engineering. Brand relationships have an important role to achieve this, mainly in the case of F2, as it is placed in a less developed stage of life cycle when compared to F1.

Further research is demanded to compare these results with a larger sample, in order to test the proposed framework.

This study should be replicated in other B2C contexts, like wealth or insurance, where there is also a high consumer involvement.

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Tables

TABLE 1.5 - Characterization of the brand identity of F1 and F2

		F1	F2
Internal part	Culture associated with the brand	- departmental culture - group culture - values (ethic, work, responsibility) - hierarchy; - bureaucratic	- departmental culture - hierarchy ; - bureaucratic
	Personality of the brand	- entrepreneur (fighter, dynamic) - competent/professional - vain (high-minded ego) - committed to success (enthusiastic)	- male (rational, not emotional) - entrepreneur - young, irreverent - vain (high-minded ego) - committed to success
	The inner thoughts that connect inner relationship with the brand (Self image)	- pride - prestige for studying at F1 - self confident - members of a clan (F1)	- pride - prestige for being university students - self confident
External part	Tangible features (Physical)	- high employment rate in the country and internationally - quality of: buildings/labs, lecturers/researchers, graduates, library, interface services - location: in one of the most dynamic towns of the country (near big companies)	- high regional employability - quality of: buildings, lecturers/researchers, graduates, library, interface services - location in the Northern region (near SME's)
	The way the consumer wisher to be regarded by peers (Reflected)	- future successful workers - people that intervene in society - the best in engineering - intelligent people - ready to party people - in the forefront of science; - international recognition	- future successful workers - people that intervene in society - intelligent people - ready to party people - in the forefront of science; - regional recognition (visibility) - ENGINEER WITH A SME

	consumer)	BUSINESS MAN WITH AN INTERNATIONAL PROFILE	PROFILE
	The way the brand interacts with consumers (Relation)	- maternal/paternal (with authority/leader, responsible) - nearless/familiar/comfort/safety - distant	- safety/friendship - distant/respect for hierarchy

Chapter 2

2. Corporate brand identity measurement in higher education – an internal and external perspective

Abstract

There is a plethora of brand identity frameworks in literature. Nevertheless, the measurement of corporate brand identity is scarce in brand management literature. This came about as an opportunity to characterize the dimensions of corporate brand identity in a higher education context. This activity has a highly consumer involvement that has never been particularized in this context. Therefore the concepts are reshaped accordingly and scales are developed following a procedure of validation involving qualitative analysis of students, lecturers, top management and independent experts to refine the scales. A questionnaire was conducted aimed at engineering higher education students and 235 complete surveys were obtained. Data were analyzed using confirmatory factor analysis. The brand identity prism by Kapferer is used in this study and findings reveal that the scales used to define it are valid and reliable. It is also found that cultures perceived as being performance oriented, generate more salient identities. This finding was discovered by developing the dimension “brand culture” as a nominal variable based in a previous research by Desphande *et al* (1993). The concept of external brand identity is also validated by this research and findings reveal that there is a second-order factor formed by the dimensions proposed by Kapferer.

Keywords: consumer involvement, corporate brands, brand identity, external brand identity, higher education, scale development.

2.1 Introduction

Research in identity is still largely conceptual “e.g.” Kapferer (1986, 2008), Balmer 1998; Balmer *et al.*, 1999; Cornelissen *et al.*, 2001; de Chernatony, 1999; Meleware, 2003, Silveira *et al.*, 2013. Valuable exceptions exist regarding corporate identity studies “e.g.” Simões *et al.* (2005), Suvatjis and de Chernatony (2005). Both studies develop the corporate identity concept using scale methodology. Simões *et al.* (2005) develop an internal perspective of corporate identity and Suvatjis and de Chernatony (2005) develop a managerial approach based in previous findings regarding corporate and brand identity. However, existing work falls short of developing a fully articulated measurement of brand identity.

Having its roots in corporate identity, brand identity is studied by researchers producing significant number of conceptual frameworks “e.g.” Aaker, 1996; Burmann and Riley, 2009; de Chernatony, 1999; Upshaw, 1995; Kapferer, 1986, 2008; Semprini, 1992, 2006; Silveira *et al.*, 2013., Although they produce very relevant discussions, conceptual frameworks are more often than not difficult to interpret and manage by brand managers. This came about as an opportunity to measure the corporate brand identity in a higher education context. Therefore, that became the aim of this research.

It is suggested by de Chernatony and Segal-Horn (2001) that the unique characteristics of the services sector: intangibility, inseparability of production and consumption, heterogeneity of quality, and perishability, demand the use of different models from the classical ones. They claim that staff plays “an important role in services branding, influencing brand quality and brand values through interactions they have with consumers” (p. 665). Relationships play an important role in service brands for they contribute to materialize the intangibility.

The higher education service deals with highly involved potential consumers that are active looking for information about degrees, learning, employability, quality of research and lecturers... Another particularity is the fact that students are at the same time consumers and staff because they have a major role in brand building, they can

influence potential students and contribute to the image and reputation of the brand. In line with this, it is necessary to adapt the concepts involved in the concept of brand identity to higher education. We used the brand identity prism, as defined by Kapferer (1986, 2008), to characterize the engineering higher education brand identity and validated the brand identity and the external brand identity of a corporate brand.

This paper also endeavors to give policy advice to general managers and to those having responsibility in university brands, for it is distinctive in that it:

- contributes to the fulfillment of a gap in the literature of brand identity management by producing a measurement of the concept of corporate brand identity in higher education;
- integrates several concepts in literature that are related with brand identity by adapting and creating new scales connected to the dimensions of corporate brand identity in the context of higher education;
- adopts the concept of students as particular stakeholders that transcend the internal/external boundaries;
- stimulates higher education brand managers to rethink the perspective about brand identity as a dynamic construct with students having an important role as co-creators of the brand.

We characterize the brand identity prism in higher education by measuring the corporate brand identity. Measurement frameworks can be easily adopted for brand managers in higher education in order to develop strategies to fill in the gap between the ideal identity and the experienced one.

The organization of this paper is as follows. In section 2.2 we review the relevant literature, describe the structure of the proposed brand identity framework and develop the investigation hypotheses. In section 2.3 there is a description of the method used to assess corporate brand identity using scale development, a description of the sample and the definitions of the used measures. Section 2.4 reports the results, summarizes the model validity and applicability. In Section 2.5 there is a discussion of the results and

finally, in section 2.6 we draw a conclusion to this paper and provide directions for further research.

2.2 Theoretical structure and hypotheses

As it is not our intention to develop a new corporate brand identity framework, but to measure it, we use the conceptual framework developed by Kapferer (1986; 2008) “the brand identity prism”. This choice is due to two main reasons: 1) this framework is one of the most developed in literature, one of the most cited and, 2) owing to its importance, it is the basis of many of the most recent developments in the management of brand identity.

According to Kapferer (1986, 2008), who is a pioneer in the study of brand identity and a reference for every study in this area, the brand identity is divided into an internal part and an external part. The internal part is responsible for decisions typically related to mission, values, strategy and brand structure. It is formed by three dimensions: culture, personality and self-image. The external part is formed by the elements defined by the interaction between the brand and the exterior: reflected consumer, relation consumer/brand and physical features. The external part is very important, especially in the case of corporate brands, owing to the fact that they are subject to constant interactions with different publics.

In order to define each dimension we adopt a holistic perspective reviewing literature on several fields of study like marketing, psychology and organizational studies.

“Brand personality” is an internal dimension, intangible and formed by the character and soul of the brand, that is, by the characteristics, traces of human personality that are relevant (Aaker, 1997; Kapferer 1986,2008), and likely to be applied to brands (Azoulay, 2009; Azoulay and Kapferer, 2003). According to Azoulay (2009) and Azoulay and Kapferer (2003) brand personality is defined by the following dimensions: agreeable, conscientious, innovative, peaceful, chic and maverick. We adopt this scale

to develop this study for three main reasons: 1) it is inspired by human personality scales in psychology; 2) it has been adjusted to be both relevant for and applicable to brands and 3) it is developed by evaluating corporate brands, not only product but also service brands.

The “self-image” dimension is also an internal and intangible dimension that reflects the consumer’s attitude towards the brand. As a matter of fact, the adoption of certain brands leads us to a certain form of relationship with ourselves (Kapferer, 1986, 2008). Organizational studies are much more prolific concerning the conceptualization of self-image. Researchers in this field of studies call it self-concept. According to Mishra (2007) only recently have researchers placed an increasing emphasis on multiple dimensions of the self-concept. According to Beheshtifar and Rahimi-Nezhad (2012) self-concepts represent knowledge structures that consist of beliefs about the self, including one’s attributes, social roles, and goals. Researchers have established that individuals differ in their orientations towards the three levels of the self-concept (Cooper and Thatcher, 2010), namely:

1. individual self-concept: This kind of self-concept relates to individuals’ abilities and weaknesses;
2. relational self-concept: People usually judge themselves in regard to the relationships. If one assumes a proper picture of relations, their self-esteem will be reinforced;
3. collective self-concept: It refers to membership in workplace or out of it. At this level, individuals describe themselves in terms of their conditions within group (Golparvar, *et al.* 2007).

We consider that the concept of “self-image” in branding is much closer to the “relational self-concept” of the organizational studies. Also psychology literature is full of mention of self-image especially regarding adolescents, but branding literature is quite scarce about self-image. The branding concept of “self-image” was proposed by Kapferer (1986, 2008) and it relates with how we want to be regarded by our pairs, by

the people with whom we develop relationships. Therefore it is a “relational self-concept”.

We couldn't find any scale in literature regarding this dimension of brand identity, so we decided to develop a procedure to define a pool of items to be used in this research. This procedure is summarized in section 2.3.

The dimension called “reflected consumer” is an external and intangible dimension which reflects the way the consumer wishes to be regarded for “using” a certain brand. It provides the consumer with a desirable model of identification (Kapferer, 1986, 2008). Even though it is an external dimension, brand managers should control the reflected consumer to avoid disagreement between the ideal identity and the experienced one.

We couldn't find any scale in literature regarding this dimension so we decided to develop a procedure (detailed in the table above) to define a pool of items to be used in this research.

The dimension called “relation” is also external, with tangible and intangible areas. It defines the behavior that identifies the brand and the way it interacts with its consumers. (Kapferer, 1986, 2008).

One of the most cited research in this area is pursued by Fournier (1998). She characterizes the relation between the consumer and the brand under a functional-emotional perspective. This approach is adopted by several authors in literature “e.g.” de Chernatony, 2006; Elliott and Percy; 2007; Keller, 1993; Martesen and Grønholdt, 2004; Yu and Dean, 2001. The central idea is that consumers interact with brands not just because they permit functional benefits but because they simply like them. According to Fournier (1998) and Fournier and Alvarez, (2012) people in many ways interact with brands the way they interact with people. These authors review and cite several studies stating that “*consumers become emotionally attached to brands they love (Albert et al., 2008; Batra et al., 2012; Shimp and Madden, 1988); consumers display*

brand loyalties that resemble marriages in their passionate commitments (Fournier and Yao, 1997; Oliver, 1999), people have flings with brands (Alvarez and Fournier, 2012), derive joy from childhood friendships (Connell and Schau, in press), invest in enmities (Hogg, 1998; Luedicke et al., 2010) and rivalrous adversarial relationships (Paharia et al., 2011), lament master–slave entrapments (Miller et al., in press) and struggle with abusive relations wrought at the hands of malicious brands (Hill, 1994)” (p. 177). Nevertheless, most of these studies rely on the relation between consumers and product brands, not service brands. Fournier (1998) refers that it is necessary to dominate the meanings that a certain relation has with the consumers and the brands. Therefore, we consider it is necessary to find out what is the meaning of the relation between the consumers and the brand in a higher education context. We developed a procedure (detailed in the previous table) to define a pool of items to use in this research.

Finally, the “physical dimension” of brand identity is defined by Kapferer (2008) as an exterior dimension that communicates the physical traits, colors, forms and qualities of the brand. de Chernatony (1999) names this dimension “presentation” of the brand and includes stakeholders’ aspirations and images, that is, the self-image and the reflected consumer dimensions. In line with the brand identity prism it is our intention to maintain the initial definition. The physical dimension is the skeleton of the brand and the starting point of any program of creation/development of brands (Kapferer, 1986, 2008). In the case of services, this component needs to be adapted. Although there is no physical component to be traded in higher education (except the final certificate...), there is always a physical space where the service takes place, which is related to physical components, for example, in the case of a higher education institution, the physical facet will be its logo, i.e., its image, as well as the quality of its schoolrooms, laboratories, library and other facilities, Deans, lecturers and other staff... Once again we consider it is necessary to redefine this dimension. Therefore, it was decided to develop a procedure (detailed in table 2.1 above) to define a pool of items to be used in this research.

The “culture” dimension is internal, intangible; it integrates the brand in the organization and is essential for brand differentiation (Kapferer, 1986, 2008). The

author also refers that it is the cultural content of the brand identity that enables the transfer from organization identity to brand identity, in the case of corporate brands. de Chernatony (1999) considers that an analysis of brand culture relies on visible artifacts, values of the top management and mental models of the people involved in brand building. Therefore he claims the involvement of the staff in brand building

Hofstede (1994) defines culture as *“the collective programming of the mind which distinguishes the member of one group or category of people from another”* (p.5). Deshpande and Webster (1989) define organizational culture as the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them with the norms and behavior in the organization. Subsequently, Deshpande *et al.* (1993) used two dimensions (from organic to mechanistic processes and from internal maintenance to external positioning) to identify four culture types: Clan, Adhocracy, Hierarchy and Market culture.

“Clan culture” emphasizes teamwork and cooperation, “adhocracy” emphasizes entrepreneurship and creativity, “hierarchy culture” emphasizes order and regulations, and “market culture” emphasizes competitiveness and goal achievement. The mentioned study concludes that market cultures are associated with the best organizational performance, followed by adhocracy cultures. Both clan and hierarchical cultures are associated with poor performance, the latter being worse than hypothesized. Other authors refer the influence of culture in brand performance. Kotter and Heskett. (1992) find an association, although weak, between culture and organizational performance.

According to Kapferer (2000) culture is the basic principle governing the brand in its outward side. Accordingly this research assumes that the culture of the brand is the perceived culture by the students/respondents about their university/institution. Therefore, it is possible that students of the same university/institution classify its culture differently, according to their different perceptions.

There isn't, in literature, a scale to measure brand culture, so we decided to adapt the scale used by Deshpande *et al.* (1993) to the higher education context. Although the methodology used by the authors is different from the proposed in this research, we decided to use the mentioned scale to identify the perceived culture by each respondent. The students define the perceived culture of their university/institution according to the mentioned scale and that information will be transformed into a nominal variable identifying the perceived culture of the university/institution where the student attends his/her studies.

A brief summary of the scales and methodology used to find items is provided in the next table.

TABLE 2.1 – Synthesis of the methodology used to find items for the scales

Dimensions/scales	Adapted items	New items
Culture	Clan, Adhocracy, Hierarchical; Market adapted from Deshpandé, Farley and Webster (1993)	
Personality	Agreeable, Conscientious, Innovative, Peaceful, Chic, Maverick adapted from Azoulay, 2009; Azoulay and Kapferer, 2003	
Self-image		Sources of influence: Kapferer (1986, 2008) + informants + focus groups+ experts
Reflected consumer		Sources of influence: Kapferer (1986, 2008) + informants + focus groups+ experts
Relation		Sources of influence: Kapferer (1986, 2008); Fournier (1998); Fournier and Alvarez, (2012) + informants + focus groups + experts
Physical		Sources of influence: Kapferer (1986, 2008); de Chernatony (1999) + informants + focus groups + experts

Bearing in mind the mentioned arguments, we propose:

- to measure the constructs that define the corporate brand identity: personality, self-image, reflected consumer, relation and physical, and to demonstrate that they are valid and reliable;
- to measure the perceptions regarding brand culture and to verify if the cultures perceived as being performance oriented, adhocracy and market culture, develop more salient identities as expected;
- to analyze and measure the constructs that define the external part of corporate brand identity, formed by the dimensions: reflected consumer, relation and physical, and to demonstrate that they are unique, valid and reliable.

We propose three research hypotheses:

H1: the constructs personality, self-image, reflected consumer, relation and physical are part of a higher dimension construct called corporate brand identity.

H2: cultures that are perceived as being performance oriented, adhocracy and market culture, develop more salient corporate brand identities.

H3: the constructs reflected-consumer, relation and physical are part of a higher dimension called external corporate brand identity.

The purpose of the first hypothesis is to confirm the concept of brand identity using the dimensions of the prism defined by Kapferer (1986, 2008) before including the brand culture as nominal variable. This research is used to validate the gathering of the other dimensions before adding the dimension culture (in H2).

The second hypothesis aims to validate the concept of brand identity using the six proposed dimensions as defined by Kapferer (1986, 2008). The previous five dimensions are scales (personality, self-image, reflected consumer, relation and

physical) and the brand culture is a nominal variable used to identify the perceptions of the students regarding the brand identity of the corporate brand where they develop their studies. It is expected that this procedure identifies if the brand cultures perceived as being performance oriented are the ones that students have qualified as adhocracy and market culture known for developing more salient corporate brand identities,

The third hypothesis aim is to confirm the concept of external brand identity as defined by Kapferer (1986, 2008): physical, relation and reflected consumer. This concept is very important because is through these dimensions that a corporate brand interact with its publics.

Measurement models tend to be used by brand managers for evaluation purposes, so that the brand identity can be properly managed resulting in congruent the brand reputation.

In the next section we provide detailed information concerning the methods and materials used.

2.3 Methods

Literature has generally revealed that students are, more often than not, viewed as customers. In this research students are considered internal and also external stakeholders. They are internal because they participate in the universities' activities; they are the main reason of the existence of universities and they contribute to deliver the brand promise. However students are also external stakeholders because they have a long association with the university and they pay their fees to attend university programs. These arguments justify why students are asked to give their opinions about the internal and the external dimensions of the brand identity prism.

In order to select new multi-item scales to the dimensions that had never been previously measured in a higher education context: self-image, reflected consumer, relation and physical, we developed a procedure of qualitative analysis summarized in the table below.

TABLE 2.2 – Procedure to develop the new multi-item scales

Procedure to develop the multi-item scales	Techniques and indicators
1 - Develop a theory	literature review and discussion with experts
2 - Generate an initial pool of items to each dimension/scale	theory, secondary data and 13 interviews to lecturers and university managers, 4 focus groups of students (bachelor, master and doctoral)
3 – Select a reduced set of items based on qualitative judgment	panel of 10 experts (national and international, academics and practitioners)
4 – Collect data from a large pre-test sample	pre-test to a sample of 80 higher education students
5 – Perform statistical analysis	reliability; factor analysis
6 – Purify the measures	analysis of the results of the pre-test sample and discussion with experts
7 – Collect data	survey to higher education students (235 complete surveys)
8 – Assess reliability and unidimensionality	Chronbach`s alfa and factor analysis
9 – Assess validity	construct (AVE and CR), discriminant (comparison between the squared root of AVE and the simple correlations) and nomological validity (significant simple correlations examination)
10 – Perform statistical analysis	Confirmatory factor analysis

Source: adapted from Churchill (1979) and Malhotra (1981, 2004)

This procedure considers the recommendations of Churchill, 1979; Malhotra 1981, 2004; Laurent (2000) and of Clark and Watson (1995) who emphasize that good scale construction is an iterative process involving several periods of item writing, followed by conceptual and psychometric analysis. Regarding external validity, Laurent (2000) claims that researchers should collect more data from experts (managers, consumers, persons with first-hand knowledge of consumers or other experts) using established methods of qualitative research. He argues that this procedure should be carried out before modeling in order to identify the appropriate variables and relationships to include in the model. Therefore, after reviewing relevant literature, analyzing the interviews, the focus-groups and after consulting available literature on item writing (“e.g” MacKenzie, 2003; Angleitner and Wiggins, 1985; Comrey, 1988; Kline, 1986) we developed a pool of items for each construct to be defined. With the help of experts

(academics and practitioners) that revealed interest for the theme in the conferences and seminars attended while developing this investigation (Barros *et al.*, 2013, 2012) there was an item selection with the purpose of sampling systematically all content that is potentially relevant to the target construct (Loevinger,1957). A pre-test was directed to a moderately sized sample of convenience of 80 engineering students and the conclusions were again analyzed with the help of experts in order to refine the item selection that would be tested later on a large sample of students and analyzed with quantitative methodologies.

A brief description of the quantitative analysis to the higher education students is done below.

2.3.1 Data collection

According to Eisenhardt (1989), to minimize extraneous variation, both studies (qualitative and quantitative) were limited to engineering institutions. Another reason for this choice was the fact that engineering institutions are, usually, considered strong brands and are considered to reveal very salient identities.

Quantitative online questionnaire

A letter was sent by e-mail to the Deans and Course instructors of most of the higher education institutions that offer degrees (bachelor, master and doctoral) in engineering located in a European country. The letter explained the research topics and asked permission to use the students of their university as respondents to a questionnaire. That e-mail had an attachment with another letter that should be sent to students explaining the investigation purposes and asking them to participate in the online questionnaire. The link was available since the last week of July until the end of October 2012.

Sample description

A group of 386 students were able to finish the questionnaire. After deleting cases with ambiguous values a final sample of 235 students was obtained. This decision was not easy to take and it was made after many tests. We based this decision on the distributional properties of the manifest variables after checking the reliability and unidimensionality of the scales. According with Kline (2005), we used the standardized Kurtosis index rescaled ≥ 7 as a guide to indicate items with excessive univariate Kurtosis values. We also checked for observations farther from the centroid, using Mahalanobis distance. We deleted 151 observations considered potential outliers obtaining a final usable sample of 235 observations. It is our conviction that this big number occurred because the target was students and most probably, some of them were not particularly motivated to answer the online questionnaire... Also the fact that engineering students are considered very objective people might have had influence in this fact because due to the subjectivity of the concepts in study, the questionnaire could not be formed by simple yes or no answers. Therefore, the task of thinking and answering should have been accomplished in about 20 minutes.

The final sample of 235 observations was distributed as follows: 102 (42,4%) were bachelor students, 45 (19,1%) master students, 75 (31,9%) integrated master students and 13 (5,5%) PhD students. Analyzing the age of the respondents it can be stated that 116 (49,4%) have between 18 and 22 years old, 64 (27,2%) have between 23 and 26 years old, 20 (8,5%) have between 27 and 30 years old, 12 (5,1%) have between 31 and 34 years old, 10 (4,3%) have between 35 and 38 years old and finally, 13 (5,5%) respondents have more than 39 years old.

The majority of the respondents are male 135 (57,4%) and most are between 18 and 22 years old. This distribution is in line with most of the statistics regarding engineering institutions in the country where the research was developed, where the majority of the students are male and there are more students in bachelor degrees than in higher degrees. Although recent statistical information (Estatísticas da Educação 2011-2012, p. 214) demonstrate that there are more women attending higher education in Portugal,

engineering studies traditionally attract more men than women so the sample is distributed as expected.

About the origin of the students, 112 are university students and 123 study in other higher education institutions, most of all polytechnics. Table 2.3 summarizes the characteristics of the respondents.

TABLE 2.3 – Characteristics of the respondents

Characteristics		Frequency	Percent (%)
Gender	Male	135	57,4
	Female	100	42,6
Age	18-22	116	49,4
	23-26	64	27,2
	27-30	20	8,5
	31-34	12	5,1
	35-38	10	4,3
	39 above	13	5,5
Origin	Engineering Polytechnic (ISEP-IPP)	100	42,6
	(Univ) Faculty of Engineering (FEUP)	61	26,0
	(Univ) School of Engineering (EEUM)	51	21,7
	Engineering Polytechnic (ESAC-IPC)	11	4,7
	Engineering Polytechnic (ESEIG-IPP)	10	4,3
	Others (Univ.)	2	0,7

Information regarding the constructs and measures are provided in the next sub-heading.

2.3.2 Constructs and measures

The definitions of the constructs of interest and number of items used in this research are given in this section. As stated before and summarized in table 2.4 (B) (below), the measures of the scales used in this research derive not only from brand management, organizational studies and psychology literature but also from interviews to informants, from focus-groups and from experts` contributions. A list of 33 items was obtained

from qualitative research including the already mentioned adapted scale to measure personality. The scale to measure culture was used to find the culture of the brand as defined by the students – that is why we named it “perceived culture”. For this reason it is not included -in the item accountability. Instead, “culture” is considered a nominal variable and therefore not included in the scale development.

The brand identity prism is empirically tested by developing and using a questionnaire. Except in the case of the culture dimension (detailed above), for all the measurement items, a five-point Likert scale was adopted, with anchors ranging from strongly disagree (1) to strongly agree (5), in a way this format better conforms to linear models, thus providing higher criterion validity (Weijters *et al.*, 2010).

Regarding the dimension culture the respondents were asked to answer distributing 100 points across four description issues: (1) kind of organization, (2) leadership, (3) what holds the organization together, and (4) what is important. The final scores are computed by adding the four A items (for clan), the four B items (for adhocracy), the four C (for hierarchy) and the four D items (for market). As such, the culture measures represent four different four-item scales that could range from 0 to more than 100.

Table 2.4 (A) (see tables) contains the specific research constructs, the measures and further details. Here we provide a brief summary in Table 2.4 (B):

TABLE 2.4 (B) – Summary of the research constructs and measures

Construct	Initial full measured items ^{a)}	Source
Culture ^{b)}	Respondents are asked to distribute 100 points across four descriptions (A, B, C, D) regarding four different kind of issues (1- kind of organization, 2-leadership, 3- what holds the organization together and 4- what is important).	Deshpande <i>et al.</i> . (1993)
Personality	If my university/institution were a person it would be: P1 – agreeable; P2 – conscientious; P3 – innovative; P4 – chic P5 – peaceful; P6 – maverick.	Azoulay, 2009; Azoulay and Kapferer, 2003
Self-image	SI1 – ...better prepared for...; SI2 – ...proud for the certificate...; SI3 – ...very satisfied...; SI4 –...makes me confident about the future; SI5 – I consider myself part of an	New

	elite; SI6– I consider myself an entrepreneur	
Reflected consumer	I believe that the society in general considers the graduates by my university/institution: RC1 – better prepared; RC2 – more capable of creating/innovating; RC3 – successful professionals; RC4 – professionals with high credibility; RC5 – better than others from other universities; RC6 – amused/opened people.	New
Relation	I felt that the relation between my university/institution and me is: R1 – friendly; R2 – respectful; R3 – trustable; R4 - motherly R5 – close; R6 - fatherly	New
Physical	F1 – modern facilities; F2 – sophisticated facilities F3 – functional facilities; F4 - adequate facilities; F5 – better facilities; F6 – high employability ; F7 - competent lecturers; F8 –quality interface services (library, students support office...); F9 – my university/institution contributes to my future professional success.	New

- a) Items measured on a five points Likert scale ranging from (1) strongly disagree to (5) strongly agree
- b) Adapted items (methodology developed in Table 2.4 (A) – Tables)

Pre-test to a moderately sized sample of students

The preliminary questionnaire was previously refined taking in consideration the comments and judgments of a panel of 10 experts (academics and practitioners). The format and content of the online questionnaire were also pretested in a sample of convenience of 80 higher education students. Based on the identification of problems regarding content, wording, sequence, layout question difficulty and instructions, minor adjustments were made to the questionnaire. The final questionnaire had 49 items (49= 33 + 16 items to assess the dimension culture) and it was written in Portuguese, suffered back-translation to ensure conceptual equivalence (Appendix A). After data collection several analyses were performed as described below.

2.3.3 Methodology to test corporate brand identity and external corporate brand identity as second order factors

Following the procedures to test the second-order factors to the corporate brand identity and the external corporate brand identity, we divide this research in two parts.

This research proposes a methodology to assess brand identity and its dimensions.

Figure 2.1 depicts the second-order factor “brand identity” that explain five first-order factors: self-image, personality, reflected consumer, relation and physical. Each factor is indicated by four or more reflective items.

Figure 2.1 - Second order factor for corporate brand identity (without the variable culture)

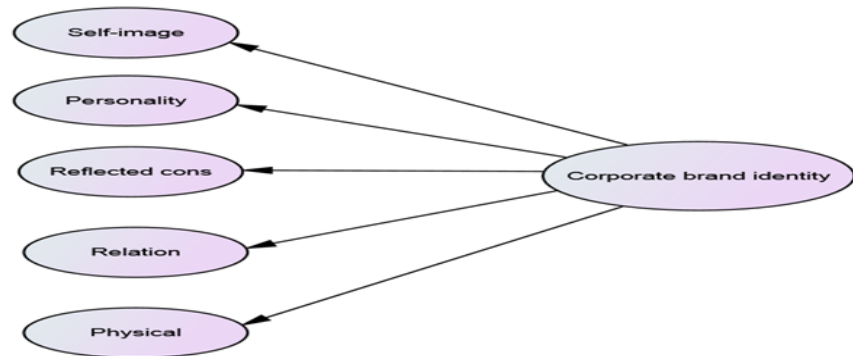


Figure 2.2 depicts the second-order facto for the corporate brand identity according to the proposed model by Kapferer (1986, 2008). The model that we defined includes “culture” a moderator of the rest of the five dimensions proposed by the author. Therefore it is a six variables model.

Figure 2.2 – Corporate Brand Identity moderated by “culture” (a nominal variable)

Then, we test the second-order factor to the external part of the brand identity to validate this concept proposed by Kapferer (1986, 2008) which is very important in the context of corporate brands because of the interactions with the stakeholders, particularly, the consumers.

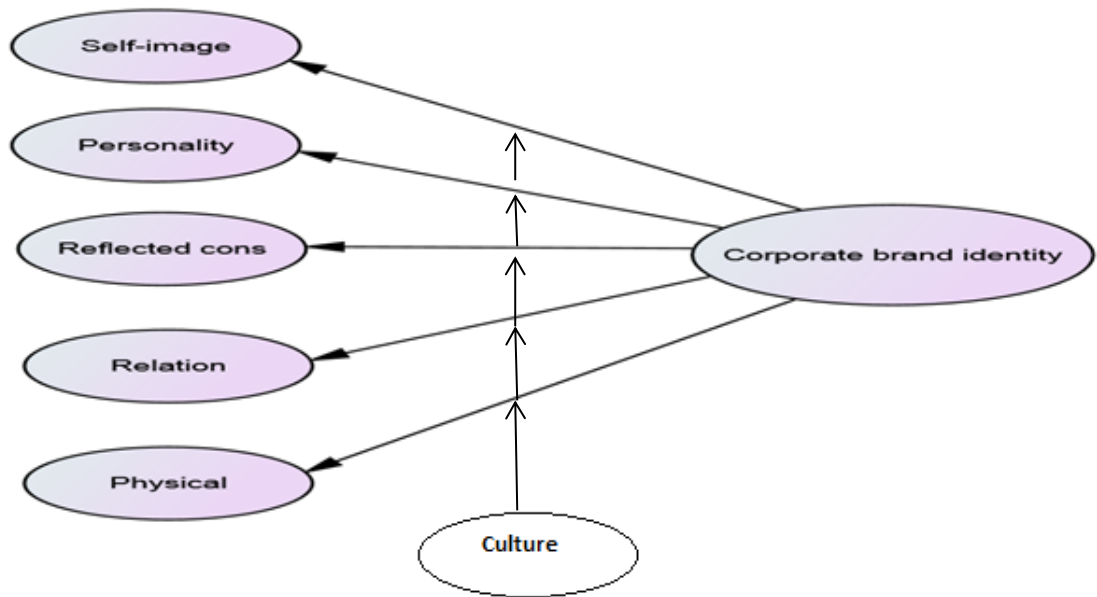
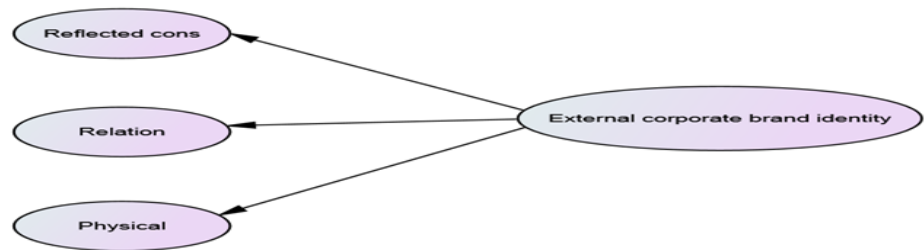


Figure 2.3 depicts the second-order factor for the external part of the brand identity as defined by Kapferer (1986, 2008)

Figure 2.3 – Second order factor for external corporate brand identity



Each of these dimensions is in itself a factor reflecting multiple item scales to assess the second-order factor of the corporate brand identity and of the corporate external brand identity as we intend to demonstrate.

Next, a brief contextualization regarding the higher-order constructs is pursued.

Higher-order constructs involve more than one dimension (Edwards, 2001; Jarvis *et al.*, 2003; MacKenzie *et al.*, 2005; Netemeyer *et al.* 2003). Most of the times, a second-order factor structure is tested. They can be thought of as explicitly representing the causal constructs that impact the first-order factors (Hair, *et al.* 2006). In conceptual terms, hierarchical factor analysis is like conducting a factor analysis on a correlation matrix of measured variables, estimating correlations among the first-order factors, and then doing a second factor analysis on the correlations among the first-order factors. The results of this second factor analysis are used to infer second-order factors that are derived from relations among the first-order factors. However, both first-order and second-order factors are estimated simultaneously in the same analysis (Marsh and Hocevar, 1988). The reliability and validity of the measures of the multidimensional constructs must complement the analysis (Edwards, 2001). At the same time as the heterogeneity of the dimensions of the higher-order construct increases, it is expected that the internal consistency of the dimension scores will be reduced. The construct validity of the dimension measures has been questioned for it contains large amounts of specific and group variance, usually treated as error variance (Law *et al.*, 1998). According to Bagozzi *et al.* (1991), this technique is appropriated for separating the confounding measurement error from specific variance.

According to Hair *et al.* (2006) all the considerations regarding the first-order factor apply to the second-order factors with a difference: the researcher must consider the first-order construct as indicators of the second-order construct.

Edwards, (2001) and MacKenzie *et al.*, (2005) claim that the use of higher-order factor allows more theoretical parsimony and reduces model complexity. For further details on second-order models, see also Bagozzi and Heatherton, 1994; Gerbing and Anderson,

1984; Gerbing *et al.* 1994; Hunter and Gerbing, 1982; Jöreskog, 1970; Marsh and Hocevar, 1988.

Proponents of higher-order constructs contend that such constructs exhibit a higher degree of criterion-related validity, especially if they serve as predictors.

Based on the referred considerations the individual dimensions of the brand identity prism are first-order factors, and corporate brand identity the second-order factor reflecting a higher level of abstraction. We followed the guidelines detailed by Bagozzi *et al.* (1991) to test the SOCFA model - Second Order Confirmatory Factor Analysis (Anderson, 1987). Therefore we begin with the CFA model because of its relative few assumptions (for model identification, it is necessary at least three first-order factors for each second-order factor), its desirable features and its parsimonious structure. As asserted by Bagozzi *et al.* (1991), *“in this approach each measure loads directly on first-order trait and method factors, and the first-factors load, in turn, on corresponding second-order trait and method factors”* (p.438).

To test the corporate brand identity model a second-order confirmatory factor analysis was used to test the hierarchical factor structure. Furthermore we tested the plausibility of the higher-order factor model for construct validity and goodness-of-fit (GOF). Firstly we estimated a first-order measurement model, analyzing construct validity and GOF indices. Only then did we estimate a second-order factor model and analyze construct and nomological validity, because higher-order factors should be examined for criterion validity. A primary validation criterion turns out to be how well the higher-order factor explains the theoretically related constructs.

We used Amos software (21st version) (Arbuckle, 2010) and maximum likelihood (ML) estimation method to conduct this study, CFA to assess the reliability and construct validity (convergent and discriminant).

In the next section we present the results of the statistical analysis and the main findings regarding:

- the measurement and second-order factor for corporate brand identity (without the variable culture);
- the role of the cultures perceived as being performance oriented in corporate brand identity;
- the measurement and demonstration of a higher dimension formed by the external dimensions of the corporate brand identity (relation, reflected consumer and physical).

2.4 Results

We use a two-step approach: first we estimate and test the fit and construct validity of the measurement model (Anderson and Gerbing, 1988; Hair *et al.*, 2006; Ping, 2004; Jöreskog, 1993). If this model is satisfactory then the second step is to estimate and test the structural theory. Thus the measurement model fit provides a basis for assessing the validity of the structural theory (Hair *et al.* 2006).

2.4.1 Unidimensionality and reliability of the scales

In this section we present some indicators and criteria to evaluate the quality of the proposed scales in terms of reliability and unidimensionality. Next, we run the CFA and evaluate the data regarding the selected fit indices. Following the proposed two-step approach, first we evaluate the fit of the measurement model and only if it reveals a satisfactory fit we test the second-order model.

The first-order model includes five factors and 33 corresponding reflective indicators as listed in the table 2.4 (A) – see Tables.

According to Ping (2004), measures should be unidimensional (having one underlying construct), consistent (fitting the model in structural equation analysis), reliable (comparatively free of measurement error) and valid (how well an item measures what it should).

The goal of most research projects is not just to develop unidimensional and reliable measurement scales but to build and test theory. Unidimensionality is necessary but not sufficient for construct validity (Gerbing and Anderson, 1988), it refers to the existence of a single trait or construct underlying a set of measures (Hattie, 1985; McDonald, 1981). A unidimensional item has only one underlying construct, and a unidimensional measure consists of unidimensional items (Aker and Bagozzi, 1979; Anderson and

Gerbing, 1988; Gerbing and Anderson, 1988; Hattie, 1995; Jöreskog, 1970, McDonald, 1981).

All the items that define a scale should provide estimates of exactly one factor (unidimensionality), but they must also be reliable, that is, the meaning of the underlying factor should correspond to the construct of interest. To summarize the data in terms of a set of underlying constructs, factor analysis is performed.

According to Ping (2004), there have been many proposals to assess reliability (see Gerbing and Anderson, 1988; Hattie, 1985; Nunnally, 1978) but coefficient alpha (Cronbach, 1951) is generally preferred (Peter, 1979) because it doesn't depend on the assumptions required by other indices of reliability. However, Bollen (1989) states that this coefficient assumes that the items are perfectly correlated with their underlying construct and the author highlights that this assumption is always unreasonable in practice. One of the most frequently used formulas to assess reliability is proposed by Werts *et al.* (1974). This latent variable reliability of a measure X, is given by:

$$\rho_x = \frac{(\sum \lambda_i)^2 \text{Var}(X)}{(\sum \lambda_i)^2 \text{Var}(X) + \sum \text{Var}(e_i)},$$

where λ_i is the loading of x_i (the items), on X (the scale), e_i is the error term for each item and Var (X) is the disattenuated (measurement error free) variance of X.

Yet, as pointed out by Gerbing and Anderson (1988), for unidimensional measures there is little practical difference between the latent variable reliability and coefficient alpha, so, it may be sufficient to report the last because at least it provides a conservative estimate of reliability.

We measured unidimensionality and reliability of the proposed scales beginning with the new scales (physical, relation, reflected-consumer, self-image) and finally personality, a scale based on the literature (Azoulay and Kapferer, 2003; Azoulay, 2009). To measure unidimensionality we ran a principal component analysis with Varimax rotation, Kaiser normalization to each scale. Those scale items that did not

show factorial stability were candidates to elimination. To measure reliability we selected the Cronbach's alpha.

Physical

According to the definition proposed by Kapferer (1986, 2088) to this dimension we selected items regarding the physical features of the universities/institutions and also items regarding intangible features like quality of the lecturers...

A first approach was made to measure the reliability of the scale and we found that if F6 (employability) was deleted the Cronbach's alpha would rise from 0,813 to 0,819. Following Ping (2004) we preferred bigger alpha coefficients (preferably higher than the 0,8 suggested by Nunnally, 1978) to avoid low AVE (average variance extracted) when running the confirmatory factor analysis (CFA). Regarding dimensionality the scale showed to be bi-dimensional as can be seen in Table 2.5 below.

Table 2.5 – Analysis of the dimensionality of Physical construct

Items	Factor loadings	
	Factor 1	Factor 2
F1 – the facilities of my university/institution are modern	0,825	
F2 – the facilities of my university/institution are sophisticated	0,860	
F3 – the facilities of my university/institution are functional	0,765	
F4 - the facilities of my university/institution are adequate	0,785	
F5 – the facilities of my university/institution are better than the ones of other universities/institutions	0,779	
F7 - lecturers of the degree I attend are very competent		0,553
F8 – in my university/institution I know that I can always count on quality interface services (library, students support office...)		0,687
F9 – my university/institution contributes to my future professional success		0,533
Extraction Method: Principal Component Analysis.		

This result is coherent with Kapferer's (1986, 2008) definition of the physical dimension. The author describes it as having tangible and intangible features. Yet, as modeling demands the unidimensionality of the scales and for that reason we divided the previous scale in two. The first scale is related to tangible issues like facilities and

the second is related to intangible issues (“e.g.” lecturers’ competence). For this reason we decided to name them “Tangible physical” and “Intangible physical” respectively. We then tested the reliability and unidimensionality of both scales. A summary of the main results regarding all the scales is provided in Table 2.6.

Table 2.6 – Summary of the reliability and unidimensionality of the scales

Scale	Item	Item-to-total ^{a)}	Cronbach’s α ^{b)}	Factor loading	% var. explained ^{c)}	KMO ^{d)}
Tangible Physical	F1	0,805	0,885	0,883	69,280	0,834
	F2	0,815		0,894		
	F3	0,669		0,790		
	F4	0,687		0,801		
	F5	0,673		0,786		
Intangible Physical	IF1	0,397	0,651	0,703	59,260	0,639
	IF2	0,499		0,804		
	IF3	0,495		0,799		
Relation	R1	0,570	0,813	0,730	58,873	0,790
	R2	0,660		0,818		
	R3	0,690		0,839		
	R4	0,558		0,698		
	R5	0,588		0,742		
Reflected-consumer	RC1	0,664	0,884	0,779	69,230	0,830
	RC2	0,712		0,820		
	RC3	0,736		0,833		
	RC4	0,764		0,866		
	RC5	0,758		0,860		
Self-image	SI1	0,726	0,880	0,844	74,279	0,796
	SI2	0,744		0,866		
	SI3	0,791		0,895		
	SI4	0,723		0,842		
Personality	P1	0,421	0,734	0,641	56,191	0,740

	P2	0,567		0,784		
	P3	0,593		0,803		
	P4	0,536		0,755		

a) Corrected item-to-total correlation it is a measure for examining the relationships between the individual items and the total scale; this is the correlation between the given item and the item sum if the given item is not included in the scale. Smaller values indicate that the given item is not well correlated with the others. Items below 0,4 (cutoff value in a principal components analysis) are candidates for deletion (Clark and Watson, 1995). IF1 loads 0,397 so it is very close to the cutoff value, Yet, it will be retained for the sake of maintaining a minimum of three items per scale (Hair *et al.*, 2006).

b) Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. There are different reports about the acceptable values of alpha, ranging from 0,70 to 0,95 (Nunnally and Berntein, 1994; Nunnally, 1978; Bland and Altman, 1997; DeVellis, 2003). However, according to Nunnally (1978), what a satisfactory level of reliability is depends on how a measure is being used. In the early stages of research one saves time and energy by working with instruments that have only modest reliability, for which purpose reliabilities of 0,70 or higher will suffice. In contrast to the standards in basic research, in many applied settings a reliability of 0,80 is not nearly high enough. Churchill (1979) suggests 0,6 as a cutoff value to this coefficient.

c) The % of variance explained was calculated for each scale. That % of variance explained is related to the 1st factor.

d) The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values (between 0,5 and 1,0) indicate factor analysis is appropriate. Values below 0,5 imply that factor analysis may not be appropriate (Malhotra, 2004)

The dimension **Tangible physical** is considered unidimensional and reliable and, although **Intangible physical** is clearly unidimensional, its alpha coefficient is 0,651 (lower than the 0,8 suggested by Nunnally, 1978). Nevertheless, as stated by Dekovic *et al.* (1991) there are, no longer, any clear standards regarding what level of reliability is considered acceptable. It is not uncommon for contemporary researchers to characterize reliabilities in the 0,60s and 0,70s as good or adequate (Dekovic *et al.*, 1991; Holden *et*

al., 1991). Therefore, we included this scale in the corporate brand identity framework and test if there is an acceptable model fit with the inclusion of this finding.

Relation

On measuring unidimensionality of the proposed scale only one component was extracted but the percentage of the variance explained by that component was only 49,908%. Also a very low loading on the item R6 - fatherly (0,273) highlighted the necessity of checking the reliability of the scale. We observed that the Cronbach's alpha improved from 0,766 to 0,813 if that item was deleted and so we did it. We then analyzed the unidimensionality of the scale and found that the scale was unidimensional with a percentage of variance explained by that component of 58,873%.

Reflected-consumer

A first approach was done to measure reliability and we decided to delete RC6 (amused/open people) so improving reliability to 0,884 for the previously mentioned reasons. We then analyzed the unidimensionality of the scale and found that the scale was unidimensional with a percentage of explained variance by that component of 69,230%.

Self-image

A first approach was done to measure reliability and we decided to delete SI5 (elite) and SI6 (entrepreneur) so improving reliability to 0,880 for the reasons already mentioned. We then analyzed the unidimensionality of the scale and found that the scale was unidimensional with a percentage of explained variance by that component of 74,279%.

Personality

A first approach was done to measure reliability and Cronbach's alpha was unacceptable (0,47). After deleting P5 (peaceful) and P6 (maverick), Cronbach's alpha improved to 0,734. The original scale (Azoulay, 2009; Azoulay and Kapferer, 2003) was tested with highly recognized corporate brands ("e.g" Coca-cola, IBM...) but not to educational brands. This could be the reason for these adaptations. The respondents found it reasonable to define the personality of a university/institution as "agreeable",

“conscientious”, “innovative” and “chic/distinct”, however they didn’t find it reasonable to define it as “peaceful” or “maverick”. We then analyzed the unidimensionality of the scale and found that the scale was unidimensional with a percentage of explained variance by that component of 56,191%.

In the next sub-section we specify a measurement model with the list of 26 items that survived the reliability and unidimensionality criteria. A guideline of the estimated and tested models is provided as well as a brief description of the selected fit indices and criteria that we follow in this research.

2.4.2 Model fit – guidelines and criteria to assess a model for corporate brand identity

Because the analysis of the physical dimension revealed the proposed construct was bi-dimensional and CFA runs with unidimensional constructs we decided to estimate and test the corporate brand identity model with six factors: tangible physical, intangible physical, relation, reflected consumer, personality and self-image. For comparison purposes we compare this model with the five factor model (without the intangible physical dimension). The second-order factor is tested only to the model(s) that provide validity (convergent and discriminant).

Next, we estimate and test the brand identity measurement model with its six original dimensions (personality, self-image, physical, relation, reflected consumer and culture as a nominal variable). The inclusion of “culture” as a nominal variable allows us to discover how the students classify the university/institution that they attend in terms of performance orientation.

Finally we test the second order factor for the external corporate brand identity for the reasons previously mentioned regarding its importance in a context of corporate brands.

The following table intends to be a guideline of the estimated and tested models.

Table 2.7 – Guideline of the estimated and tested models

Guideline of the proposed models	
Section	Estimated and tested models
2.4.2.1	<u>Dimensions</u> : six factors: tangible physical, intangible physical, relation, reflected consumer, personality and self-image. (1 st order measurement model)
2.4.2.2	Model re-especification (1st order measurement model)
2.4.2.3	<u>Dimensions</u> : five factors: tangible physical, relation, reflected consumer, personality and self-image (1st order measurement model)
2.4.2.4	2 nd -order factor model
2.4.3	<u>Dimensions</u> : six factor (Kapferer, 1986, 2008): tangible physical, relation, reflected consumer, personality, self-image and culture as a nominal variable (1st order measurement model and 2 nd order factor model)
2.4.4	<u>Dimensions</u> : tangible physical, relation, reflected consumer (1st order measurement model)
2.4.5	<u>Dimensions</u> : tangible physical, relation, reflected consumer (1st order measurement model and 2 nd -order factor model)

To assess the psychometric properties of the measures, we initially specified a measurement model for the first-order latent variables, in which no structural relationships were included. The first-order measurement model included six factors (tangible physical, intangible physical, relation, reflected consumer, personality and self-image) with their 26 corresponding reflective indicators, as listed before in Table 2.6. We ran a CFA of the six factor structure not only to assess the overall model fit, but also to assess the reliability of the measures and construct validity. Using three or four fit indices provides adequate evidence of model fit (Byrne, 2010, Hair *et al.*, 2006, Marôco, 2010). The researcher should report at least one incremental index, in addition to the Chi-square value (χ^2) and the associated degrees of freedom (DF), the CFI

(comparative fit index) and the RMSEA (root mean square error of approximation) will usually provide sufficient unique information to evaluate a model.

We evaluated model fit through multiple fit criteria, each of which represents a different aspect of the model. In particular, three indices were examined in this study:

- Chi-square normalized by degrees of freedom (CMIN/DF): represents the minimum discrepancy divided by its degrees of freedom. The authors disagree about the values that are indicative of an acceptable fit between the hypothetical model and the sample data. According to Marsh and Hocevar (1985) different researchers have recommended using ratios as low as 2 or as high as 5 to indicate a reasonable fit. In Byrne's proposition (1989, 2010) it seems clear that a ratio higher than 2,00 represents an inadequate fit. We will follow this conservative guideline to evaluate the model fit.
- Comparative fit index (CFI): values close to 1 indicate a very good fit (higher than 0,9). CFI depends, in a large part, on the average size of the correlations in the data. If the average correlation between variables is not high, then the CFI will not be very high.
- Root mean square error of approximation (RMSEA): is one of many ways to quantify the difference between values implied by an estimator and the true values of the quantity being estimated. A value close to zero indicates a perfect fit. A RMSEA of zero, means that the estimator predicts observations of the parameter with perfect accuracy, it is the ideal, but it is practically never possible.

Our sample is compounded by 235 individuals. According to what has been stated and Hair's (2006) suggestions for a sample of 250 individual or less, with items between 12 and 30, we followed the guidelines:

- $CMIN/DF < 2,00$ (Byrne, 1989, 2010);
- $CFI^* \geq 0,95$ (Hair, *et al.* 2006) Byrne (2010), Ping (2004)
- $RMSEA < 0,08$ (Hair *et al.*, 2006; Hu and Bentler, 1999; Bentler, 1990).with $CFI \geq 0,95$ (Hair *et al.*)

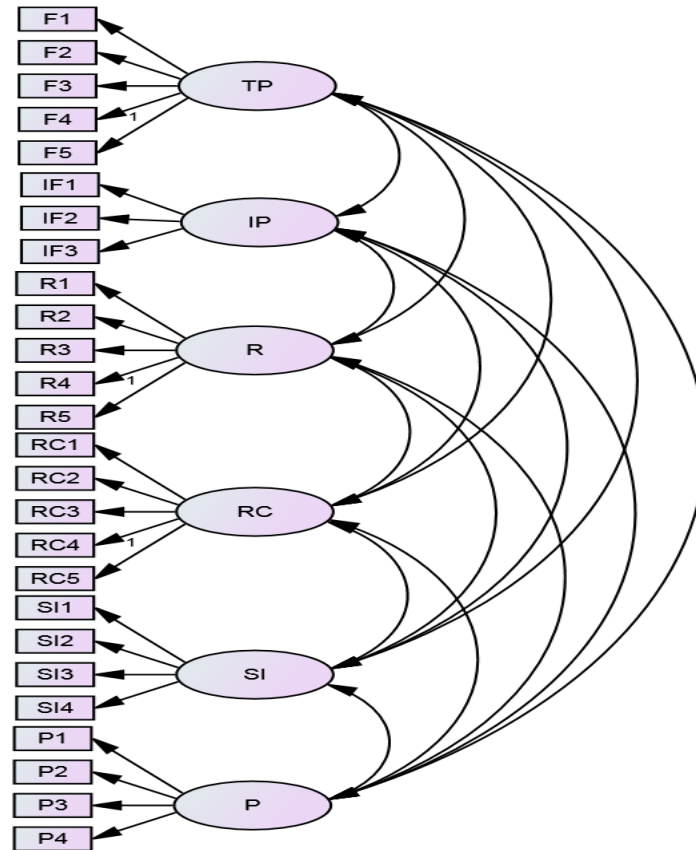
* Hu and Bentler, 1999; Bentler, 1990, Marsh *et al.* (1996) and Browne and Cudeck (1993) argue that satisfactory model fits are indicated by non-significant chi-square tests, RMSEA value $\leq 0,08$ and CFI $\geq 0,90$. Nevertheless we opted for the mentioned criteria because we believe that a measurement of a very important theory demands a conservative approach.

Following these guidelines, we ran the first-order measurement model to corporate brand identity.

2.4.2.1 – A first approach to the measurement of corporate brand identity with six factors: tangible physical, intangible physical, relation, reflected consumer, personality and self-image

The results of the first-order measurement model, indicate that the model fits the data satisfactory in terms of almost all the fit indices considered in this study $\chi^2(280)=504,897$, $p < 0.000$, chi-square normalized by degrees of freedom (CMIN/DF)= 1,803, CFI=0,935 (should be higher than 0,95 for $N < 250$), RMSEA=0,059 with the 90% confidence interval [0,050;0,067].

Figure 2.4 – A six factor first-order model to corporate brand identity (tangible physical, intangible physical, relation, reflected consumer, personality and self-image)



Regardless of the satisfactory fit, we tried to improve the model by developing the procedures described in Appendix B. Therefore we decided to drop P1 and RC5 of further analyses, assuring at least three items indicators for each construct, as models with sample size greater than 200 that adhere to the three indicator rule are unlikely to produce problems with model identification (Hair et al., 2006; Kline, 2005; Jöreskog and Sörbom, 2001).

2.4.2.2 – Corporate brand identity – model re-specification

Guided by both theoretical and empirical considerations, the re-specified model shows better fit statistics. CFA results suggest an overall good fit: $\chi^2 (211) = 330,673$, $p = .000$, CMIN/DF = 1,567 which is less than the maximum of 2 proposed by Byrne (1989, 2010), CFI=0,960; RMSEA=0,049. Using the 90% confidence interval we concluded

that the true value of RMSEA is between [0,039, 0,059] (even the upper bound is lower than the threshold of 0,08) which reveals a very acceptable fit.

No problems were found regarding the standardized loadings (all > 0,5), the standardized residuals, all < 2,58 (cutoff value according to Jöreskog and Sörbom, 2001). Regarding the modification indices (MI's) MI's > 11 are values demanding attention, according to (Hair *et al.*, 2006, Byrne 2010). No problems were found because the modification indices, all <11, except between F4 and SI2 – 11,693 yet according to all other criteria the items are acceptable, therefore, considering the small difference we decided to keep both items.

We assessed construct validity by examining convergent and discriminant validity. Convergent and discriminant validity are considered sub-categories, or subtypes, of construct validity. To establish convergent validity, we need to show that measures that should be related are in reality related. To establish discriminant validity, we need to show that measures that should not be related are in reality not related.

The reliability (CR) of these measures was over the threshold of 0,7 and the average variance extracted (AVE) exceeded the recommended value of 0,5 (Fornell and Larcker, 1981) (see Table below).

Table 2.8 – Construct and discriminant validity

Construct validity:

	Tangible Physical	Relation	Personality	Self-Image	Reflected Consumer	Intangible Physical
AVE	0,79	0,68	0,70	0,79	0,82	0,63
CR	0,92	0,88	0,83	0,92	0,94	0,76

Discriminant validity:

	Self-Image	Personality	Relation	Tangible Physical	Reflected Consumer	Intangible Physical
Self-Image	0,89					
Personality	0,83	0,83				
Relation	0,76	0,64	0,83			
Tang Physical	0,53	0,55	0,31	0,89		
Reflected Consumer	0,70	0,67	0,61	0,68	0,90	
Intangible Physical	0,90	0,80	0,89	0,47	0,68	0,79

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

To assess discriminant validity, Fornell and Larcker (1981) suggest the use of AVE, which should be greater than the variances shared between the constructs. After checking the results (Table above), we found that except for Intangible physical (IP) against the Self-image (SI) and the Relation (R) constructs, all other constructs have adequate discriminant validity. Nevertheless, as the differences is quite small (0,01 (0,90-0,89) between Intangible Physical (IP) and Self-image (SI) and 0,06 (0,089-0,086) between Intangible physical (IP) and Relation (R) we tested another way to measure discriminant validity. In line with Hair's guidelines (Hair *et al.*, 2006) we decided to set the value of the relationship between the constructs IP and SI to one (1) and also of IP and R to one (1). In line with this we tested the following hypotheses:

H0: the constraint model is equal to the free model

H1: the constraint model is different from the free model

H0: χ^2 (constraint model) = χ^2 (free model)

H1: χ^2 (constraint model) $\neq$ χ^2 (free model)

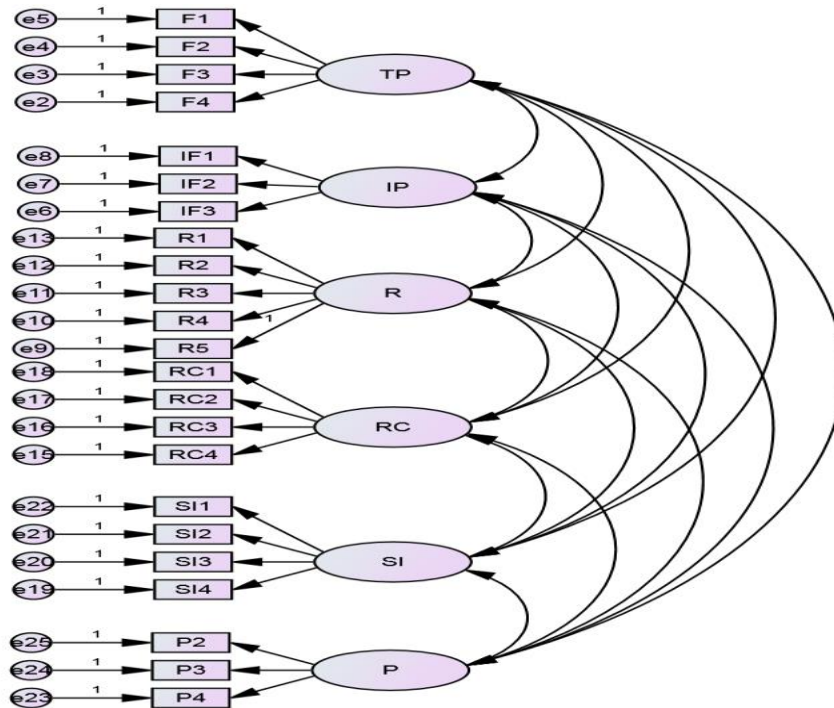
Using the χ^2 statistic the results were as follows:

Table 2.9 – Comparison using χ^2 statistic

Constraint model		Free model		Difference	
χ^2	DF	χ^2	DF	χ^2	DF
150,315	97	145,840	94	4,475	3

As the difference between the χ^2 of the constraint model and the free model is not significative (the critical value of the χ^2 for 3 degrees of freedom is 7,82 ($\alpha = 0,05$) H0 is confirmed and therefore the conclusion remained the same. For this reason we concluded that there is no discriminant validity between the constructs IP and SI or between IP and R

Figure 2.5 – A re-specified first-order six factor model to brand identity (tangible physical, intangible physical, relation, reflected consumer, personality and self-image)



Although according to the definition proposed by Kapferer (1986, 2008) it seemed that the intangible features should be taken into account, the findings reveal that these features are not different enough to be considered a single differentiated factor. We consider this finding may be related to the particularities of the used sample or with some theoretical misspecification. Probably, if we used another sample (“e.g.” psychology or arts students) the results would be different. Yet, we are analyzing this sample and so we will decide in accordance with the extracted conclusions.

By examining the psychometric properties of each indicator there is no evidence of discriminant validity between Intangible physical (IP) and the mentioned factors (Self-image - SI and Relation - R). As it is required when developing a measurement instrument, great emphasis should be given to discriminant validity, which means that all factors of a multidimensional scale should have distinct measures, and consequently assure the unidimensionality of each factor. As a result, we tested a five factor measurement model after excluding Intangible physical factor from further analysis.

Theoretically this drop causes no damage to the proposed model by Kapferer because this factor derived from this study and not from the author's research. Yet, we consider that this redraw would not be necessary in another context, using another sample.

For the six factor measurement model, standardized loadings, Cronbach's alpha, composite reliability, average variance extracted, and correlations of the measures will be available on request.

2.4.2.3 – Corporate brand identity – five factor model (tangible physical, relation, reflected consumer, personality and self-image

In assessing the re-specified five factor first-order measurement model we ran CFA not only to test the overall fit but also to test the validity of the measures. As shown in Table 2.10, the results supported convergent validity for all measures: all estimated factor loadings of the items are above the threshold of 0,5 and were all significant ($p < 0.001$) exceeding the statistical significance level accepted in this study. Standardized residuals suggest no modification: all residuals are below 2,58 suggesting no major problems with items covariance's discrepancy.

Table 2.10 – Psychometric properties for the first-order constructs

Measured Items	Factor loadings λ_i	$\Sigma^a)$	Delta ^{b)}	AVE	CR	Cronbach's α
Tangible Physical				0,79	0,92	0,877
F1	0,870		0,130			
F2	0,937		0,063			
F3	0,674		0,326			
F4	0,666	3,174	0,334			
Relation				0,68	0,88	0,790
R1	0,609		0,391			
R2	0,818		0,182			
R3	0,868		0,132			
R4	0,516		0,484			
R5	0,599	3,410	0,401			
Reflected-consumer				0,82	0,94	0,878
RC1	0,722		0,278			
RC2	0,785		0,215			
RC3	0,856		0,144			
RC4	0,913	3,276	0,087			
Self-image				0,79	0,92	0,796
SI1	0,797		0,203			
SI2	0,730		0,270			
SI3	0,825		0,175			
SI4	0,811	3,163	0,189			
Personality				0,70	0,83	0,731
P2	0,727		0,273			
P3	0,669		0,331			
P4	0,693	2,089	0,307			

a) Sum of the factor loadings

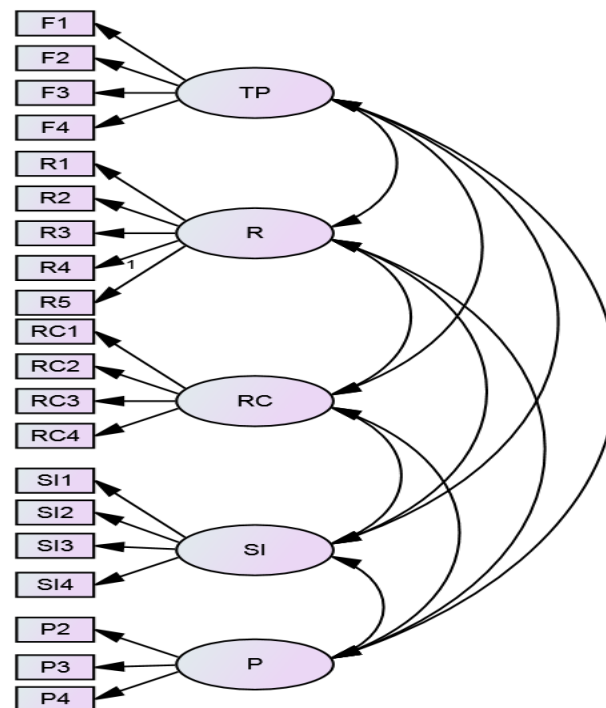
b) Delta is a measure that is used to calculate the CR (construct reliability) and the formula do obtain it is $1 - \lambda^2$

The overall model fit was satisfactory: χ^2 (156) = 251,518; $p=0.000$, CMIN/DF was 1,612, which is less than the maximum of 2, and the CFI, and the RMSEA were satisfactory (0,965 and 0,051, respectively). Using the 90% confidence interval we

concluded the true value of RMSEA is between 0,039 and 0,063 (even the upper bound is lower than the threshold of 0,08) which is an acceptable fit.

Comparing with the model fit including Intangible physical (IP), the model fit decreased slightly when the (IP) was dropped... yet, both CFI and RMSEA exceed the GOF guidelines proposed by Hair *et al.* (2006) and Hu and Bentler (1999) for a model of this complexity and effective sample size.

Figure 2.6 – A five factor model to corporate brand identity



Given that, we dared to develop three new scales to measure the Self-image (SI), Reflected-consumer (RC) and Tangible physical (TP) it is appropriate to examine construct validity – specifically in terms of convergent and discriminant validity. As Table 2.10 shows (above), the fact that all the items loaded highly (above the threshold of 0,5) on the factors to which they were assigned, is itself a test of convergent validity of the scale.

We assessed construct validity examining convergent and discriminant validities. The value of Cronbach's alpha of the constructs exceeded the normally accepted 0,7 threshold. The minimum reliability (CR) of these measures was 0,83, over the threshold of 0,7. In addition, the AVE across the constructs exceeded 0,5 as we demonstrate in Table 2.10 (above) and Table 2.11 - construct validity (below), which provides evidence of reliable measures. From the examination of the correlation estimates in the Table below (discriminant validity), it seems also that there is a lack of discriminant validity between Personality and Self-image. Yet, if we round the values to three decimals we can observe that the square root of the AVE from Personality (0,834) is higher than the correlation between Personality and Self-image (0,826). Therefore we can conclude that there is discriminant validity in the sense of Fornell and Larcker (1981).

Table 2.11 – Construct and discriminant validity

Construct validity:

	Tangible Physical	Relation	Personality	Self-Image	Reflected Consumer
AVE	0,79	0,68	0,70	0,79	0,82
CR	0,92	0,88	0,83	0,92	0,94

Discriminant validity:

	Self-Image	Personality	Relation	Tangible Physical	Reflected Consumer
Self-Image	0,89				
Personality	0,83	0,83			
Relation	0,76	0,64	0,83		
Tang Physical	0,53	0,55	0,31	0,89	0,42
Reflected Consumer	0,70	0,67	0,61	0,42	0,90

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

From the examination of the correlation estimates (see Table above - Discriminant Validity, below the diagonal) we observe that the first-order constructs are highly correlated specially Self-image (SI), Personality (P) and Relation (R). This could explain why there is so much common variance to make a higher-order factor structure appropriate.

According to these results we can now test a second-order factor for the corporate brand identity.

2.4.2.4 – A second-order model (five factors: tangible physical, relation, reflected consumer, personality and self-image)

Here we estimate and test a second-order factor analysis for corporate brand identity using the dimensions developed by scale methodology. Therefore, the dimension culture is not included in this section because it is a nominal variable. It will be included in the next section.

According to Hair *et al.* (2006) the first-order model will always fit better in absolute terms, because it uses more paths to capture the same amount of covariance. In contrast, the second-order model is more parsimonious, as it uses fewer degrees of freedom (p.817), therefore RMSEA (a parsimony-adjusted measure) should perform better in the second-order factor structure. However, a higher-order model is not “simpler” because it involves several levels of abstraction. This fact complicates empirical comparisons and places more weight on theoretical and pragmatic concerns. Second-order factors should be examined for nomological validity because it is possible that confounding explanations may exist for a higher-order factor. We tested the alternative higher-order structure in order to determine the plausibility of second-order model of both six and five factor structure, just for comparison purposes. The six factor model, although not perfect, since the Intangible Physical factor has not shown adequate discriminant validity, has a level of fit considered sufficient to proceed with an assessment of the second-order model (Bagozzi *et al.*, 1991).

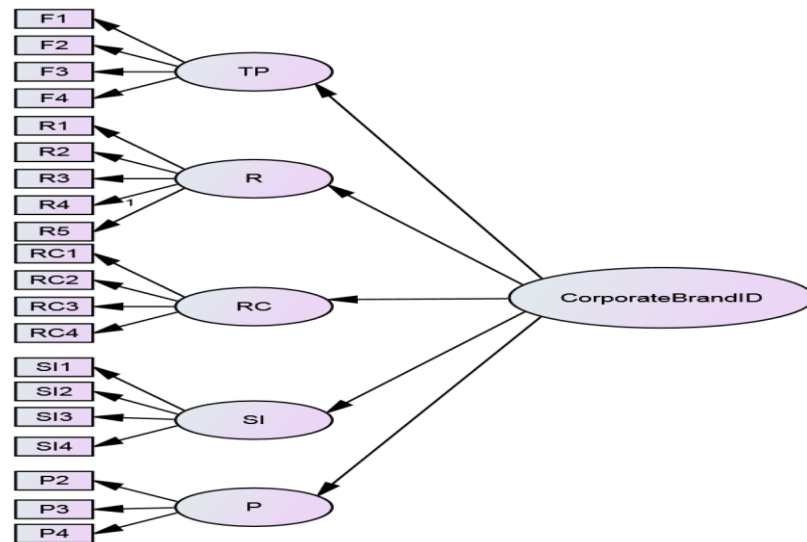
The results are summarized in the next table.

Table 2.12 – Comparison of the second-order factors for brand identity

Model	χ^2	DF	CMIN/DF	CFI	RMSEA
Six factor	357,211	220	1,624	0,955	0,052 [0,042; 0,061]
Five factor	253,718	160	1,586	0,965	0,050 [0,038; 0,061]

As one can see, the five factor model fits better than the six factor model for the second-order factor for corporate identity and therefore we assessed the reliability and validity of the proposed five factor model (Figure below).

Figure 2.7 – Second-order dimension for corporate brand identity – five factor model



Following good measurement practices, we assessed reliability and validity of the second-order factor brand identity. Construct validity is demonstrated by plausible correlations of the second-order construct with the first-order indicators, while convergent validity could be suggested by an AVE for the second-order construct that is greater than 0,5 (Ping, 2004; Bagozzi *et al.*, 1991). Following Ping's (2004) guidelines, we compute CR and AVE using the error variances (ζ 's) and loadings (β 's) of the first-order constructs on the second-order construct in a second-order measurement model in place of λ 's and $\text{Var}(\epsilon)$'s. The values of CR = 0,91 and AVE = 0,71 are greater than the recommended values suggesting higher reliabilities and convergent validity for the second-order construct. The loadings of the first-order latent variables on the second-order factor are all positive and statistically significant at $\alpha = 0,001$ and all exceed the recommended value 0,5 permitting to justify the importance of each dimension to create the second order factor (Hair *et al.*, 2006; Ping, 2004). According to Spiro and Weitz (1990), to test the nomological validity of the scale we examined the simple correlations between the corporate brand identity and the five factors. The results demonstrate (see

Table below) that the second-order factor brand identity is highly correlated with the five individual first-order dimensions ranging from 0,55 to 0,96.

Table 2.13 – AVE, CR and correlations of the second-order factor for corporate brand identity

	Brand ID
AVE	0,71
CR	0,91

	correlations
Personality	0,87
SelfImage	0,96
ReflectedConsumer	0,75
Relation	0,77
TangiblePhysical	0,55

These high values indicate the great importance and contribution of each dimension to the corporate brand identity construct. This means that students/consumers evaluate brand identity according to the proposed five basic dimensions and, in addition, they view overall brand identity as a higher-order factor.

The high construct reliability (CR=0,91) suggests that brand identity analysis could be appropriately conducted at the dimension as well the overall level. In addition, the overall fit indices (CFI =0,965 and RMSEA=0,050 exceeding the acceptable values) indicate that the second-order model is appropriate to measure overall brand identity. Regarding these empirical results there is evidence of theoretical support in the sense that the five first-order factors are the dimensions and indicators of one single higher-order factor corporate brand identity.

In line with these findings we can accept the 1st hypothesis and conclude that the constructs personality, self-image, reflected consumer, relation and physical are part of a higher dimension construct named corporate brand identity.

2.4.3 The role of the perceived brand culture in corporate brand identity

Here we include the nominal variable defined as perceived brand culture in the five factor model for corporate brand identity. It is our intention to find if cultures perceived as being performance oriented develop more salient brand identities. This corporate brand identity salience is measured by the model fit.

As stated before, this research assumes that the culture of the brand is the students' perceived culture about their university/institution. This perception is identified by using an adapted scale to measure organizational culture proposed by Desphande *et al.* (1993). Accordingly, the dimension culture is then converted into a nominal variable identifying the perceived culture by each respondent.

According to Desphande *et al.* (1993), adhocracy and market cultures develop higher levels of performance and oppositely, clan and hierarchical cultures develop smaller levels of organizational performance. In line with these findings, in this study, it is expected that cultures perceived as being performance oriented (market and adhocracy cultures) develop more salient brand identities (measured by the model fit) than cultures perceived as being less performance oriented (clan and hierarchical cultures).

We divided our 235 individuals sample in two groups according with the findings of Desphande *et al.* (1993):

1 – performance oriented cultures (adhocracy and market perceived cultures) - 136 individuals vs

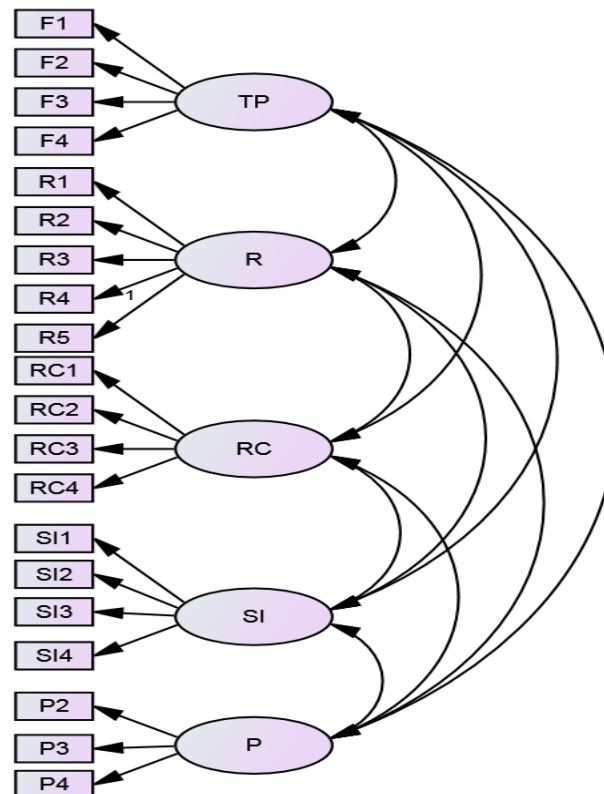
2 – less performance oriented cultures (clan and hierarchical perceived cultures) - 99 individuals;

and ran a CFA to each group. The model proposed can be seen in Figure 2.8.

The analysis includes the six dimensions of the brand identity as defined by Kapferer (1986, 2008), five of which are scales (“physical”, “relation”, “reflected consumer”,

“personality” and “self-image”) and “culture” is a nominal variable that is a moderator of the model.

Figure 2.8 - Corporate brand identity with the perceived culture



Note: the model includes the six variables proposed by Kapferer (1986, 2008): five factors: “physical”, “relation”, “reflected consumer”, “personality”, “self-image” and culture as a nominal variable.

The results are summarized in the next table.

Table 2.14 – Comparison of the 1st order constructs for brand identity considering the perceived culture

	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Performance oriented cultures (N=136)	239,981	158	0,000	1,519	0,942	0,062 [0,046; 0,077]
Less performance oriented cultures (N=99)	275,839	159	0,000	1,735	0,912	0,087 [0,069; 0,103]

The results show that, according to the theory, the group formed by market and adhocracy perceived culture fits better than the group formed by the clan and hierarchical perceived cultures, having the latter an unacceptable fit regarding RMSEA. Using the 90% confidence interval for this group we conclude that the true value of RMSEA is between 0,069 and 0,103 (the upper bound is even higher than the threshold of 0,08 which reveals an unacceptable fit).

The first order-factor for brand identity formed by the group that is perceived as being performance oriented, in spite of revealing construct validity, it reveals problems related to discriminant validity between self-image and personality as can be seen in the following table.

Table 2.15 – Convergent and discriminant validity

Construct validity:

	Tangible Physical	Relation	Personality	Self-image	Reflected Consumer
AVE	0,78	0,65	0,65	0,80	0,77
CR	0,92	0,86	0,78	0,93	0,91

Discriminant validity:

	Personality	Relation	Tangible Physical	Reflected Cons	Self-image
Personality	0,80				
Relation	0,73	0,81			
Tang Physical	0,54	0,27	0,89		
Reflected Consu	0,67	0,69	0,40	0,88	
Self-image	0,83	0,75	0,48	0,71	0,90

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

In line with these findings and for comparison purposes we decided to test the same first-order models without the self-image construct and the results are summarized in the next table.

Table 2.16 - Comparison of the 1st order constructs for brand identity considering the perceived culture (without the self-image dimension)

	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Performance oriented cultures (N=136)	132,436	96	0,008	1,380	0,963	0,053 [0,028; 0,074]
Less performance oriented cultures (N=99)	156,874	97	0,000	1,617	0,936	0,079 [0,056; 0,102]

We can conclude that both groups reveal a better fit, but the improvement verified in the group formed by the less performance oriented cultures (clan and hierarchical perceived cultures) was not enough to consider it better. The group perceived as having cultures performance oriented (market and adhocracy perceived cultures) that reveals an acceptable fit reveals now construct and discriminant validity as can be seen in the table below.

Table 2.17 – Convergent and discriminant validity

Construct validity:

	Tangible Physical	Relation	Personality	Reflected Consumer
AVE	0,78	0,65	0,64	0,77
CR	0,92	0,86	0,78	0,91

Discriminant validity:

	Personality	Relation	Tangible Physical	Reflected Consumer
Personality	0,80			
Relation	0,74	0,81		
Tang Physical	0,55	0,27	0,89	
Reflected Consumer	0,67	0,69	0,40	0,87

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

Even knowing that the 1st order constructs for brand identity (Table 2.14) considering the perceived culture (six dimensions as proposed by Kapferer: “physical”, “relation”, “reflected consumer”, “personality”, “self-image” and “culture”) didn’t reveal discriminant validity in the case of the performance oriented cultures, we developed the second-order model and compared it with the second-order model without the dimension “self-image”.

Table 2.18 - Comparison of the 2nd order constructs for brand identity considering the perceived culture

Performance oriented cultures	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Six dimensions (Kapferer, 1986, 2008)	249,908	163	0,000	1,533	0,939	0,063 [0,47; 0,078]
Five dimensions (without self-image)	141,882	98	0,003	1,448	0,955	0,058 [0,035; 0,078]

Although the model of the five dimensions fits relatively better, both models reveal very acceptable fits. Yet, we must recall that the proposed model for the six dimensions didn’t reveal discriminant validity.

Taking in attention the limitations of the model, we can accept the 2nd hypothesis and conclude that cultures that are perceived as being performance oriented (market and adhocracy) develop more salient corporate brand identities. The brand identity model as defined by Kapferer (1986, 2008) is defined by five dimensions (“physical”, “relation”, “reflected consumer”, “personality” and “self-image”) and “culture” is a nominal variable that moderates the analysis. We found that the “culture” moderates the analysis of the brand identity in a corporate brand context by influencing all the other dimensions. According to Kapferer (2008), there is a transfer of the corporate identity into the brand identity when the organization and the brand names coincide. *This does not mean that they perfectly coincide, but there is a bridge between them. Such a bridge is usually easier to build by means of the cultural dimension* (p. 206). This research gives a step forward and concludes that the brand culture dimension influences all the other dimensions; therefore, it is a development of the theory proposed by Kapferer (2008).

2.4.4 Measuring the external part of corporate brand identity

According to Kapferer (1996, 2008), brand identity is divided into an internal part (culture, personality and self-image) and an external part (relation, reflected consumer and physical). The external part is very important, especially in the case of corporate brands, owing to the fact that they are subject to constant interactions with different publics. In line with this, we assessed the first-order factor to the corporate external brand identity by running a CFA not only to test the overall fit but also to test the validity of the measures.

Taking into account the previous analysis we tested also the external identity with four factors (including intangible physical) for comparison purposes. The results are synthesized in the Table below.

Table 2.19 – Comparison of the first-order factors for the external part of corporate brand identity

	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Four factor (with Intangible physical)	125,755	95	0,019	1,324	0,984	0,037 [0,016; 0,054]
Three factor	82,685	59	0,023	1,401	0,985	0,041 [0,016; 0,061]

As can be seen, both models have a good fit regarding all the indicators but the four factor model reveals even a better fit. Yet, consistent with previous analysis, the four factor model shows no discriminant validity between intangible physical (IP) and relation (R), although it reveals construct validity (see table below).

Table 2.20 – Construct and discriminant validity

Construct validity:

	Tangible Physical	Relation	Reflected Consumer	Intangible Physical
AVE	0,79	0,68	0,79	0,63
CR	0,92	0,88	0,92	0,76

Discriminant validity:

	Relation	Tangible Physical	Reflected Consumer	Intangible Physical
Relation	0,83			
Tang Physical	0,31	0,89		
Reflected Consumer	0,63	0,42	0,89	
Intangible Physical	0,89	0,47	0,70	0,79

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

In opposition, the three factor model (relation, reflected consumer and tangible physical) reveals construct and discriminant validity (see table below) showing that the external dimensions of the brand identity prism make sense together, as stated by Kapferer (1986, 2008).

Table 2.21 – Construct and discriminant validity

Construct validity:

	Tangible Physical	Relation	Reflected Consumer
AVE	0,79	0,68	0,79
CR	0,92	0,88	0,92

Discriminant validity:

	Relation	Tangible Physical	Reflected Consumer
Relation	0,82		
Tang Physical	0,31	0,89	
Reflected Consumer	0,63	0,42	0,89

Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal

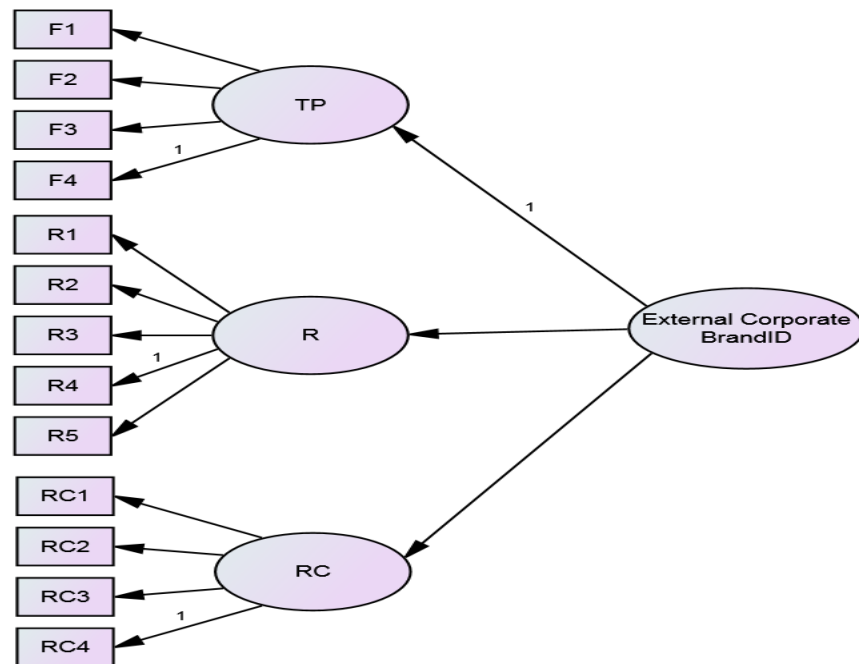
Therefore, we consider that there are conditions to test a second-order dimension to the external part of the corporate brand identity.

It is worth noting that it wasn't necessary to adapt the mentioned guidelines because although this model has fewer items it has more than 12 (13 items), therefore the selected criteria suggested by Hair *et al.* (2006), is maintained concerning CFI and RMSEA (RMSEA < 0,8 with CFI ≥ 0,95).

2.4.5 Corporate external brand identity – a higher dimension

As stated before, there is enough evidence to suggest that the external dimensions of the corporate brand identity can be aggregated as a second order dimension. Therefore, we assessed the second-order factor structure in order to determine the plausibility of the second-order model of the three factor structure (relation, reflected consumer and tangible physical).

Figure 2.9 - Second-order dimension for the external corporate brand identity – three factor model



The results are summarized in Table 2.22 (below). We can conclude that for a sample like this ($235 < 250$) the results fulfill Hair's guidelines (Hair *et al.*, 2006) and the second order factor reveals an AVE of 0,69 ($> 0,5$) and a CR of 0,82 ($> 0,7$) exceeding the acceptable values.

Table 2.22 - Second-order factors for external brand identity¹

Model	χ^2	DF	p	CMIN/DF	CFI	RMSEA	AVE	CR
Three factor	52,685	59	0,023	1,401	0,985	0,041 [0,016; 0,061]	0,69	0,82

¹ The theoretical propositions justifying the second order model were assumed directly to estimate the empirical model. No further additional empirical tests were used.

We can conclude that, according to theory, there is a second-order factor for the corporate external brand identity formed by three factors: relation, reflected consumer and tangible physical. Therefore we can accept the 3rd hypothesis and conclude that the constructs reflected-consumer, relation and physical are part of a higher dimension called external identity.

In the next section we discuss the meaning of the results.

2.5 Discussion

The measurement of corporate brand identity is scarce in brand management literature. The results of this research have an important meaning because they prove that the brand identity field can be investigated using quantitative methodologies, especially if a qualitative procedure had been developed previously. The use of both methodologies in different stages of the research was considered very enriching. We must highlight that this research is, as far as our knowledge concerned, the first measurement of the brand identity prism by Kapferer (1986, 2008).

Because we couldn't find adequate scales in branding literature, four new scales came out of this research to characterize the brand identity prism: self-image, reflected consumer, relation and physical. The scales were developed through a sample of engineering higher education students, following a procedure that involved literature review and the use of informants, focus groups and experts in the area. The other two dimensions: culture and personality were adapted from previous studies under a holistic approach. The culture dimension was adapted to the higher education context, from Desphande *et al.* (1993). These authors developed four types of organizational culture (Clan, Hierarchical, Adhocracy and Market culture) that were used here. This inclusion and adaptation to the higher education context turned out to be rather innovative in the branding area contributing to an approach between fields of study.

The research development found a new perspective of the physical dimension. The finding regarding the named Intangible Physical was mentioned in the description of the Physical dimension developed by Kapferer (1986, 2008). The author states that the Physical dimension is formed by features like the logo, buildings... but also the qualities and other intangible features of the brand. Therefore, it was expected that the intangible features should be included in the Physical dimension as defined by the author. Nevertheless, as the methodology selected to do this research demanded unidimensionality, the Physical dimension had to be divided in two scales, one more connected to tangible features and another to intangible features. This dimension was never particularized in previous studies. Nevertheless was always present in the

Physical dimension defined by Jean Noel Kapferer. This scale, although revealed validity and reliability, didn't show enough discriminant validity to be considered a single differentiated factor. We are convinced that this dimension could be differentiated in other samples.

The model showed robustness even using five of the original six dimensions proposed by Kapferer (1986, 2008), without considering the dimension "culture" which was used afterwards as a moderator.

The inclusion of the dimension culture as defined by Desphande *et al.* (1993) as well as the contents derived from other mentioned studies regarding the influence of culture in performance was very important to justify the second investigation hypothesis. It was proved that the perceptions of the students towards the performance of their university/institution are very important in the management of brand identity. The research suggested that cultures perceived as being performance oriented (market and adhocracy cultures) are also perceived as developing more salient corporate brand identities. Therefore, "brand culture" is a moderator variable that influences the other five variables of the brand identity prism, as defined by Kapferer (1986, 2008). The author states that, in a context of corporate brands, the corporate identity is transferred to the brand identity by means of the culture dimension. This research adds that the brand culture influences the other dimensions of the brand identity prism (personality, self-image, relation, reflected consumer and physical), in a context of corporate brands.

Regarding the external part of the corporate brand identity the research gave important insights regarding the theory proposed by Kapferer (1986, 2008) concluding that the brand identity prism is formed by an external part formed by the dimensions more exposed to interaction with the publics: reflected consumer, (tangible) physical and relation. These are the dimensions that are more connected to corporate brands and therefore they were very important to this study. The selected higher education universities/institutions developed their identities acting like corporate brands. Therefore it was important to find whether there is a common identity coming out of the

engineering higher education context, known for their salient and very characteristic identities.

The results confirm the brand identity theory proposed by Kapferer, in a way that was never tested before. The brand identity prism (with the six proposed dimensions) and the external part of the brand identity were measured by the first time and the results confirm one of the most developed and cited theory in the branding literature.

In the next section we draw a final conclusion regarding this research, justify it in the brand management field and suggest future experiments.

2.6 Conclusions

Identity studies are mostly developed under a qualitative analysis. This came about as an opportunity to develop a measurement analysis of corporate brand identity in higher education. For that purpose we used the brand identity model by Jean Noel Kapferer. We should highlight that this research is, as far as our knowledge concerned, the first measurement of the brand identity prism.

The higher education sector is a very particular one because of its particular characteristics regarding the involvement of the consumers. Students are external stakeholders (consumers) but also internal and therefore they have a main role in delivering the brand promise of their university/institution.

This research reveals a new perspective of the physical dimension in the brand identity prism that was named “Intangible Physical”. This dimension is present in the Physical dimension defined by Jean Noel Kapferer. Yet, taking in account the used sample, the research revealed that this dimension, although valid and reliable, didn’t show enough discriminant validity to be considered a single differentiated factor. It is necessary other analysis involving other samples.

As proposed, the use of quantitative methods allowed us to find a higher dimension called corporate brand identity formed by five factors (self-image, personality, relation, reflected consumer and tangible physical).

The culture dimension was included in this research. Using the findings revealed by Desphande *et al.* (1993) we were able to identify the perceived culture by each student regarding their university/institution. In line with this, we demonstrated that cultures perceived as being performance oriented develop more salient corporate brand identities. That salience was measured by the model fit. We divided the sample in two groups in accordance with Desphande *et al.* (1993) and verified that the sample compounded by the students that perceived their university/institution as being performance oriented revealed better identity salience than the other sample formed by

the students that didn't (perceive their university/institution as being performance oriented). This finding is very important to the management of brand identity in universities/higher education institutions. It reveals the power of the students' perceptions and its influence in the corporate brand identity dimensions. The perceptions regarding brand culture must be managed by the brand managers in order to create the desired perceptions in the students making the desired corporate brand identity coincident with the existing one. This finding also reveals the influence of the culture dimension in the other dimensions of the corporate brand identity.

Corporate brands are much exposed to interaction of the different publics. Therefore, in line with the proposed definition of external brand identity by Kapferer (1986, 2008) we measured the external corporate brand identity. This research concludes quantitatively that the three factors: relation, reflected consumer and tangible physical make sense together and that there is a higher external dimension formed by these three factors.

This research opens a new door in brand identity investigation. This field of studies was traditionally studied by qualitative studies. This study revealed the importance of joining qualitative and quantitative methodologies and proved that the latter is also applicable to the subjective concepts that are related with brand identity. This means that the investigation in this area must be developed by brand identity researchers and managers in order to develop the integration of theory and practice.

Future analysis and empirical research must be developed namely the testing of this questionnaire in another samples in order to improve the measures and to generalization.

Other services much exposed to interaction with different publics and having high levels of consumers involvement should be tested for generalization purposes, such as insurance or medical services.

Appendices

Appendix A – Questionnaire to the higher education students

QUESTIONNAIRE

1 – Please fill:

1.1 Where do you study? _____

1.2 What degree and year are you attending?

- ☐ Bachelor _____ → ☐ 1st year ☐ 2nd year ☐ 3rd year
☐ Master _____ → ☐ 1st year ☐ 2nd year
☐ Ph.D.

1.4 How old are you? _____

1.5 Gender: _____ → ☐ Female ☐ Male

2 Please express your agreement degree to each sentence by signing (X) from **1 (TD – totally disagree) to 5 (TA – totally agree)**:

	1 TD	2	3	4	5 TA
F1 – the facilities of my university/institution are modern					
F2 – the facilities of my university/institution are sophisticated					
F3 – the facilities of my university/institution are functional					
F4 - the facilities of my university/institution are adequate					
F5 – the facilities of my university/institution are better than the other facilities from other					

universities/institutions					
F6 – the employability of the graduates of the degree I attend is very high					
F7 - lecturers of the degree I attend are very competent					
F8 – in my university/institution I know that I can always count on quality interface services (library, students support office...)					
F9 – my university/institution contributes to my future professional success					

3 - Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“I fell that the relation between my university/institution and me is...”:

	1 DT	2	3	4	5 CT
R1 – friendly					
R2 – respectful					
R3 - trustable					
R4 - motherly					
R5 – close					
R6 - fatherly					

4. Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“I believe that the society in general considers the graduates by my university/institution...”

	1 TD	2	3	4	5 TA
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RC1 – better prepared for the labor market					
RC2 – more capable of creating/innovating					
RC3 – successful professionals					
RC4 – professionals with high credibility					
RC5 – better than others from other universities					
RC6 – amused/opened people					

5. Please fill according with the information provided:

5.1 - Kind of organization (please distribute 100 points)	Points
A – My university/institution is a very personal place. It is like extended family. People seem to share a lot of themselves.	
B - My university/institution is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	
C - My university/institution is a very formalized and structural place. Established procedures generally govern what people do.	
D - My university/institution is very production oriented (degrees, publications, investigation projects...)	
TOTAL	100

5.2 - Leadership (please distribute 100 points)	Points
A – The head of my university/institution is generally considered to be a mentor, sage, or a father or mother figure.	
B - The head of my university/institution is generally considered to be an entrepreneur, an innovator, or a risk taker.	
C - The head of my university/institution is generally considered to be a coordinator, an organizer or an administrator.	
D - The head of my university/institution is generally considered to be a producer, technician, or a hard-driver.	
TOTAL	100

5.3 - What holds the university/institution together (please distribute 100 points):	Points
A – The glue that holds my university/institution together is loyalty and tradition. Commitment to this university/institution runs high.	
B - The glue that holds my university/institution together is commitment to innovation and development. There is an emphasis on being the first	
C - The glue that holds my university/institution together is formal rules and policies. Maintaining a smooth-running institution is important here.	
D - The glue that holds my university/institution together is the emphasis on tasks and goal accomplishment. A production oriented is commonly shared.	
TOTAL	100

5.4 - What is important (please distribute 100 points)	Points
A – My university/institution emphasizes human resources. High cohesion and morale are important.	
B - My university/institution emphasizes growth and acquiring new resources. Readiness to meet challenges is important.	
C - My university/institution emphasizes permanence and stability. Efficient, smooth operations are important.	
D - My university/institution emphasizes competitive actions and achievement. Measurable goals are important.	
TOTAL	100

6 - Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

	1 TD	2	3	4	5 TA
SI1 – I consider myself better prepared for attending this university/institution					
SI2 – I am proud for the certificate that I will obtain					
SI3 – I feel very satisfied for concluding this degree in this university/institution					
SI4 – concluding this degree in this university/institution makes me confident about the future					
SI5 – I consider myself part of an elite					
SI6 – I consider myself an entrepreneur					

7 – Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“If my university/institution were a person it would be...”

	1 DT	2	3	4	5 CT
P1 – agreeable (welcoming, warm, cheerful)					
P2 – conscientious (precise, determined, organized)					
P3 – innovative (original, nonconformist, creative)					
P4 – chic (distinct, sophisticated, elegant)					
P5 – peaceful (modest, silent, quiet)					
P6 – maverick (impulsive, uncontrolled, wild)					

8 – Please classify the items below from 1 – poor to 5 – high:

	1 poor	2	3	4	5 high
Rep21 – intellectual performance (retain/recruits prestigious lecturers/investigators; high levels of scientific publications...)					
Rep22 – network performance (attracts 1st class students; high employment rate; strong links between the students and industry...)					
Rep23 – products (prestigious degrees; competent graduates...)					
Rep24 – innovation (innovative methodologies; rapid adaptation to changes; innovating curricula...)					
Rep25 – provided services (strong relations with the exterior; specialized tasks; high level of instruction of lecturers and staff...)					
Rep26 – leadership (strong and charismatic leaders; organized and competent management; vision to future...)					
Rep27 – corporate governance (open and transparent management; behaves ethically; fair in transactions with the stakeholders...)					
Rep28 – work environment (equal opportunities, reward systems, care for the welfare of the staff and students...)					
Rep29 – Citizenship (promotes services to society; supports good causes; acts positively in the society; open to the industry and to society...)					

9. Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“To attend this university/institution allows me...”

	1 TD	2	3	4	5 TA
C1 – to achieve (have access) important relationship networks					
C2 – to be able to reach a major professional and social role					
C3 – to be influent					
C4 – to reach technical and scientific excellence					

10. Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“The connections between my university/institution and the recognized brands (INESC, INEGI, ISISE, CCT, CALG, ALGORITMI; MIT, Harvard, Oxford...) with whom it relates...”

	1 TD	2	3	4	5 TA
M1 – give credibility to the lecturing process					
M2 – facilitate the access to research					
M3 – facilitate the access to the labor market					
M4 – facilitate the access to a top career					
M5 – give credibility to the university/institution in the eyes of the labor market					
M6– make easier the access to an international career					

M7 – foster entrepreneurship					
T1 – make me feel safe					
T2 – are trustable					
T3 – are a guarantee					
T4 – are transparent (honest)					
T5 – are sincere					
T6 – are interesting					
T7 – influence the curricula offer of my university/institution					
T8 – contribute to improve the answers to the students` needs					

Appendix B – Procedures developed to improve the Baseline Model

Several diagnostic measures are made to assess items reliability of each construct including standardized loadings $> 0,5$, standardized residuals $|2,5 - 4,0|$ and modification indices (Lagrange Multipliers > 11). First, by looking at the completely standardized loading estimates of the items are above the threshold of 0,5 and were all significant ($p < 0.001$) except P1 (0,490). Therefore we decided to pay attention to P1. When examining the standardized residual values, that exceeds the cutpoint of 2,58 (Jöreskog and Sörbom, 2001), we observe the largest residuals for RC5 and F5 (4,208), P1 and R4 (3,197) and for P1 and R4 (3,110). Also P1 reveals high residuals with F1 (2,852) and RC5 with P4 (2,923). Also F5 captured our attention because of its high residuals and therefore we decided to drop it.

Analyzing the modification indices for P1 and RC5 they have a value that exceeds 11 (17,918). The same occurs with RC5 and F5 (16,087). Other analyses were pursued and we concluded that P1 and RC5 were always a source of conflicts regarding model fit. Therefore we decided to drop P1 and RC5 in further analyses, assuring at least three items indicators for each construct, as models with sample size greater than 200 that adhere to the three indicator rule are unlikely to produce problems with model identification (Hair *et al.*, 2006; Kline, 2005; Jöreskog and Sörbom, 2001).

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Tables

TABLE 2.4 (A) - Research constructs and measures

Construct	Initial full measured items ^{a)}	Source
Culture ^{b)}	Respondents are asked to distribute 100 points across four descriptions (A, B, C, D) regarding four different kind of issues (1- kind of organization, 2-leadership, 3- what holds the organization together and 4- what is important). The four culture scores are computed by adding the four A items for clan culture, B items for adhocracy, C items for hierarchical and D items for market culture.	Deshpande <i>et al.</i> . (1993)
Personality	If my university/institution were a person it would be: P1 – agreeable (welcoming, warm, cheerful) P2 – conscientious (precise, determined, organized) P3 – innovative (original, nonconformist, creative) P4 – chic (distinct, sophisticated, elegant) P5 – peaceful (modest, silent, quiet) P6 – maverick (impulsive, uncontrolled, wild)	Azoulay, 2009; Azoulay and Kapferer, 2003
Self-image	SI1 – I consider myself better prepared for attending this university/institution SI2 – I am proud for the certificate that I will obtain SI3 – I feel very satisfied for concluding this degree in this university/institution SI4 – concluding this degree in this university/institution makes me confident about the future SI5 – I consider myself part of an elite SI6– I consider myself an entrepreneur	New
Reflected consumer	I believe that the society in general considers the graduates by my university/institution: RC1 – better prepared for the labor market RC2 – more capable of creating/innovating RC3 – successful professionals RC4 – professionals with high credibility RC5 – better than others from other universities RC6 – amused/opened people	New
Relation	I fell that the relation between my university/institution and me	New

	is: R1 – friendly R2 – respectful R3 - trustable R4 - motherly R5 – close R6 - fatherly	
Physical	F1 – the facilities of my university/institution are modern F2 – the facilities of my university/institution are sophisticated F3 – the facilities of my university/institution are functional F4 - the facilities of my university/institution are adequate F5 – the facilities of my university/institution are better than the other facilities from other universities/institutions F6 – the employability of the graduates of the degree I attend is very high F7 - lecturers of the degree I attend are very competent F8 – in my university/institution I know that I can always count on quality interface services (library, students support office...) F9 – my university/institution contributes to my future professional success	New

a) Items measured on a five points Likert scale ranging from (1) strongly disagree to (5) strongly agree

b) Adapted questions:

1 – Kind of organization (please distribute 100 points):

A – My university/institution is a very personal place. It is like extended family. People seem to share a lot of themselves.

B - My university/institution is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.

C - My university/institution is a very formalized and structural place. Established procedures generally govern what people do.

D - My university/institution is very production oriented (degrees, publications, investigation projects...)

2 – Leadership (please distribute 100 points):

A – The head of my university/institution is generally considered to be a mentor, sage, or a father or mother figure.

B - The head of my university/institution is generally considered to be an entrepreneur, an innovator, or a risk taker.

C - The head of my university/institution is generally considered to be a coordinator, an organizer or an administrator.

D - The head of my university/institution is generally considered to be a producer, technician, or a hard-driver.

3 – What holds the university/institution together (please distribute 100 points):

A – The glue that holds my university/institution together is loyalty and tradition. Commitment to this university/institution runs high.

B - The glue that holds my university/institution together is commitment to innovation and development. There is an emphasis on being the first

C - The glue that holds my university/institution together is formal rules and policies. Maintaining a smooth-running institution is important here.

D - The glue that holds my university/institution together is the emphasis on tasks and goal accomplishment. A production oriented is commonly shared.

4 – What is important (please distribute 100 points):

A – My university/institution emphasizes human resources. High cohesion and morale are important.

B - My university/institution emphasizes growth and acquiring new resources. Readiness to meet challenges is important.

C - My university/institution emphasizes permanence and stability. Efficient, smooth operations are important.

D - My university/institution emphasizes competitive actions and achievement. Measurable goals are important.

The four culture scores are computed by adding the **four A item for clan**, the **four B items for adhocracy**, the **four C items for hierarchy**, and the **four D items for market**.

Chapter 3

3. The influence of brand relationships on corporate brand identity – a model proposition

Abstract

There is a growing interest in the literature on brand identity about the creation and development of the brand identity in dynamic contexts. Authors have been paying great attention to the co-creation of brands with the consumers having a major role in this task.

This research develops a concept regarding brand relationships and a model showing the influence of brand relationships in the identity of the corporate brands and reputation. It is argued that the management of the corporate brand identity should be carried out from a relational perspective, by means of relationships of the corporate brand with other recognized brands so as to create positive reputations in all the stakeholders. Although we find in literature references to the influence of relationships in identity, we cannot find a definition of relationships between brands, neither a model showing the influence of it in brand identity and reputation.

The context of this research is higher education and therefore the concepts are reshaped accordingly and scales are adapted to it following a procedure of validation. A questionnaire is conducted to engineering higher education students and 216 complete surveys are obtained. Data is analyzed using confirmatory factor analysis and structural equation modeling.

Findings reveal that the concept of brand relationships is formed by three dimensions: trust, motivation and commitment. The proposed brand relationships construct is valid and reliable. In line with this, a structural equation model is developed with the purpose of testing the brand relationships concept as an antecedent of the corporate brand

identity and reputation. For a model of this complexity, the structural model reveals robustness regarding the selected fit indicators proving that the relationships between brands influence the corporate brand identity and consequently, the brand reputation.

Keywords: brand relationships, external corporate brand identity, reputation, scale development, structural equation modeling.

3.1 Introduction

The aim of this research is to propose a concept to define the relationships between brands in the higher education services sector and to study its influence in the external corporate brand identity and reputation. Therefore a model is proposed which integrates the specificities of brand relationships in the management of corporate brand identity and consequently, reputation.

A stable brand identity is commonly accepted in academic as well as in business-oriented publications as it may serve as a reference for the consumers and help the firms adapting to the market changes (Collins and Porras, 1994). In line with other domains of identity (“e.g.” sociology - Goffman, 1959; Tajfel, 1981; Tajfel and Turner, 1979; corporate identity - Handelman, 2006 and organizational identity – Gioia *et al.* 2000, Hatch and Schultz, 2004), this research adopts the notion of brand identity as a dynamic concept emanating from multiple actors.

In a context where the environment is increasingly dynamic and transformations are hard-to-predict, the increasing development of technology demands increasing interaction between corporate brands and with corporate brands and their consumers, who are more than ever mentioned as co-creators of brands (Silveira *et al.*, 2013; Hatch and Schultz, 2010; Payne *et al.*, 2009; Madden *et al.*, 2006; Prahalad and Ramaswamy, 2004). We argue that the brand identity of a corporate brand is developed taking in account the relationships it develops with other recognized brands in order to manage the brand identity in a dynamic environment so as to create a desired reputation in all the stakeholders especially in the consumers.

Literature is scarce regarding the conceptualization of the relationships between brands - brand relationships. Existing work stops short of developing a fully articulated measurement for brand relationships. Relationships have been traditionally positioned in the theory of networks among companies “e.g.” Ford *et al.*, 2003; Hakansson and Snehota, 1989, 1995; Hakansson and Ford, 2002 and, although literature may

acknowledge its influence in the identity of organisations (Hakansson and Snehota, 1989, 1995), there are no empirical studies supporting it.

This study uses the theory proposed by Kapferer (1986, 2008) to test whether the relationships between brands influence the external part of the brand identity prism, as defined by Kapferer (1986, 2008). We argue that corporate brands are mostly exposed to interaction with public; therefore the external part of the brand identity (formed by three dimensions: physical, relation and reflected consumer, detailed below) assumes greater importance especially in a dynamic context where everything the corporate brand decides, in terms of relationships, matter to the stakeholders and influences their perceptions and actions. No research is pursued regarding the influences of the relationships with other brands in the management of brand identity and reputation.

This came about as an opportunity to develop a measure for the brand relationships concept and to develop a model to test the brand relationships' influence in the management of the corporate brand identity and reputation.

In a context of corporate branding, it is recognized that corporate reputation is strengthened when the corporate brand promise is kept, so, companies should focus on managing their corporate brand as a means of managing corporate reputation (Argenti and Druckemiller 2004). It is also generally accepted by the scientific community that brand reputation is a consequence of brand identity; therefore a good brand reputation is the expected output of an effective brand identity management. In line with this, we worked some adaptations to the reputation concepts developed by Fombrum (2006) and Vidaver-Cohen (2007). Fombrum (2006) is an author of several studies and papers regarding reputation, most of them are related with industry. Vidaver-Cohen (2007) adapted and applied the reputation concept designed by Fombrum (2006), to a very specific unit of analysis: a business school, therefore we considered to be appropriate to adapt this concept to our study.

Reviewing the literature Keller and Lehman (2006) pointed out relationships and clients' experience as two areas demanding further investigation. Such statements

reinforced the necessity of developing empirical investigation about the influence of the relationships between brands in the identity and reputation of the corporate brand.

We consider important to select brands in the services sector, because of its particular characteristics especially the intangibility that demands for relationships in order to materialize the services. We particularly selected the higher education because of its higher consumer involvement. In the higher education context, students are at the same time internal stakeholders and consumers. For some time there was some resistance to the notion of students as consumers in higher education literature (Hemsley-Brown and Oplatka, 2006). Only recently was it recognized that higher education was not a product but a service with particular features (Nicholls *et al.*, 1995). More recently, Balmer and Liao (2007) and Balmer *et al.* (2010) state that students are, above all, university members by arguing that characterizing them as customers fails to take into account the lifelong association that students may have with an institution, and the legal status they have in terms of the University's governance. Accordingly we adopted the notion of student as particular stakeholders that transcend the internal/external boundaries.

This paper also endeavors to give policy advice to general managers and to those having responsibility in university brands, for it is distinctive in that it:

- contributes to the fulfillment of a gap in literature by developing a concept of brand relationships in higher education;
- integrates the concept of brand relationships in the management of the external corporate brand identity and reputation in higher education;
- uses the concept of corporate brand reputation as a consequence of the management of the corporate brand identity in the higher education context;
- stimulates higher education brand managers to rethink the perspective about the management of brand identity as a dynamic construct that develops under a brand relationship approach.

The organization of this paper is as follows. Section 3.2 we review the relevant literature, describe the structure of the proposed framework to manage the corporate brand identity under a relational approach and develop the investigation hypotheses. In section 3.3 there is a description of the method used to assess the concept of corporate brand relationships, a description of the sample and the definitions of the used measures. Section 3.4 reports the results, summarizes the model validity and applicability. In Section 3.5 there is a discussion of the results and finally, in section 3.6 we draw a conclusion to this paper and provide directions for further research.

3.2 Theoretical structure and hypotheses

In this section we review the relevant literature and detailed information is provided regarding the conceptualization of the constructs and measures used in the proposed model to manage the corporate brand identity under a relational approach. The purposes and investigation hypotheses are also revealed.

Brand relationships

In order to investigate the influence of relationships in the corporate brand identity we must clarify the concept of brand relationships adopted in this research. Brand Relationships are defined as mutually oriented interactions between those corporate brands whose mission is education (universities and other higher education institutions) and other reputed brands that students consider to create commitment, be attractive when selecting a higher education institution. We found in previous research that students considered very attractive the relationships between their universities/institutions and the national research centers and the international universities like MIT or Carnegie Mellon with which they interact in the context of conjoint degrees, international mobility or other forms of interaction.

Corporate brands have specific characteristics that distinguish them from other brands: they are centered in the brand promise, multidisciplinary roots, medium/ long gestation, focused externally but largely supported by internal stakeholders, attaching great importance to communication and visual identity (Balmer and Gray, 2003), therefore the dimensions of the Brand Relationships should be adapted to this context. In line with this, we reviewed literature in the context of services focused on the theory of relational networks and branding, so as to be able to present characteristics suitable for a concept of relationship between brands connected to education. Services are intangible by nature and relationships are commonly used to materialize them. The Relationships between brands are not included in the concept of “relation” expressed in the prism of brand identity by Kapferer (2008). The latter is focused on the interaction between the brand and the consumer, not on the influence of the relationships between brands in the

consumers of a corporate brand. In this context, all stakeholders are important, not just the consumers. We argue that the relationship between brands should be also taken into account. This argument is inspired in the definition of relationships between companies by Hakkansson and Snehota (1995). They state that “*It is not easy to define what a relationship is...a relationship is a mutually oriented interaction between two reciprocally committed parties...*” (p. 25). They agree that the notion of relationship is chosen regarding the concepts of mutually orientation and commitment over time which are common in interactions between organizations.

The quality of relationships in the context of services in B2B markets has been assessed in four different, though related, dimensions: recognized quality of the service, trust, commitment, satisfaction and service quality (Rauyruen and Miller, 2007). Empirical investigation is, however, more scarce. Dwyer and Oh (1987) and Moorman *et al.* (1992) concluded empirically that the quality of relationships is characterized by three dimensions: trust, commitment and satisfaction.

Relationship marketing includes the relationships that customers have with service companies (Berry, 1995). According to Beatty *et al.* (1988) trust and commitment are used as one attempt to explain the mechanisms underlying stable preferences. Some researchers examined the roles of trust and commitment in the relationship that customers develop with service companies (Garbarino and Johnson, 1999; Sirieix and Dubois, 1999) and others found a positive relationship between trust and commitment, for consumer products (Chaudhari and Holbrook , 2001 and Kennedy *et al.*, 2000).

After reviewing the relevant literature, analyzing the conclusions of a previous qualitative research and after exploring the concept of relationships between brands, we were able to select the following dimensions to characterize the brand relationships concept: trust, commitment and motivation. A brief review of the concepts is made here in order to report the procedure developed (scale development) to select the items to characterize the mentioned dimensions.

The dimension Trust was adapted from Gurviez and Korchia, (2002) and defined as a psychological variable mirroring a set of accumulated presumptions involving the credibility, integrity and benevolence that a stakeholder group attributes to the brand relationship. Therefore, the original scale of Gurviez and Korchia (2002) is a multidimensional one. Yet, one can find in the market research literature three ideas of trust: one-dimensional, two- dimensional, and three-dimensional:

- Trust as a one dimensional construct: Fournier (1994) conceptualizes trust as one-dimensional construct. Also, Morgan and Hunt (1994) use Larzelere and Huston's one-dimensional scale (1980), which considers that the dimensions of honesty and benevolence, albeit conceptually distinct, «are operationally inseparable».
- Trust as a two-dimensional construct: is more commonly found in the literature. In a brand relational context Fletcher and Peters (1997), and Sirieix and Dubois (1999), among others, pointed out that a dimension that can be objectified involves the capability and honesty attributed to the brand; the other dimension concerns the perception of the motivation and intentions geared to consumer interest.
- Trust as a three-dimensional construct: According to Hess (1995), Gurviez, (1999), Frisou (2000) three dimensions may be distinguished, i.e., the presumption of capability (know-how), the presumption of honesty, viz., making a promise and keeping it, and the brand's ability to take into account the consumer interest, which involves long-term motivations.

To define Trust we select the items of the three dimensions mentioned by Gurviez and Korchia (2002): credibility, integrity and benevolence. These dimensions are characterized by items that are adapted to the context of the relationships between brands in higher education.

Trust and Commitment have recently been described as important major aspects of strategic partnerships (Søderberg *et al.*, 2013).

The dimension Commitment is adapted from Hardwick and Ford (1986) and Wilson (1995). Commitment between brands influences the internal and external stakeholders' perceptions about the future value or benefits for them.

We could not find any scale characterizing the commitment between brands in the literature available. Therefore, we developed a scale procedure to select items for this dimension as we could not find an available scale in literature.

The dimension Motivation² is based on the reasons that the internal and external stakeholders refer when choosing an educational institution, based on the relationships that the university/institution is able to provide. Therefore we also decided to develop a scale procedure to select items for this dimension as well, as we could not find an available scale in literature.

In order to define each dimension we adopted a holistic perspective reviewing literature on several fields of study like B2B marketing, psychology and organizational studies. We develop a procedure to define a pool of items to use in this research. This procedure is detailed in the next section.

We developed scale methodology to create multi-item scales for the concept that we named Brand Relationships. We analysed the relationships that derived from the interviews with lecturers and brand managers and with focus groups of students. We investigated the characteristics of the selected relationships considered attractive in the eyes of the students, this means, the relationships between the higher education institutions and other brands that are capable of attracting students, from their own point of view.

² Emotions – positive and negative also came out of the first research developed in chapter 1. Yet, this dimension wasn't used in this research because it didn't show validity in any of the specified criteria.

Corporate brand identity (external part)

Most of the recognized faculties behave like corporate brands by demonstrating specific characteristics that distinguish them from their pairs. Legally they are part of a University that aggregates them, yet, the corporate brands of the faculties are so strong and distinctive from one another that it would be unwise not to consider them as corporate brands. Also Balmer *et al.* (2010) characterized as corporate brands a sample of business schools (part of Universities) that they used to investigate for corporate brand management and identification. They found that some of the interviewed students missed the identification between their Business School and the University to which it belonged. They claimed they had a much stronger link with the Business School than with the University.

Kapferer (1986, 2008) proposed a model known as the brand identity prism. It is divided into an internal part defined by the brand “culture”, “personality” and “self-image” and into an external part defined by the brand “physical” dimension, “relation” and “reflected consumer”. In his view, the external part of the brand identity prism is very important, especially in the case of corporate brands owing to the fact that they are subject to constant interactions with different publics and therefore, more exposed to public interactions. The dimension called “reflected consumer” is an external and intangible dimension which reflects the way the consumer wishes to be regarded for “using” a certain brand. It provides the consumer with a desirable model of identification (Kapferer, 1986, 2008). This dimension is characterized by the following items: better prepared for the labor market; more capable of creating/innovating, successful professionals, professionals with high credibility. The dimension called “relation” is formed by tangible and intangible areas. It defines the behavior that identifies the brand and the way it interacts with its consumers (Kapferer, 1986, 2008). This dimension is characterized by the following items: friendly, respectful, trustable, motherly, close. Finally, the “physical” dimension of brand identity is defined by Kapferer (2008) as an exterior dimension that communicates the physical traits, colors, forms and qualities of the brand. This dimension is characterized by the following items

regarding the physical traits of the university/institution: modern; sophisticated, functional, adequate.

We used the external part of the brand identity prism to argue that the relationships between brands (Brand Relationships) influence the external part of the Corporate Brand Identity and Reputation.

The result of a well-managed corporate brand identity is a positive reputation. Therefore, brand reputation appears as the expected result of an active corporate brand identity management under a relational approach. It is widely suggested in the literature that identity precedes reputation (Kapferer, 1986, 2008; de Chernatony, 1999; Burmann *et al.*, 2009). Corporate brands should actively choose and select recognized brands to develop relationships in order to bridge the gap between brand identity and reputation. The result of this management should be the increase of the brand reputation.

We provide a brief description of the concept brand reputation.

Brand reputation

Both academics and professionals consider Reputation the most valuable asset of an organization - it reduces the stakeholders' uncertainty about their future performance, strengthens competitive advantages that generate trust in the public and creates value through the capacity of the organization to increase the probability of achieving a prize for its goods and services. Studies based on data from World Most Admired Company of Fortune magazine, reveal that a 5% increase in the reputation of an entity corresponds to a 3% increase of its market value. According to Fombrun (1996), leader of the Reputation Institute, consumers motivated to acquire goods and services of a certain organization/brand, attract highly qualified employees, external investors, earn the trust of local communities and help secure transaction partners such as suppliers and distributors.

The growing interest in corporate brands is based on the defense of the reputation. Fombrum (1996) defines corporate reputation as the net perceptions of an organization's capability to meet the expectation of all its stakeholders.

It is recognized that corporate reputation is strengthened when the corporate brand promise is kept, so, companies should focus on managing their corporate brand as a means of managing corporate reputation (Argenti and Druckemiller 2004).

We used the concept defined by Vidaver-Cohen (2007) because it is based on the most recognized reputation model - Rep Trak (Fombrum, 2006) - and it was successfully adapted by Vidaver-Cohen (2007) to a business school. The original dimensions (predictors from Rep Trak) were adapted to the business school context and separated from the reputation perceptions (trust, admiration, good feeling and perceived public esteem). Therefore, we selected the items used by Vidaver-Cohen (2007) in her research about a business school reputation to characterize the reputation of the corporate brands.

Taking these arguments into account, we propose:

- to measure and define the concept of brand relationships (relationships between brands) demonstrating that its dimensions are valid and reliable;
- to integrate the concept of brand relationships in the management of the corporate brand identity as an antecedent of the external part of the corporate brand identity;
- to integrate the concept of brand reputation in the management of the corporate brand identity, showing that it is a result of the management of the external part of the corporate brand identity under a relational approach.

We propose three research hypotheses:

H1: the constructs trust, motivation and commitment are part of a higher dimension construct named Brand Relationships;

H2: the Brand Relationships construct influences the external part of the Corporate Brand Identity;

H3: the external part of the Corporate Brand Identity influences the Brand Reputation.

We argue that students value the relationships between their university/institution of higher education and other recognized brands based in trust, motivation and commitment for they consider these that these features increase the salience of the reflected consumer by reinforcing their image in the society, their relation with the brand and contributing to the visibility of the physical facet. It is commonly accepted in the literature that brand identity precedes brand reputation (Kapferer, 1986, 2008; de Chernatony, 1999). If this research confirms these hypotheses we can argue that the management of the corporate brand identity is developed under a relational approach. Therefore, the choice and selection of recognized brands to develop relationships is a task that should be carried out by the brand management team taking in account that brand identity develops and interacts with the dynamic environment by its external part.

In the next section we describe the methods and give detailed information about how the research was developed.

3.3 Methods

In order to select new multi-item scales to the dimensions of brand relationships that had never been previously measured in a higher education context: trust, motivation and commitment, we develop a procedure of qualitative analysis summarized in Table 3.1.

TABLE 3.1 – Synthesis of the methodology used to find items for the scales

Dimensions/scales	Adapted items	New items
Trust	Adapted from Gurviez and Korchia (2002); Morgan and Hunt (1994)	
Commitment		Sources of influence: informants + focus groups+ experts + desk research
Motivation		Sources of influence: informants + focus groups+ experts + desk research

This procedure considers the previously described recommendations of Churchill (1979); Malhotra (1981, 2004); Laurent (2000) and of Clark and Watson (1995) who emphasize that a good scale construction is an iterative process involving several periods of item writing, followed by conceptual and psychometric analysis.

In terms of external validity, researchers should collect more data from experts: managers, consumers, persons with first-hand knowledge of consumers or others using established methods for qualitative research, before modeling so that they can identify appropriate variables and relationships to include in the model (Laurent, 2000). After reviewing relevant literature, analyzing the interviews, the focus-groups and after consulting available literature on item writing (“e.g” Angleitner and Wiggins, 1985; Comrey, 1988; Kline, 1986, Loevinger,1957) and the selected experts (academics and practitioners), a pool of items was developed for each concept. A pre-test was pursued to a moderately sized sample of convenience of 80 engineering students and the

conclusions were again analyzed with the help of experts in order to refine the item selection that would be tested later in a large sample of students and analyzed with quantitative methodologies.

A brief description of the quantitative analysis to the higher education students is done below.

3.3.1 Data collection

According to Eisenhardt (1989), to minimize extraneous variation, both studies (qualitative and quantitative) are limited to engineering institutions. Engineering students have particular characteristics that are consequence of attending recognized institutions, mostly in the public sector and highly reputed within the academic field and the society in general.

Quantitative online questionnaire

A letter was sent by e-mail to the Deans and Course instructors of all higher education institutions that offer degrees (bachelor, master and doctoral) in engineering located in Portugal. The letter explained the research topics and asked permission to use the students of their university as respondents to a questionnaire. That e-mail had an attachment with another letter that should be sent to students explaining the investigation purposes and asking them to participate on the online questionnaire. The link was available from the last week of July until the end of October 2012.

Sample description

A group of 256 students were able to finish the questionnaire. After deleting cases with ambiguous values a final sample of 216 students was obtained. This decision is based on the distributional properties of the manifest variables after checking the reliability and unidimensionality of the scales. According to Kline (2005), we used the

standardized Kurtosis index rescaled ≥ 7 as a guide to indicate items with excessive univariate Kurtosis values. We also check for observations farthest from the centroid using Mahalanobis distance. We deleted 40 observations considered potential outliers obtaining a final usable sample of 216 observations.

The final sample of 216 was distributed as follows: 86 (39,8%) were bachelor students, 47 (21,8%) master students, 71 (32,9%) integrated master students and 12 (5,6 %) PhD students. By analyzing the age of the respondents one may observe that 105 (48,6%) are between 18 and 22 years old, 63 (29,2%) are between 23 and 26 years old, 17 (7,9%) are between 27 and 30 years old, 11 (5,1%) are between 31 and 34 years old, 10 (4,6%) are between 35 and 38 years old and finally, 10 (4,6%) respondents are older than 39 years.

Table 3.2 summarizes the characteristics of the respondents.

TABLE 3.2 – Characteristics of the respondents

Characteristics		Frequency	Percent (%)
Gender	Male	125	57,9
	Female	91	42,1
Age	18-22	105	48,6
	23-26	63	29,2
	27-30	17	7,9
	31-34	11	5,1
	35-38	10	4,6
	39 above	10	4,6
Origin	ISEP-IPP	91	42,1
	FEUP	62	28,7
	EEUM	46	28,3
	ESEIG-IPP	9	4,2
	ESAC-IPC	6	2,8
	Others (Univ.)	1	0,5

The majority of the respondents are male 125 (57,9%) and most are between 18 and 22 years old. This distribution is in line with most of the statistics regarding engineering

institutions in the country where the research was developed, where the majority of the students are male and there are more students attending bachelor degrees than higher degrees. Although recent statistical information (Estatísticas da Educação 2011-2012, p. 214) demonstrates that there are more women attending higher education in the country where this research took place. Engineering studies traditionally attract more men than women, so the sample is distributed as expected.

About the origin of the students 110 are university students and 96 study in other higher education institutions, most of all polytechnics.

3.3.2 Constructs and measures

The definitions of the constructs of interest and number of items used in this research are given in this section.

As stated before and summarized previously in table 3.1, the measures of the scales used in this research derive not only from brand management, organizational studies and psychology literature but also from interviews to informants, from focus-groups and from experts' contributions.

A brief summary the procedure to develop multi-item scales is provided in Table 3.3.

TABLE 3.3 – Procedure to develop the new multi-item scales

Procedure to develop the multi-item scales	Techniques and indicators
1 - Develop a theory	literature review and discussion with experts
2 - Generate an initial pool of items to each dimension/scale	theory, secondary data and 13 interviews to lecturers and university managers, 4 focus groups of students (bachelor, master and doctoral)
3 – Select a reduced set of items based on qualitative judgment	panel of 10 experts (national and international, academics and practitioners)
4 – Collect data from a large pre-test sample	pre-test to a sample of 80 higher education students

5 – Perform statistical analysis	reliability; factor analysis
6 – Purify the measures	analysis of the results of the pre-test sample and discussion with experts
7 – Collect data	survey to higher education students (216 complete surveys)
8 – Assess reliability and unidimensionality	Chronbach's alfa and factor analysis
9 – Assess validity	construct (AVE and CR), discriminant (comparison between the squared root of AVE and the simple correlations) and nomological validity (significant simple correlations examination)
10 – Perform statistical analysis	Confirmatory factor analysis Structural equation modeling

Source: adapted from Churchill (1979) and Malhotra (1981, 2004)

As it was explained in the previous section, we argue that Brand Relationships influence the Corporate Brand Identity (external part) and therefore the concept is considered an antecedent of the latter.

After defining the procedures to characterize the concept named Brand Relationships, we developed a structural equation model including the mentioned concept as an antecedent of the corporate brand identity and reputation. The students that answered the questionnaire came from reputed engineering institutions of higher education (universities and other institutions) acting in the same European country.

A total list of 42 items is obtained from the questionnaire to test the structural equation model that relates the three main constructs: brand relationships, corporate brand identity and reputation.

From this list of 42 items:

- a list of 19 items is obtained from qualitative research to measure the constructs that define the brand relationships concept: trust (8 items), motivation (7 items) and commitment (4 items);

- a list of 13 items regarding the corporate brand identity and its measures: physical (4 items); relation (5 items); reflected consumer (4 items);

- concerning the brand reputation we adapted the scale developed by Vidaver- Cohen (2007) formed by 10 items.

For all the measurement items, a five-point Likert scale was adopted, with anchors ranging from strongly disagree (1) to strongly agree (5), in such a way this format better conforms to linear models, thus providing higher criterion validity (Weijters *et al.*, 2010).

Table 3.4 (A) (see Tables) contains the specific research constructs, the measures and details. We provide here (Table 3.4 (B)) a brief synthesis:

TABLE 3.4 (B) - Research constructs and measures

Construct	Initial full measured items	Source
Trust	T1 – make me feel safe; T2 – are trustable; T3 – are a guarantee; T4 – are transparent (honest); T5 – are sincere; T6 – are interesting ; T7 – influence the curricula offer of my university/institution; T8 – contribute to improve the answers to the students` needs	Adapted from Gurviez and Korchia (2002)
Commitment	C1 – to reach important relationship networks; C2 – to reach a major professional and social role; C3 – to be influent; C4 – to reach technical and scientific excellence	New
Motivation	M1 –lecturing process; M2 –access to research; M3 – access to the labor market; M4 – access to a top career; M5 – give credibility to the university/institution (labor market); M6– access to an international career; M7 – foster entrepreneurship	New
Reflected consumer	RC1 – better prepared; RC2 – more capable of creating/innovating; RC3 – successful professionals; RC4 – professionals with high credibility	New
Relation	R1 – friendly; R2 – respectful; R3 – trustable; R4 – motherly; R5 – close	New
Physical	F1 – modern facilities; F2 –sophisticated facilities; F3 – facilities functional; F4 - facilities adequate	New

Reputation	Rep21 – intellectual performance; Rep22 – network performance; Rep23 – products; Rep24 – innovation; Rep25 – provided services ; Rep26 – leadership; Rep27 – corporate governance; Rep28 – work environment; Rep29 – Citizenship; Rep2.10 – Financial performance	Adapted from Vidaver-Cohen (2007)
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These items were pretested to a moderately sized sample of 80 engineering students. The details about this procedure are described below.

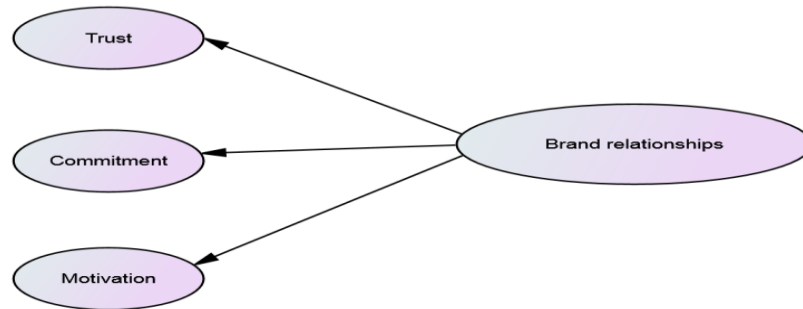
Pre-test to a moderately sized sample of students

The preliminary questionnaire was previously refined taking in consideration the comments and judgments of a panel of 10 experts (academics and practitioners). The format and content of the online questionnaire were also pretested in a sample of convenience of 80 higher education students. Based in the identification of problems regarding content, wording, sequence, layout question difficulty and instructions, minor adjustments were made to the questionnaire. The final questionnaire had the same 42 items and it was written in Portuguese, suffered back-translation to ensure conceptual equivalence (Appendix A). After data collection several analyses were performed as described below.

3.3.3 Methodology to develop the brand relationships concept and the structural model

This research proposes a methodology to assess a brand relationships construct and its dimensions. Figure 3.1 depicts the second-order factor brand relationships that explain three first-order factors: trust, commitment and motivation. Each factor is indicated by four or more reflective items.

Figure 3.1 – second order factor for brand relationships



Each of these dimensions is in itself a factor reflecting multiple item scales to assess the second-order factor brand relationships as we intend to demonstrate.

As it was previously mentioned in chapter two, higher-order constructs involve more than one dimension (Edwards, 2001; Jarvis *et al.*, 2003; MacKenzie *et al.*, 2005; Netemeyer *et al.* 2003). Edwards, (2001) and MacKenzie *et al.*, (2005) claim that the use of higher-order factor allows for more theoretical parsimony and reduces model complexity. Several other considerations regarding the conceptual terms of the hierarchical factor analysis were previously mentioned. Nevertheless let us recall that all the considerations regarding the first-order factor apply to the second-order factors with a difference: the researcher must consider the first-order construct as indicators of the second-order construct (Hair *et al.*, 2006).

Bagozzi and Yi (2012) have recently warned that the second order model provides a way to address certain forms of multicollinearity. This may become a problem when the correlations of independent variables with a dependent variable are lower than the

correlations among the independent variables. A common outcome in such cases is that a true positive (negative) effect turns out to be nonsignificant or even becomes negative (positive), demonstrating reversals in sign. For further details on second-order models, see also Bagozzi and Yi, 2012; Bagozzi and Heatherton, 1994; Gerbing and Anderson, 1984; Gerbing *et al.* 1994; Hunter and Gerbing, 1982; Jöreskog, 1970; Marsh and Hocevar, 1988.

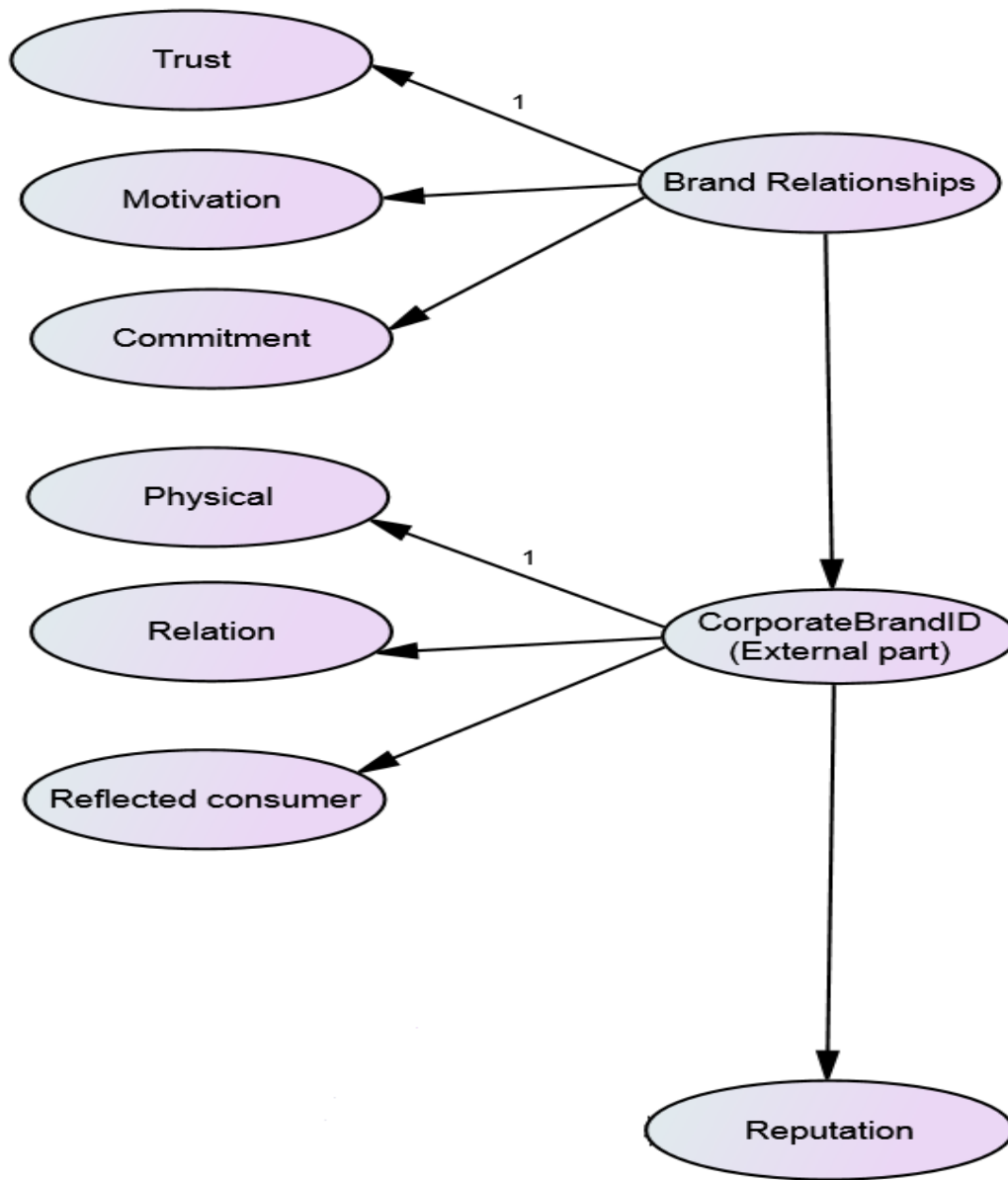
Based on the referred considerations, the three individual dimensions are first-order factors, and the brand relationships concept is the second-order factor reflecting a higher level of abstraction. We follow the guidelines detailed by Bagozzi *et al.* (1991) to test the SOCFA model (Anderson, 1987). Therefore we begin with the CFA model because of its relative few assumptions (for model identification, at least three first-order factors are necessary for each second-order factor), its desirable features and its parsimonious structure.

To test the brand relationships model, a Second-Order Confirmatory Factor Analysis (SOCFA) is used to test the hierarchical factor structure. Furthermore we test the plausibility of the higher-order factor model for construct validity and goodness-of-fit (GOF). Firstly we estimate a first-order measurement model, analyzing construct validity and GOF indices. Only then do we estimate a second-order factor model and analyze construct and nomological validity, as higher-order factors should be examined for criterion validity. A primary validity criterion turns out to be how well the higher-order factor explains the theoretically related constructs.

We use Amos software (21st version), maximum likelihood (ML) estimation method to conduct this study, CFA to assess the reliability and construct validity (convergent, discriminant and nomological).

The next figure presents the proposed structural model to evaluate the influence of the relationships between brands in the corporate brand identity and consequently in brand reputation.

Figure 3.2 – Structural model proposal



In the next section we present the results of the statistical analysis and the main findings regarding the brand relationships measurement and the higher dimension formed by the brand relationships. Next we develop a structural equation model testing the influence of brand relationships in the corporate brand identity (external part) and consequently in brand reputation.

3.4 Results

In this section we develop the measures for the concepts that we intend to connect: Brand Relationships, Corporate Brand Identity (external part) and Brand Reputation.

First we test the construct reliability and unidimensionality for the proposed measures for the Brand Relationships: Trust, Commitment and Motivation. The same procedure is done regarding the Brand Reputation. The measures that form the Corporate Brand Identity were previously analyzed, yet the results regarding the reliability and unidimensionality are provided here. Then we develop the measurement model for the Brand Relationships concept (using CFA) and only if the results regarding the selected fit indices are acceptable we develop the second-order model.

Finally we test the structural model, using Brand Relationships (SOCFA) as a cause of the salience of the External part of Corporate Brand Identity (SOCFA) and with Brand Reputation as a result of the management of the corporate brand identity (external part) under a relational approach. We compare the results with the ones of a rival model.

3.4.1 Unidimensionality and reliability of the scales for the measures of constructs: Brand Relationships, Corporate Brand Identity (external part) and Brand Reputation

The first-order model includes three factors (Trust, Commitment and Motivation), and 19 corresponding reflective indicators as listed previously in table 3.4 (A and B).

The goal of most research projects is not just to develop unidimensional and reliable measurement scales but to build and test theory. Unidimensionality is necessary but not sufficient for construct validity (Gerbing and Anderson, 1988). All the indicators that define a scale should provide estimates of exactly one factor (unidimensionality), but they must also be reliable, that is, the meaning of the underlying factor should correspond to the construct of interest. Ping (2004) summarizes by stating that,

measures should be unidimensional (having one underlying construct), consistent (fitting the model in structural equation analysis), reliable (comparatively free of measurement error) and valid, how well an item measures what it should (Aker and Bagozzi, 1979; Anderson and Gerbing, 1988; Gerbing and Anderson, 1988; Hattie, 1995; Jöreskog, 1970; McDonald, 1981; Nunnally, 1978; Peter, 1979; Ping, 2004; Werts *et al.*, 1974).

To summarize the data in terms of a set of underlying constructs, factor analysis was performed.

We measure unidimensionality and reliability of the proposed scales. To measure unidimensionality we run a principal component analysis with Varimax rotation, Kaiser normalization to each scale. The scale items that did not show factorial stability were candidates to elimination. To measure reliability we selected the Cronbach's alpha.

We analyze next the measures of the Brand Relationships construct:

Trust

This is an adapted scale from Gurviez and Korchia (2002) and Morgan and Hunt (1994) formed by eight reflexive items. We measured the reliability of the scale defined by the selected items and the Cronbach's alpha is 0,898 (higher than the 0,8 suggested by Nunnally, 1978). Contemporary researchers are less demanding regarding reliability. Dekovic *et al.* (1991) and Holden *et al.* (1991) characterize reliabilities of 0,60 or 0,70 as good or adequate. Yet, Ping (2004) states that higher reliability measures tend to avoid low AVE (average variance extracted) when running the CFA confirmatory factor analysis. Regarding dimensionality, the scale showed to be unidimensional with an explained variance extracted by that component of 59,213%.

Commitment

This is a new scale proposed in this research formed by four reflexive items. Regarding the reliability of the scale, the Cronbach's alpha is high (0,819). We then analyzed the unidimensionality of the scale and found that the scale is unidimensional with an explained variance by that component of 64,898%.

Motivation

This is also a new scale proposed in this research formed by seven reflexive items. Concerning the reliability of this scale, the Cronbach's alpha is high (0,886). Analyzing the dimensionality we found that this scale is unidimensional with an explained variance of 60,417%.

Regarding the structural model we have analyzed the reliability and unidimensionality of the measures of the **Corporate Brand Identity** (external part) in chapter two and next we analyze these contents regarding the Brand Reputation construct. A summary of analysis of all the used measures is provided afterwards.

Brand Reputation

This scale is adapted from the reputation model proposed by Vidaver-Cohen (2007). We adapted the items to our research and found that although the scale reveals a high Cronbach's alpha (0,871), it is bi-dimensional (Table 3.5, see tables).

As CFA (confirmatory factor analysis) only runs with unidimensional constructs, we decided to select the first component as we consider it contained items more related to the aim of this research (Rep21 - intellectual performance, Rep22 - network performance, Rep23 – products, Rep24 – innovation, Rep25 – provided services, from the initial nine items). We named it “academic brand reputation” for it is more connected with the core business of the universities/higher education institutions. We also decided to drop the item Rep25 – “provided services” of the “academic brand

reputation” because this item also contributes highly to the second factor as can be seen in Table 3.5 (see tables). Therefore, the Cronbach’s alpha was recalculated to Rep21, Rep22, Rep23 and Rep24 and found to be very acceptable (0,810). Regarding dimensionality, the scale showed to be unidimensional with an explained variance extracted by that component of 63,721%.

A summary of the results regarding reliability and unidimensionality of the scales is provided in Table 3.6 including the final list of 36 items:

Table 3.6 – Summary of the reliability and unidimensionality of the scales

Scale	Item	Item-to-total ^{a)}	Cronbach’s α ^{b)}	Factor loading	% var. explained ^{c)}	KMO ^{d)}
Trust	T1	0,652	0,898	0,738	59,213	0,861
	T2	0,744		0,815		
	T3	0,663		0,748		
	T4	0,691		0,769		
	T5	0,702		0,775		
	T6	0,672		0,763		
	T7	0,719		0,798		
	T8	0,658		0,747		
Commitment	C1	0,602	0,819	0,775	64,898	0,764
	C2	0,708		0,851		
	C3	0,688		0,843		
	C4	0,571		0,750		
Motivation	M1	0,658	0,886	0,767	60,417	0,884
	M2	0,699		0,798		
	M3	0,649		0,740		
	M4	0,698		0,776		
	M5	0,713		0,810		
	M6	0,706		0,787		
	M7	0,669		0,762		
Tangible Physical	F1	0,737	0,866	0,852	71,618	0,730
	F2	0,794		0,890		
	F3	0,693		0,830		
	F4	0,660		0,811		
Relation	R1	0,591	0,819	0,747	59,569	0,785

	R2	0,652		0,809		
	R3	0,737		0,864		
	R4	0,563		0,702		
	R5	0,563		0,725		
Reflected-consumer	RC1	0,688	0,868	0,821	71,938	0,782
	RC2	0,689		0,823		
	RC3	0,771		0,885		
	RC4	0,736		0,862		
Reputation	Rep21	0,625	0,810	0,796	63,721	0,797
	Rep22	0,661		0,824		
	Rep23	0,613		0,786		
	Rep24	0,611		0,785		

Details regarding “Item-to total”, “Cronbach’s α ” and “KMO” are provided below as we reveal the guidelines that we followed to maintain/drop each of the mentioned measures:

a) Corrected item-to-total correlation it is a measure for examining the relationships between the individual items and the total scale. Items below 0,4 (cutoff value in a principal components analysis) are candidates for deletion (Clark and Watson, 1995).

b) Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. There are different reports about the acceptable values of alpha, ranging from 0,70 to 0,95 (Nunnally and Berntein, 1994; Nunnally, 1978; Bland and Altman, 1997; DeVellis, 2003). However, according to Nunnally (1978) what a satisfactory level of reliability is depends on how a measure is being used... As can be seen, the lowest value is 0,810 for the brand reputation scale. Therefore no problems derived from this fact.

c) The % of variance explained was calculated for each scale. That % of variance explained is related to the 1st factor.

d) The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values (between 0,50 and 1,00) indicate factor analysis is appropriate. Values below 0,5 imply that factor analysis may not be appropriate (Malhotra, 2004). In this research, all the values to KMO are much above this value being the lowest value of 0,730. For this reason no problems derived from this fact.

3.4.2 Model fit – guidelines and criteria to assess a model for brand relationships

According to Anderson and Gerbing (1988); Hair *et al.* (2006); Ping, (2004) and; Jöreskog (1993) it was used a two-step approach: first it was tested the fit and construct validity of the measurement model and only if this model fits satisfactory is tested the structural theory as a second step. This way, the measurement model fit provides a basis for assessing the validity of the structural theory (Hair *et al.* 2006).

To assess the psychometric properties of the measures, we initially specified a measurement model for the first-order latent variables, in which no structural relationships were included. The first-order measurement model included three factors (trust, motivation and commitment) with their 19 corresponding reflective indicators, as listed previously in the previous table. We ran a CFA of the three factor structure not only to assess overall model fit, but also to assess the reliability of the measures and construct validity. Byrne (2010), Bentler (1990), Browne and Cudeck (1993), Hair *et al.* (2006) Hu and Bentler (1999), Marsh *et al.* (1996) refer that using three or four fit indices provides adequate evidence of model fit. They agree that the researcher should report at least one incremental index, in addition to the Chi-square value (χ^2) and the associated degrees of freedom (DF), the CFI (comparative fit index) and the RMSEA (root mean square error of approximation) will usually provide sufficient unique information to evaluate a model.

We evaluated model fit through multiple fit criteria, each of which represents a different aspect of the model. In particular, three indices were examined in this study:

- Chi-square normalized by degrees of freedom (CMIN/DF): represents the minimum discrepancy divided by its degrees of freedom. The authors disagree about the values that are indicative of an acceptable fit between the hypothetical model and the sample data. According to Marsh and Hocevar (1985) different researchers have recommended the use of ratios as low as 2 or as high as 5 to indicate a reasonable fit. In Byrne's opinion (1989, 2010) it seems clear that a ratio higher than 2,00 represents an

inadequate fit. We will follow this conservative guideline to evaluate the model fit of the “Brand Relationships” construct and measures.

- Comparative fit index (CFI): values close to 1 indicate a very good fit (higher than 0,9). CFI depends in large part on the average size of the correlations in the data. If the average correlation between variables is not high, then the CFI will not be very high.

- Root mean square error of approximation (RMSEA): is one of many ways to quantify the difference between values implied by an estimator and the true values of the quantity being estimated. In line with this a value close to zero indicates a perfect fit. An RMSEA of zero, means that the estimator predicts observations of the parameter with perfect accuracy, it is the ideal one, but it is practically never possible.

Discussions regarding these indices can be found in the work of Bentler (1990), Hu and Bentler (1999), Marsh *et al.* (1996), and Browne and Cudeck (1993). According to these authors, satisfactory model fits are indicated by non-significant chi-squares tests, RMSEA value $\leq 0,08$ and NFI, CFI values $\geq 0,90$.

According to what has been stated, we decided to use the following guidelines:

- $CMIN/DF < 2,00$ (Byrne, 1989, 2010);
- $CFI > 0,90$ (Bentler, 1990; Hu and Bentler, 1999, Marsh *et al.*, 1996; Browne and Cudeck, 1993)
- $RMSEA < 0,08$ (Hair *et al.*, 2006; Bentler, 1990; Hu and Bentler, 1999, Marsh *et al.*, 1996; Browne and Cudeck, 1993)

Following these guidelines, we decided to run the first-order measurement model to the Brand Relationships concept.

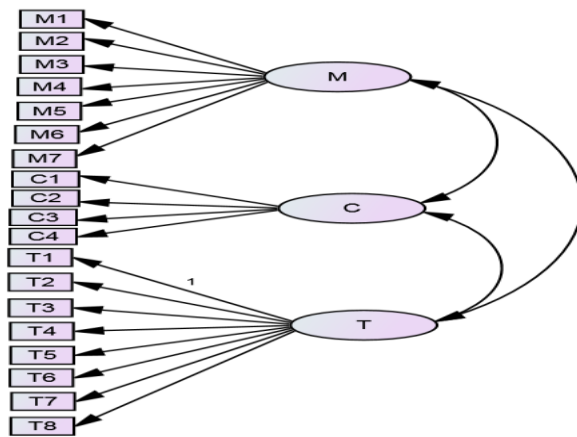
3.4.2.1 – A first approach to the measurement of Brand Relationships

We ran the first-order measurement model, and the results indicated that the model fits the data very satisfactory in terms of all the fit indices considered in this study $\chi^2(145)=237,107$, $p < 0.000$, chi-square normalized by degrees of freedom (CMIN/DF)= 1,635, CFI=0,961 (higher than 0,95 for $N < 250$), RMSEA=0,054 with higher than the threshold of 0,08 (Hair *et al.*, 2006; Hu and Bentler, 1999; Bentler, 1990). Using the 90% confidence interval we conclude the true value of RMSEA is between 0,042 and 0,067 (even the upper bound is lower than the threshold of 0,08) which reveals a very acceptable fit.

No problems were found regarding the:

- standardized loadings - all $> 0,5$ and preferably $> 0,7$, as suggested by Hair *et al.* (2006), Byrne (2010), Ping (2004);
- standardized residuals - all $< 2,58$ according to Jöreskog and Sörbom, (2001);
- modification indices - all < 11 , as suggested by Jöreskog and Sörbom (2001).

Figure 3.3 – A Three factor model to brand relationships



On examining the psychometric properties of each indicator there is no evidence of discriminant validity between Trust (T) and Commitment (C). As it is required when

developing a measurement instrument, great emphasis should be put on discriminant validity, which means all factors of a multidimensional scale should have distinct measures, and consequently assure the unidimensionality of each factor. As a result, we developed further investigation regarding the items that formed the Trust factor and found that if we drop the item T4 – “the selected relationships are transparent (honest)”, the AVE calculated to Trust (T) would rise from 0,51 to 0,53 increasing the distinction between both constructs, as can be seen in the table, below.

Table 3.7 – Construct and discriminant validity

Construct validity (before drop T4):			
	Motivation	Trust	Commitment
AVE	0,52	0,51	0,77
CR	0,89	0,89	0,82
Discriminant validity (before drop T4):			
	Motivation	Trust	Commitment
Motivation	0,72		
Trust	0,67	0,72	
Commitment	0,65	0,73	0,88
Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal			
Construct validity (after drop T4)			
	Motivation	Trust	Commitment
AVE	0,52	0,53	0,77
CR	0,89	0,89	0,82
Discriminant validity (after drop T4):			
	Motivation	Trust	Commitment
Motivation	0,72		
Trust	0,67	0,73	
Commitment	0,65	0,72	0,88
Notes: Squared root of AVE on the diagonal; correlation estimates below the diagonal			

In line with these findings we decided to drop T4 in order to develop measures discriminately valid without losing validity. Therefore we decided to run again a CFA after excluding T4 from further analysis.

3.4.2.2 – Brand relationships – model re-specification

Guided by both theoretical and empirical considerations, the re-specified model, although it fits slightly worse in terms of the selected indicators, it maintains a very satisfactory fit and now the model reveals convergent and discriminant validity.

CFA results suggest an overall good fit: $\chi^2 (129) = 219,023$, $p = .000$, $CMIN/DF = 1,698$ which is less than the maximum of 2 proposed by Byrne (1989, 2010), $CFI=0,955$; $RMSEA=0,057$. Using the 90% confidence interval we conclude the true value of $RMSEA$ is between $[0,044, 0,070]$ (even the upper bound is lower than the threshold of 0,08) which reveals a very acceptable fit.

The results supported convergent validity for all measures: all estimated factor loadings of the items are above the threshold of 0,5 (table below) and were all significant ($p < 0,001$) exceeding the statistical significance level accepted in this study. Standardized residuals suggest no modification: all residuals are below 2,58 (Jöreskog and Sörbom, 2001) and the modification indices are all lower than the threshold of 11, suggesting no major problems with items covariance's discrepancy.

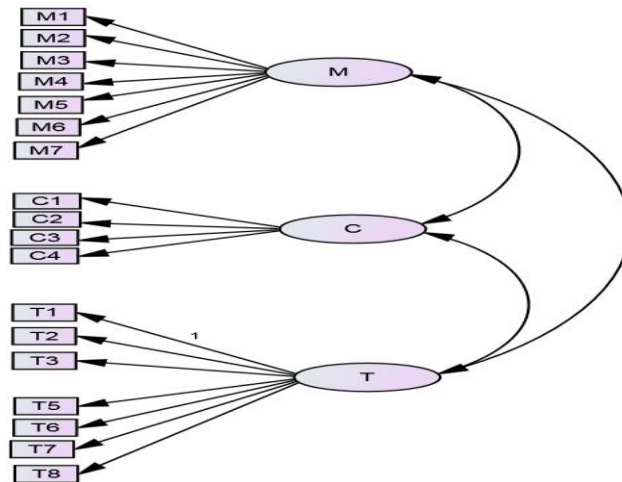
Table 3.8 – Loadings of the first-order factor for Motivation, Commitment and Trust

	Estimate
M7 <--- Motivation	,731
M6 <--- Motivation	,771
M5 <--- Motivation	,735
M4 <--- Motivation	,761
M3 <--- Motivation	,696
M2 <--- Motivation	,723
M1 <--- Motivation	,647
T3 <--- Trust	,713
T2 <--- Trust	,816
T1 <--- Trust	,713
T5 <--- Trust	,657
T6 <--- Trust	,733

		Estimate
T7	<--- Trust	,759
T8	<--- Trust	,683
C3	<--- Commitment	,653
C2	<--- Commitment	,716
C1	<--- Commitment	,705
C4	<--- Commitment	,717

We assess construct validity by examining convergent and discriminant validity. The reliability (CR) of these measures was over the threshold of 0,7 and the average variance extracted (AVE) exceeded the recommended value of 0,5 (Fornell and Larcker, 1981) (see the table above). To assess discriminant validity, Fornell and Larcker (1981) suggest the use of AVE, which should be greater than the variances shared between the constructs.

Figure 3.4 – A re-specified three model factor to brand relationships



Theoretically to drop T4 causes no damage to the proposed re-specified Trust proposed by Gurviez and Korchia (2002) because reliability, measured by the Cronbach's alpha, maintains a high level (0,885), the percentage of the explained variance increases from

59,213% to 60,139% increasing the unidimensionality revealed by this scale and KMO maintains a high level (0,894).

A summary of the psychometric properties for the first-order constructs is provided in the next table.

Table 3.9 – Psychometric properties for the first-order constructs for Brand

Relationships						
Measured Items	Factor loadings λ_i	$\Sigma^a)$	Delta ^{b)}	AVE	CR	Cronbach's α
Trust (T)				0,53	0,89	0,885
T1	0,713		0,492			
T2	0,816		0,334			
T3	0,713		0,492			
T5	0,657		0,568			
T6	0,733		0,463			
T7	0,759		0,424			
T8	0,683	5,074	0,534			
Commitment (C)				0,77	0,82	0,819
C1	0,705		0,308			
C2	0,716		0,487			
C3	0,653		0,574			
C4	0,717	2,791	0,316			
Motivation (M)				0,52	0,89	0,886
M1	0,647		0,581			
M2	0,723		0,477			
M3	0,696		0,516			
M4	0,761		0,421			
M5	0,735		0,460			
M6	0,771		0,406			
M7	0,731	5,064	0,466			

a) Sum of the factor loadings

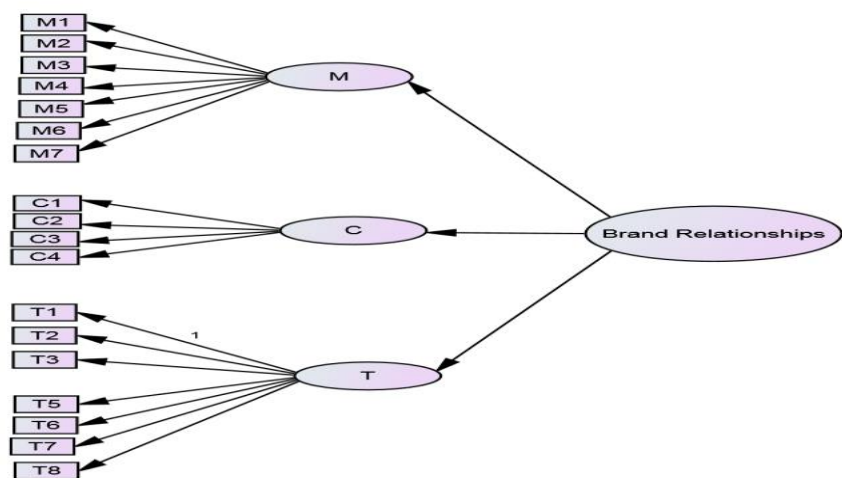
b) Delta is a measure that is used to calculate the CR (construct reliability) and the formula do obtain it is $1 - \lambda^2$

From the examination of the correlation estimates (Table 3.7, below the diagonal) we observe that the first-order constructs are highly correlated specially Trust (T) and Commitment (C) with a correlation of 0,72. This could explain why there is so much common variance to make a higher-order factor structure appropriate.

3.4.2.4 Brand relationships– a higher dimension

A higher-order model is not “simpler” because it involves several levels of abstraction. This fact complicates empirical comparisons and places more weight on theoretical and pragmatic concerns. Second-order factors should be examined for nomological validity because it is possible that confounding explanations may exist for a higher-order factor. Further details regarding higher-order models were already provided.

Figure 3.5 – Second-order dimension for brand relationships



The results are summarized in the next table.

Table 3.10 - Second-order factors for Brand Relationships³

Model	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Brand Relationships (three factor)	219,023	129	0,000	1,698	0,955	0,057 [0,044; 0,070]

We assess reliability and validity of the second- order factor Brand Relationships. Construct validity is demonstrated by plausible correlations of the second-order construct with the first-order indicators, while convergent validity could be suggested by an AVE for the second-order construct that is greater than 0,5 (Ping, 2004; Bagozzi *et al.*, 1991).

The values of CR = 0,87 and AVE = 0,68 (see table below) are greater than the recommended values suggesting higher reliabilities and convergent validity for the second-order construct.

Table 3.11 – AVE, CR and correlations of the second-order factor for brand relationships

	Brand Relationships
Motivation	0,77
Trust	0,86
Commitment	0,84
AVE	0,68
CR	0,87

	correlations
Motivation	0,60
Commitment	0,70
Trust	0,74

The loadings of the first-order latent variables on the second-order factor are all positive and statistically significant at $\alpha = 0,001$ and all exceed the recommended value 0,5, as

³ The theoretical propositions justifying the second order model were assumed directly to estimate the empirical model. No further additional empirical tests were used.

can be seen in the next table, permitting to justify the importance of each dimension to create the second order factor (Hair *et al.*, 2006; Ping, 2004).

Table 3.12 – Loadings of the first-order latent variables on the second-order factor
Brand Relationships

		Estimate
Motivation	<--- Brand Relationships	,774
Commitment	<--- Brand Relationships	,839
Trust	<--- Brand Relationships	,862
M7	<--- Motivation	,731
M6	<--- Motivation	,771
M5	<--- Motivation	,735
M4	<--- Motivation	,761
M3	<--- Motivation	,696
M2	<--- Motivation	,723
M1	<--- Motivation	,647
T3	<--- Trust	,713
T2	<--- Trust	,816
T1	<--- Trust	,713
T5	<--- Trust	,657
T6	<--- Trust	,733
T7	<--- Trust	,759
T8	<--- Trust	,683
C3	<--- Commitment	,653
C2	<--- Commitment	,716
C1	<--- Commitment	,705
C4	<--- Commitment	,717

According to Spiro and Weitz (1990), to test the nomological validity of the scale we examined the simple correlations between the corporate brand identity and the three factors. The results demonstrate (see Table 3.11 - correlations) that the second-order factor Brand Relationships is highly correlated with the three individual first-order dimensions ranging from 0,60 to 0,74. These high loadings indicate the great importance and contribution of each dimension to the Brand Relationships construct.

This means that students/consumers evaluate the relationships between the brands selected by their university/higher education school to relate according to the proposed three basic dimensions (Trust, Commitment and Motivation), and in addition, they view overall Brand Relationships as a higher-order factor.

In line with this we must conclude that the students consider they are attracted by universities/institutions that develop relationships with brands that generate Trust, Commitment and Motivation as previously defined.

The high construct reliability ($CR=0,87$) suggests that the brand relationships analysis could be appropriately conducted at the dimension as well as the overall level. In addition, the overall fit indices ($CFI =0,955$ and $RMSEA=0,057$ exceeding the acceptable values) indicate that the second-order model is appropriate to measure overall brand relationships.

Regarding these empirical results there is evidence of theoretical support in the sense that the three first-order factors are the dimensions and indicators of one single higher-order factor named Brand Relationships.

Obs: As can be seen, the values regarding the selected fit indices are exactly the same as the ones of the first-order construct. This situation is rather unusual. Hair *et al.* (2006) state that the first-order model will always fit better in absolute terms because it uses more paths to capture the same amount of covariance. In contrast, the second-order model is more parsimonious, as it uses fewer degrees of freedom (p.817), therefore RMSEA (a parsimony-adjusted measure) should perform better in the second-order factor structure.

In line with these findings and taking in consideration the limitations of the research, we can accept the 1st hypothesis and conclude that the constructs motivation, trust, and commitment are part of a higher dimension construct called brand relationships.

In the next section we provide detailed information regarding the structural equation model that relates the Brand Relationships concept with the Corporate Brand Identity (external part) and Brand Reputation.

3.4.3 – Structural equation model

In this section the structural model that connects the three constructs: Brand Relationships, Corporate Brand Identity (external part) and Brand Reputation are related in a structural equation model. We argue that the relationships between brands influence the External part of the Corporate Brand Identity and this fact results in a congruent Brand Reputation. This calls for greater attention to the management of the Brand Relationships by choosing, selecting and investing in relationships with powerful brands that may highlight the brand identity of the corporate brand and increase the brand reputation in all stakeholders, particularly in the consumers.

Services are intangible; therefore they need relationships to be materialized. The higher education context has particularities that demand a closer attention to the relationships between brands because of the influence they have in the choices of the students regarding the university/institution they decide to attend. The higher education sector is characterized by consumers highly involved because students usually develop a long term relation with it.

We follow the already detailed procedures to evaluate the proposed model.

3.4.3.1 - Measurement model evaluation

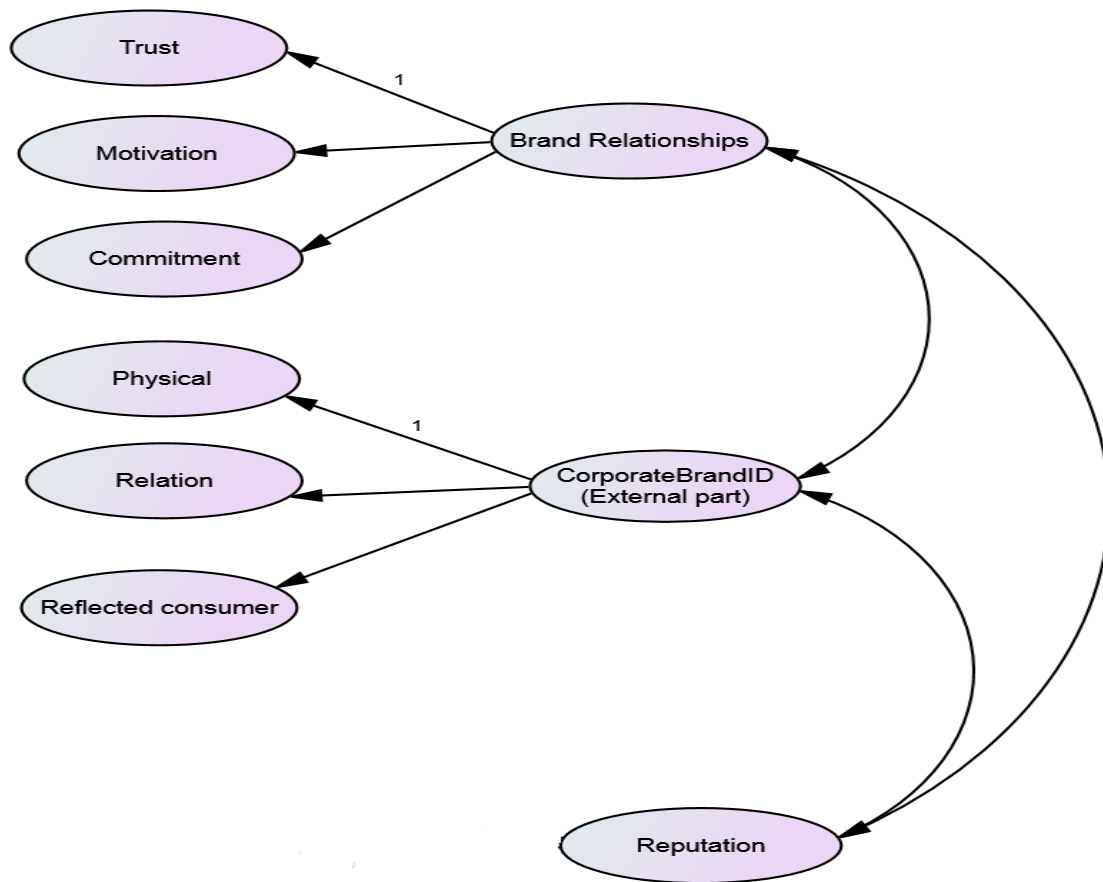
The primary concern is to assess to what extent the relations between the variables are valid. For this reason, it is critical that the measurement of each latent variable is psychometrically sound. An important preliminary step in the analysis is to test the validity of the measurement model before making any attempt to evaluate the structural model. According to Byrne (2010), Ping (2004), Bagozzi *et al.* (1991), CFA procedures are used in testing the validity of the indicator variables. Once it is known that the measurement model is operating adequately one can have more confidence in findings related to the assessment of the hypothesized structural model.

We built a confirmatory factor analysis (CFA) with the mentioned three second-order constructs: Brand Relationships, Corporate Brand Identity and Brand Reputation and a total of 35 measures detailed as above:

- a list of 18 items is obtained from qualitative research to measure the constructs that define the Brand Relationships concept: trust (now with 7 items because the drop of T4), motivation (7 items) and commitment (4 items);
- a list of 13 items derived from the research developed in chapter two regarding the Corporate Brand Identity (external part) and its measures: physical (4 items); relation (5 items); reflected consumer (4 items);
- a list of 4 items adapted from the concept of Reputation developed by Vidaver- Cohen (2007). We previously found that this concept was bi-dimensional and therefore we selected one of its dimensions, the one we considered to be more connected with this research. The results regarding reliability and unidimensionality of this dimension were already discussed and provided in Table 3.6.

Next we present the measurement model specification.

Figure 3.6 – Measurement model specification



We developed the usual procedures to purify our measures and we analysed:

- the standardized regression weights (loadings) which should be higher than 0,5 as suggested by Hair *et al.* (2006); Byrne (2010), Ping (2004).
- the standardized residuals, paying special attention to those between [2, 4], as suggested by Hair *et al.* (2006). Jöreskog and Sörbom (2001) claim 2,58 as a cut point. Nevertheless, we follow Hair *et al.* (2006) when they state that, although residuals between |2,5| and |4,0| deserve some attention, they may not suggest any changes to the model if no other problems are associated with those items;
- the modification indices: according to Jöreskog and Sörbom (2001) the MI's can be conceptualized as a χ^2 statistic with one degree of freedom; we must pay attention specially to those that have a value higher than 11;

- the guidelines and the usual fit indices already mentioned in section 3.4.2: CMIN/DF < 2,00 (Byrne, 1989, 2010); CFI > 0,90 (Bentler, 1990; Hu and Bentler, 1999, Marsh *et al.*, 1996; Browne and Cudeck, 1993) and RMSEA < 0,08 (Hair *et al.*, 2006; Bentler, 1990; Hu and Bentler, 1999, Marsh *et al.*, 1996; Browne and Cudeck, 1993).

A first analysis to the proposed measurement model suggested the drop of the item Rep24 (innovation). With this procedure we made some re-calculations regarding the reliability and the unidimensionality of the scale and found that for the new three items, the Brand Reputation scale has a Cronbach's α of 0,777 (higher than the threshold of 0,7 defined by Nunnally and Berntein, 1994; Nunnally, 1978; Bland and Altman, 1997; DeVellis, 2003) and a percentage of explained variance of 68,481% which is very acceptable. In line with these findings we re-specified the model and run again a CFA. The results are as follows:

Table 3.13 – Summary of the indices of fit of the measurement model

Model	χ^2	DF	p	CMIN/DF	CFI	RMSEA
Measurement model (Brand relationships; Corporate brand identity (external) and Reputation)	726,149	503	0,000	1,444	0,944	0,045 [0,038; 0,053]

As can be seen the fit indices are very satisfactory according to the selected guidelines. This means that the second order construct named “Brand relationships” is related to the second order construct “Corporate brand identity (external part)” and to the construct “Academic reputation” formed by three measures.

Analysing the loadings, with the exception of Physical, all the other loadings are higher than the threshold of 0,5. The dimension “Physical” contributes poorly to the external part of the Corporate brand identity construct (0,420<0,5). Even so, the model fit is very satisfactory. We must conclude that, in opposition to what Kapferer (1986, 2008) suggests, the used sample does not value greatly the Physical dimension of the

Corporate Brand Identity (external part). Once again, we must highlight that the used sample was composed by engineering students, known as individuals very connected with achieving goals. They demonstrated that they give more value to the dimensions Reflected Consumer (loading: 0,784) and Relation (loading: 0,750) because they consider that these dimensions are more connected with their path as students and as future professionals. The Reflected Consumer dimension (the one with the highest loading) is strictly connected with the aspirations of the students, as can be seen in Table 3.4 (A) (see Tables). Nevertheless, this finding demands further investigation in other contexts, using other samples.

Regarding the standardized residual values, there are three residuals deserving some attention:

- 2,629 between F4 and Rep22;
- 2,731 between R5 and C3;
- 2,716 between R5 and C2.

All the other standardized residuals are below the cut point of 2,58 as suggested by Jöreskog and Sörbom (2001). As for Rep22 we cannot drop it because the CFA demands at least three items to run an analysis. As for the other items, they are part of another second order constructs, they were previously analysed and evaluated and revealed validity (convergent, discriminant and nomological). Therefore, considering that the mentioned values are far from the cut point of |4,0| suggested by Hair *et al.* (2006), demand no further considerations regarding any matters and the model fit is very satisfactory we decided to keep these items and test the structural model.

About the modification indices, the one between R5 and C3 has a value of 11,588 (>11). This was an expected result taking into account the standardized residual value between both items (described above). Yet, as the difference is very small, according to what was previously mentioned about these items, we decided to keep them. All the other MI's have values below 11. Above all, no problems regarding multicollinearity were found and no other indices deserved our attention.

In line with these findings we tested the structural model.

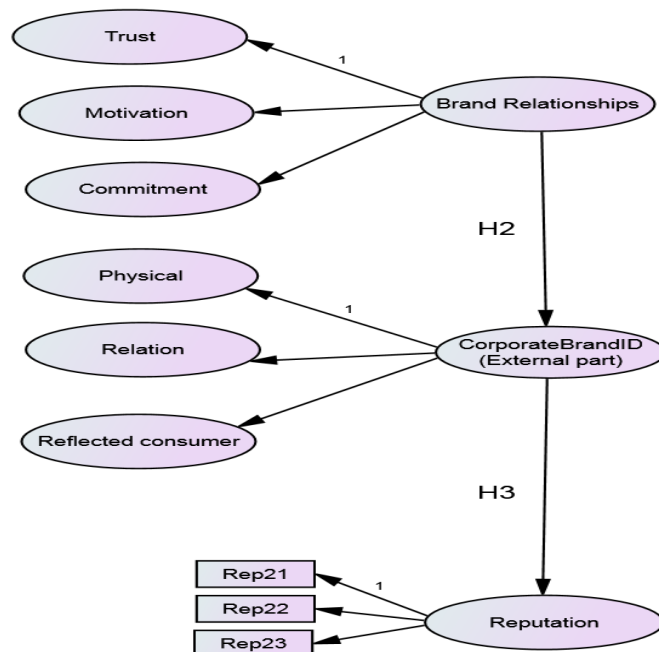
3.4.3.2 - Structural model estimation and testing

By developing this causal model we intend to prove that the universities/institutes of higher education must invest in and select recognized brands for developing relationships in order to manage the corporate brand identity in the part that is more exposed to interaction with the publics. This way the management team can increase the brand reputation.

In the proposed model the construct Brand Relationships is an antecedent of the construct Corporate Brand Identity (external part) and the latter is an antecedent of the construct Reputation. The Corporate Brand Identity (external part) and the construct Reputation are latent variables.

The structural model is illustrated in Figure 3.7.

Figure 3.7 – Structural model proposal (Brand relationships, Corporate brand identity and Reputation)



At this stage, according with Hair *et al* (2006), Marôco (2010) and Mulaik and Brett (1982) we added to the analysis a parsimony fit index. We selected PCFI for it represents the result of applying the Mulaik and Brett (1982) parsimony adjustment to the CFI:

$$PCFI = CFI * d/d_b$$

where d is the degrees of freedom for the model being evaluated, and d_b is the degrees of freedom for the baseline model. Values are between [0,1] and better fits are closer to 1.

The following table summarizes the indices of fit of the structural model:

Table 3.14 – Summary of the indices of fit of the structural model

Model	χ^2	DF	p	CMIN/DF	CFI	RMSEA	PCFI
Structural model (Brand relationships; Corporate brand identity (external) and Reputation)	727,239	504	0,000	1,443	0,944	0,045 [0,038; 0,053]	0,847

As expected, the χ^2 is higher than the one calculated with the measurement model, because a recursive structural model cannot fit better (to have a lower χ^2) than the overall CFA. The difference between both χ^2 is quite small (727,239-726,149=1,09) demonstrates that the model is strongly suggestive of adequate fit (Hair *et al.*, 2006).

Regarding the loadings, the standardized residuals and the modification indices the “problematic items” maintain approximately the same values regarding the standardized residuals:

- 2,704 between F4 and Rep22;
- 2,805 between R5 and C3;
- 2,787 between R5 and C2.

and the modification indices:

- R5 and C3 = 11,752

The small differences don't demand further analysis because at this stage the focus is on the diagnosis of the relationships between the constructs.

A good model fit alone is insufficient to support a structural theory. It is also necessary to examine the individual parameters estimates that represent each specific hypothesis (Hair *et al.*, 2006). Therefore, a theoretical model is considered valid to the extent that the parameters estimates are:

1. statistically significant and in the predicted direction (greater than zero for a positive relationship and less than zero for a negative relationship);
2. nontrivial (checked using the completely standardized loading estimates).

The following table summarizes the main indicators and conclusions:

Table 3.15 – Structural equation model results

			Regression estimates			Statistics	
			Unstandardized	S.E.	Standardized	C.R.	p-value
ExternalCorporateBrandID	<---	Brand Relationships	0,652	0,135	0,876	4,830	<0,001
Physical	<---	ExternalCorporateBrandID	1,000		0,421		
Relation	<---	ExternalCorporateBrandID	1,419	0,302	0,762	4,695	<0,001
Reflected consumer	<---	ExternalCorporateBrandID	1,185	0,242	0,797	4,890	<0,001
Trust	<---	Brand Relationships	1,000		0,801		
Motivation	<---	Brand Relationships	0,625	0,093	0,771	6,698	<0,001
Commitment	<---	Brand Relationships	1,031	0,144	0,937	7,156	<0,001
Reputation	<---	ExternalCorporateBrandID	1,302	0,260	0,824	5,012	<0,001

Notes: S.E. – standard error; CR – Critical ratio.

We examined the paths between the constructs and they are all statistically significant in the predicted direction. The path that represents the weight between Brand Relationships and the External Corporate Brand Identity is characterized by $\beta_{BR.ECBI} =$

0,652; S.E. = 0,135; $\beta_{BR-ECBI} = 0,876$; $p < 0,001$) meaning that the regression weight for Relationships in the prediction of the External Corporate Brand Identity is significantly different from zero at the 0,001 level (two-tailed). Regarding the path that represents the weight between the External Corporate Brand Identity and Reputation is characterized by $\beta_{ECBI.Rep} = 1,302$; S.E. = 0,260; $\beta_{ECBI.Rep} = 0,824$; $p < 0,001$ meaning that the regression weight for the External Corporate Brand Identity in the prediction of Reputation is significantly different from zero at the 0,001 level (two-tailed).

Table 3.16 – Squared correlations (R^2)

	R^2
ExternalCorporateBrandID	0,768
Physical	0,177
Relation	0,581
Reflected consumer	0,636
Trust	0,641
Motivation	0,595
Commitment	0,878
Reputation	0,680

We analyzed the variance explained estimates for the endogenous constructs and found that the predictors of the construct Physical explained 17,7% of its variance meaning that the error variance of the Physical dimension is approximately 82,3% of the variance of this dimension itself. This value is very high. As for the other constructs, no problems were found.

We can conclude that our model supports both hypotheses (H2 and H3), therefore the relationships between brands (Brand Relationships) influence the External Corporate Brand Identity and the later influences the brand Reputation.

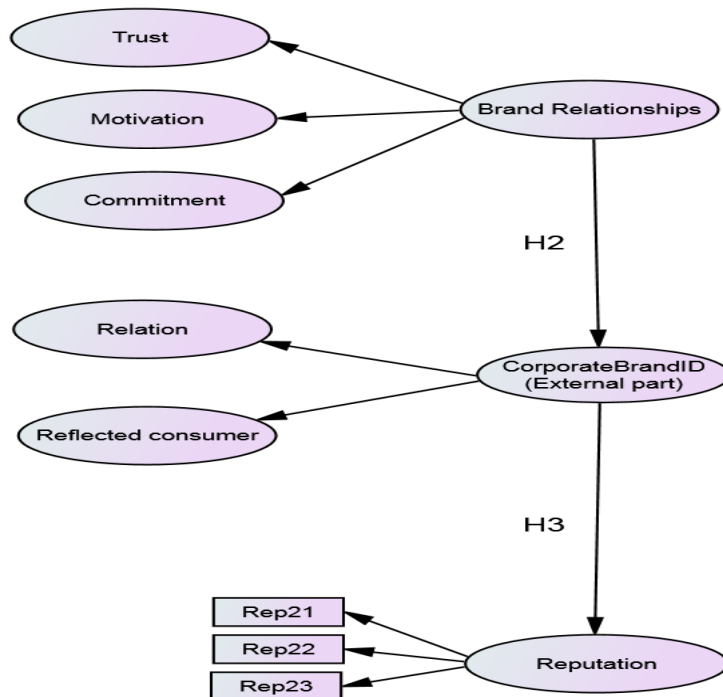
Because theory becomes essential in assessing the validity of a structural model, we examined an equivalent model with the purpose of testing an alternative theory. To the previous model we dropped the Physical dimension for comparison purposes.

3.4.4 Comparison with a rival model – evaluating physical dimension

One important criterion of a model's success is its performance compared with that of rival models in which, the examination of the relationships for which no hypothesis was theorized increase the internal validity of the findings (Bagozzi, 1980)

In line with the previous analysis of the variance explained for the endogenous constructs we decided to evaluate a rival model formed by the previously proposed model without the physical dimension. The rival model is illustrated in the following figure:

Figure 3.8 – Rival model



There are a few differences between the previous model and the rival model. The latter has a slightly better CFI (0,944 → 0,949), a slightly worse CMIN/DF (1,444 → 1,445),

RMSEA (0,045 → 0,046), and PCFI (0,847 → 0,838) as can be seen comparing Table 3.14 (above) and Table 3.17 (below).

Table 3.17 – Summary of the indices of fit of the structural model (rival model)

Model	χ^2	DF	p	CMIN/DF	CFI	RMSEA	PCFI
Structural rival model	558,841	384	0,000	1,445	0,949	0,046 [0,037; 0,054]	0,838

In line with these findings we conclude that there are few differences between both models. This fact might be related with the characteristics of the sample or even with some theoretical misspecification, as mentioned before. Regarding the few differences, we note that the initially proposed model fits generally better in terms of CMIN/DF and RMSEA and it's more parsimonious (PCFI=0,847 > PCFI=0,838).

The following table summarizes the main indicators and conclusions:

Table 3.18 – Structural equation model results (rival model)

			Regression estimates			Statistics		
			Unstandardized	S.E.	Standardized	C.R.	p-value	Decision
ExternalCorporateBrandID	<---	Brand Relationships	0,794	0,118	0,900	6,702	<0,001	H2 supported
Relation	<---	CorporateBrandID	1,216	0,194	0,768	6,274	<0,001	
Reflected consumer	<---	CorporateBrandID	1,000		0,794			
Trust	<---	Brand Relationships	1,000		0,798			
Motivation	<---	Brand Relationships	0,623	0,093	0,767	6,677	<0,001	
Commitment	<---	Brand Relationships	1,044	0,145	0,942	7,202	<0,001	
Reputation	<---	CorporateBrandID	1,065	0,154	0,795	6,916	<0,001	H3 supported

We examined the paths between the constructs and they are all statistically significant in the predicted direction.

The loadings they are all above 0,7. Comparing the standardized residuals and the modification indices of the previously identified “problematic items” they show now

lower values, yet according to Jöreskog and Sörbom (2001) the standardized residuals would still be considered “problematic” for they are higher than 2,58:

- 2,647 between R5 and C3;
- 2,597 between R5 and C2.

As for the modification indices the same pair of variables reveals a value higher than 11 (R5 and C3 = 11,309).

Table 3.19 – Squared correlations (R^2) – rival model

	R^2
ExternalCorporateBrandID	0,810
Relation	0,590
Reflected consumer	0,630
Trust	0,637
Motivation	0,589
Commitment	0,887
Reputation	0,633

We analyzed the variance explained estimates for the endogenous constructs and found that no problems were found being the lowest value of 0,590 (Relation) meaning that the error variance of the Relation dimension is approximately (only) 41,0% of the variance of this dimension itself.

According to what has been stated, we didn’t find enough statistical evidence to claim the drop of the Physical dimension. We found that the students didn’t value this dimension as we expected, oppositely, they valued greatly the other dimensions of the external Corporate Brand Identity and they believe that it influences the brand reputation according to our initial argument.

In line with these findings, we accept the 2nd and 3rd hypotheses and conclude that the brand relationships construct influences the external part of the corporate brand identity (H2) and the latter influences the brand reputation (H3). This way, the management of the Corporate Brand Identity depends on the investment and selection of strong

relationships with reputed brands so as to attract students and increase the Brand Reputation.

3.5 Discussion

The higher education sector is a very particular one because of its specific characteristics regarding the intangibility and the involvement of the consumers. Students are at the same time consumers and staff for they have a main role in delivering the brand promise of their university/institution.

Most of the recognized faculties behave like corporate brands. The University of Porto is one of these examples. Under this name there are several faculties that behave like corporate brands because they have specific characteristics that distinguish them from their pairs (FEUP – Faculty of Engineering of University of Porto, FEP – Faculty of Economics, FCDEF – Faculty of Sciences of Sport, to name a few) each one with its distinguishing features regarding the brand identity dimensions.

As it was our intention to investigate influences among the relationships between brands, the corporate brand identity salience and brand reputation, we considered that a sample of engineering students would be appropriate for this matter. Engineering faculties are recognized for developing very salient brand identities due to their intervention in the society by building bridges and other public and private infrastructures, developing innovative artifacts, processes and technology to industry that are frequently granted by national and/or international research centers, or other institutions recognized for developing science. It is also frequent that these interventions win prizes due to the testing of innovative instruments or processes.

For this purpose, after a previous qualitative research, where interviews (with lecturers, staff and representatives of the management team) and focus groups of students were used, we developed a questionnaire to the higher education engineering students. The data collected permitted us to validate a new concept defining the relationships between brands from the students' point of view. The investigated relationships were the ones between the corporate brands whose mission is education (universities and other higher education institutions) and the strategic partnerships with national reputed research centers (INESC, INEGI, ISISE, CCT, CALG, ALGORITMI...) and international

reputed universities (MIT, Harvard, Oxford...) with which they interact in the context of conjoint degrees, international mobility or other forms of interaction. We named that new concept “Brand Relationships” and found that it is formed by three dimensions: Trust, Motivation and Commitment. The research was based in the literature review, the previous qualitative analysis, discussions with experts and desk research and the reflection in order to propose and validate a new model. The questionnaire served to test the scales and items in a sample so that the results could be generalizable. Trust and Motivation were adapted from existing scales in the literature but the scale Commitment was developed in this research. Using a confirmatory factor analysis, the scales used to define the Brand Relationships construct were considered valid and reliable. Therefore we can conclude that students consider attractive those relationships between universities/institutions and other brands that generate Trust, Motivation and Commitment, as described.

To test the structural model we used the Corporate Brand Identity (external part) previously developed and, for the sake of unidimensionality, we used selected items of the Reputation concept developed by Vidaver-Cohen (2007), the ones that revealed unidimensionality and were more connected with this research (Intellectual performance; Network performance and Products).

We found that students don't value, as expected the Physical dimension of the external Corporate Brand Identity. This fact may be a consequence of the particularities of the used sample or even with some theoretical misspecification. These might be some of the reasons for this unexpected finding. We are convinced that the results would be different if we had used another sample, for instance one formed by psychology or arts students.

In line with this we tested a rival model (without the Physical dimension). In general terms, the rival model didn't reveal better fit indices regarding the selected ones. Therefore we decided to accept the previous model as it serves better the proposed theory.

For a model of this complexity, the final structural model reveals robustness regarding the selected fit indicators, proving that the relationships between brands influence the corporate brand identity and, consequently, the brand reputation. In line with the findings we may state that the management of the corporate brand identity is guided by the relationships between recognized brands that increase the salience of the corporate brand identity and the brand reputation.

The measurement of constructs involving the corporate brand identity is scarce in brand management literature. Therefore, it is impossible to compare these results with other published results.

In the next section we draw a final conclusion regarding this research, justify it in the brand management field and suggest future experiments.

3.6 Conclusions

Researchers have long been arguing the influence of relationships between brands in identity. Yet, never before a definition of the relationships between brands was proposed, nor a model showing that influence in the corporate brand identity and reputation. As far as our knowledge is concerned, this is the first empirical study supporting the influence of the relations between brands in the brand identity of the corporate brands. Therefore, we consider this of great importance to the advance of the brand management knowledge.

This research proves that the management of the corporate brand identity is possible by investing and selecting in the development of relationships with recognized brands bridging the gap between brand identity and reputation. This is even more true in a highly consumer involvement sector like higher education.

The management of the brand identity, especially in the case of the corporate brands, is highly motivated by the publics with whom the brands are exposed to interaction. Therefore the management of the corporate brand identity should be carried out from a relational perspective, so as to create positive reputations in all the stakeholders.

Besides filling a gap in the literature, this model highlights the necessity of managing the external part of the corporate brand identity according to the expectations of the main stakeholders of a higher education brand – the students.

A university/higher education institution that chooses and selects other recognized brands (research centers and international universities) to develop a relationship, gives the market a sign of what may be expected from it. The students develop expectations regarding the universities/higher education institutions they attend and the relationships that they develop with other brands. These relationships develop feelings in the students “e.g.” safety, they feel committed to reach important relationship networks and to get a major professional and social role, they feel motivated to have access to research, to the labor market, to a top career (national or international) and to develop entrepreneurship

qualities. As a result, they expect to get a better preparation for the labor market, to be more capable of innovating, to become successful professionals with high credibility. At the same time they develop a closer relation with the university/higher education institution and expect it to develop the physical features necessary to maintain and increase that link.

This research opens a new door in brand management creating a closer relationship between marketing and B2B branding literature. It also reveals the importance of joining qualitative and quantitative methodologies and proves that the latter are also applicable to subjective concepts that have been traditionally treated only by qualitative methodologies.

Future research must be developed namely the testing of this questionnaire in another population, in order to improve the measures and for purposes of generalization. Also, other relationships between brands should be tested, namely, between the universities/higher education institutions and the companies that receive the graduates as employees. The proposed model should also be tested in other services having high levels of consumers' involvement, such as insurance or medical services, for purposes of generalization.

Appendices

Appendix A – Questionnaire to the higher education students

QUESTIONNAIRE

1 – Please fill:

1.3 Where do you study? _____

1.4 1.2 What degree and year are you attending?

☐ Bachelor _____ → ☐ 1st year ☐ 2nd year ☐ 3rd year

☐ Master _____ → ☐ 1st year ☐ 2nd year

☐ Ph.D.

1.4 How old are you? _____

2.5 Gender: _____ → ☐ Female ☐ Male

3 Please express your agreement degree to each sentence by signing (X) from **1 (TD – totally disagree) to 5 (TA – totally agree)**:

	1 TD	2	3	4	5 TA
F1 – the facilities of my university/institution are modern					
F2 – the facilities of my university/institution are sophisticated					
F3 – the facilities of my university/institution are functional					
F4 - the facilities of my university/institution are adequate					
F5 – the facilities of my university/institution are better than the other facilities from other universities/institutions					
F6 – the employability of the graduates of the degree I					

attend is very high					
F7 - lecturers of the degree I attend are very competent					
F8 – in my university/institution I know that I can always count on quality interface services (library, students support office...)					
F9 – my university/institution contributes to my future professional success					

3 Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“I fell that the relation between my university/institution and me is...”:

	1 DT	2	3	4	5 CT
R1 – friendly					
R2 – respectful					
R3 - trustable					
R4 - motherly					
R5 – close					
R6 - fatherly					

4 Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“I believe that the society in general considers the graduates by my university/institution...”

	1 TD	2	3	4	5 TA
RC1 – better prepared for the labor market					
RC2 – more capable of creating/innovating					

RC3 – successful professionals					
RC4 – professionals with high credibility					
RC5 – better than others from other universities					
RC6 – amused/opened people					

5. Please fill according with the information provided:

5.1 - Kind of organization (please distribute 100 points)	Points
A – My university/institution is a very personal place. It is like extended family. People seem to share a lot of themselves.	
B - My university/institution is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	
C - My university/institution is a very formalized and structural place. Established procedures generally govern what people do.	
D - My university/institution is very production oriented (degrees, publications, investigation projects...)	
TOTAL	100

5.2 - Leadership (please distribute 100 points)	Points
A – The head of my university/institution is generally considered to be a mentor, sage, or a father or mother figure.	
B - The head of my university/institution is generally considered to be an entrepreneur, an innovator, or a risk taker.	
C - The head of my university/institution is generally considered to be a coordinator, an organizer or an administrator.	
D - The head of my university/institution is generally considered to be a producer, technician, or a hard-driver.	
TOTAL	100

5.3 - What holds the university/institution together (please distribute 100 points):	Points
--	--------

A – The glue that holds my university/institution together is loyalty and tradition. Commitment to this university/institution runs high.	
B - The glue that holds my university/institution together is commitment to innovation and development. There is an emphasis on being the first	
C - The glue that holds my university/institution together is formal rules and policies. Maintaining a smooth-running institution is important here.	
D - The glue that holds my university/institution together is the emphasis on tasks and goal accomplishment. A production oriented is commonly shared.	
	TOTAL 100

5.4 - What is important (please distribute 100 points)	Points
A – My university/institution emphasizes human resources. High cohesion and morale are important.	
B - My university/institution emphasizes growth and acquiring new resources. Readiness to meet challenges is important.	
C - My university/institution emphasizes permanence and stability. Efficient, smooth operations are important.	
D - My university/institution emphasizes competitive actions and achievement. Measurable goals are important.	
	TOTAL 100

6 - Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

	1 TD	2	3	4	5 TA
SI1 – I consider myself better prepared for attending this university/institution					
SI2 – I am proud for the certificate that I will obtain					
SI3 – I feel very satisfied for concluding this degree in this university/institution					
SI4 – concluding this degree in this university/institution makes me confident about the future					
SI5 – I consider myself part of an elite					
SI6 – I consider myself an entrepreneur					

7 – Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“If my university/institution were a person it would be...”

	1 DT	2	3	4	5 CT
P1 – agreeable (welcoming, warm, cheerful)					
P2 – conscientious (precise, determined, organized)					
P3 – innovative (original, nonconformist, creative)					
P4 – chic (distinct, sophisticated, elegant)					
P5 – peaceful (modest, silent, quiet)					
P6 – maverick (impulsive, uncontrolled, wild)					

8 – Please classify the items below from 1 – poor to 5 – high:

	1 poor	2	3	4	5 high
Rep21 – intellectual performance (retain/recruits prestigious lecturers/investigators; high levels of scientific publications...)					
Rep22 – network performance (attracts 1st class students; high employment rate; strong links between the students and industry...)					
Rep23 – products (prestigious degrees; competent graduates...)					
Rep24 – innovation (innovative methodologies; rapid adaptation to changes; innovating curricula...)					
Rep25 – provided services (strong relations with the exterior; specialized tasks; high level of instruction of lecturers and staff...)					
Rep26 – leadership (strong and charismatic leaders; organized and competent management; vision to future...)					
Rep27 – corporate governance (open and transparent management; behaves ethically; fair in transactions with the stakeholders...)					
Rep28 – work environment (equal opportunities, reward systems, care for the welfare of the staff and students...)					
Rep29 – Citizenship (promotes services to society; supports good causes; acts positively in the society; open to the industry and to society...)					

9. Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“To attend this university/institution allows me...”

	1 TD	2	3	4	5 TA
C1 – to achieve (have access) important relationship networks					
C2 – to be able to reach a major professional and social role					
C3 – to be influent					
C4 – to reach technical and scientific excellence					

10. Please express your agreement degree to each sentence by signing (X) from 1 (TD – totally disagree) to 5 (TA – totally agree):

“The connections between my university/institution and the recognized brands (INESC, INEGI, ISISE, CCT, CALG, ALGORITMI; MIT, Harvard, Oxford...) with whom it relates...”

	1 TD	2	3	4	5 TA
M1 – give credibility to the lecturing process					
M2 – facilitate the access to research					
M3 – facilitate the access to the labor market					
M4 – facilitate the access to a top career					
M5 – give credibility to the university/institution in the eyes of the labor market					
M6– make easier the access to an international career					

M7 – foster entrepreneurship					
T1 – make me feel safe					
T2 – are trustable					
T3 – are a guarantee					
T4 – are transparent (honest)					
T5 – are sincere					
T6 – are interesting					
T7 – influence the curricula offer of my university/institution					
T8 – contribute to improve the answers to the students` needs					

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Tables

TABLE 3.4 (A) - Research constructs and measures

Construct	Initial full measured items ^{a)}	Source
Trust	The connections between my university/institution and the recognized brands (INESC, INEGI, ISISE, CCT, CALG, ALGORITMI; MIT, Harvard, Oxford...) with whom it relates: T1 – make me feel safe T2 – are trustable T3 – are a guarantee T4 – are transparent (honest) T5 – are sincere T6 – are interesting T7 – influence the curricula offer of my university/institution T8 – contribute to improve the answers to the students` needs	Adapted from Gurviez and Korchia (2002)
Commitment	To attend this university/institution allows me: C1 – to achieve (have access) important relationship networks C2 – to be able to reach a major professional and social role C3 – to be influent C4 – to reach technical and scientific excellence	New scale in literature; Sources of influence: informants + focus groups+ experts + desk research
Motivation	The connections between my university/institution and the recognized brands (INESC, INEGI, ISISE, CCT, CALG, ALGORITMI; MIT, Harvard, Oxford...) with whom it relates: M1 – give credibility to the lecturing process M2 – facilitate the access to research M3 – facilitate the access to the labor market M4 – facilitate the access to a top career M5 – give credibility to the university/institution in the eyes of the labor market M6– make easier the access to an international career M7 – foster entrepreneurship	New scale in literature; Sources of influence: informants + focus groups+ experts + desk research
Reflected consumer	I believe that the society in general considers the graduates by my university/institution: RC1 – better prepared for the labor market RC2 – more capable of creating/innovating RC3 – successful professionals	Developed in Chapter two

	RC4 – professionals with high credibility	
Relation	I fell that the relation between my university/institution and me is: R1 – friendly R2 – respectful R3 - trustable R4 - motherly R5 – close	Developed in Chapter two
Physical	F1 – the facilities of my university/institution are modern F2 – the facilities of my university/institution are sophisticated F3 – the facilities of my university/institution are functional F4 - the facilities of my university/institution are adequate	Developed in Chapter two
Reputation	Please classify the items below from 1 – poor to 5 – high: Rep21 – intellectual performance (retain/recruits prestigious lecturers/investigators; high levels of scientific publications...) Rep22 – network performance (attracts 1st class students; high employment rate; strong links between the students and industry...) Rep23 – products (prestigious degrees; competent graduates...) Rep24 – innovation (innovative methodologies; rapid adaptation to changes; innovating curricula...) Rep25 – provided services (strong relations with the exterior; specialized tasks; high level of instruction of lecturers and staff...) Rep26 – leadership (strong and charismatic leaders; organized and competent management; vision to future...) Rep27 – corporate governance (open and transparent management; behaves ethically; fair in transactions with the stakeholders...) Rep28 – work environment (equal opportunities, reward systems, care for the welfare of the staff and students...) Rep29 – Citizenship (promotes services to society; supports good causes; acts positively in the society; open to the industry and to society...) Rep2.10 – Financial performance (fees and value added programs..)	Adapted from Vidaver-Cohen (2007)

- a) Items measured on a five points Likert scale ranging from (1) strongly disagree to (5) strongly agree

Table 3.5 – Analysis of the dimensionality of Reputation

	Factor loadings	
	Factor 1	Factor 2
Rep21 – intellectual performance (retain/recruits prestigious lecturers/investigators; high levels of scientific publications...)	0,800	
Rep22 – network performance (attracts 1st class students; high employment rate; strong links between the students and industry...)	0,813	
Rep23 – products (prestigious degrees; competent graduates...)	0,736	
Rep24 – innovation (innovative methodologies; rapid adaptation to changes; innovating curricula...)	0,685	
Rep25 – provided services (strong relations with the exterior; specialized tasks; high level of instruction of lecturers and staff...)	0,591	0,449
Rep26 – leadership (strong and charismatic leaders; organized and competent management; vision to future...)		0,616
Rep27 – corporate governance (open and transparent management; behaves ethically; fair in transactions with the stakeholders...)		0,822
Rep28 – work environment (equal opportunities, reward systems, care for the welfare of the staff and students...)		0,821
Rep29 – Citizenship (promotes services to society; supports good causes; acts positively in the society; open to the industry and to society...)		0,709
Extraction Method: Principal Component Analysis.		

Conclusion

There is a plethora of brand identity frameworks in literature. Nevertheless, the measurement of brand identity in the particular context of corporate brands is scarce.

It is commonly accepted that corporate brands have many advantages regarding the reduction of costs (amongst others) but the growing interest in corporate brands is based on the defense of the reputation which is very important in the services sector due to the intangibility that demands for the inclusion of relationships in order to materialize the service, and due to higher consumer involvement that characterizes the higher education sector. Reputation, in line with a well-designed positioning, became urgent to defend in order to attract the best students in a context where there is a decrease of births that will reduce the offer of most of the higher education institutions in developed countries.

There are nowadays global assessments of the quality of universities, which generate National, European or even World rankings. In a context where the offer tends to be superior to the demand it is central that the higher education institutions position their corporate brands according with the students' aspirations and needs.

Relationships have a prominent role connecting people and brands, yet the links between brands and their influence in the management of the corporate brand identity and reputation have not been much explored.

The research developed in the first study suggests that the relationships between brands influence the identity of the corporate brands and consequently increases the brand reputation. More significantly, the research pointed out that students feel attracted by the relationships that the higher education institutions develop with other recognized brands especially in the case of the recognized research centers/international universities and in the case of the companies that employ newly graduates. This study provided cues and initial features to characterize the relationships between brands; the

corporate brand identity (internal and external part) and the brand reputation. The proposed features were evaluated afterwards by a panel of experts.

Regarding the dimensions of the relationships between brands (Brand Relationships) the students selected the following dimensions: Trust, Motivation Commitment and Emotions (positive and negative) – yet this dimension wasn't used in the following researches (paper 2 and 3) because it didn't show validity in any of the specified criteria. Trust and Commitment have recently been described as important major aspects of strategic partnerships. The inclusion of the Motivation dimension and the measures to characterize it, derived from the research developed with the interviews and the focus groups. Students feel motivated to attend a certain higher education institution based on the brand relationships it develops with certain brands. They expect to have a privileged access to the labor market, to a top career or to an international career, to gain credibility, to foster entrepreneurship and to develop research, to name a few expectations. The research suggested that the relationships between brands influence the corporate brand identity features but they also are influenced by the “brand personality” and “self-image”.

Another significant conclusion from this first study was the fact that Big, international higher education brands must invest in additional emotive relationships, strongly linked to intangible features in order to empower the corporate brand internationally. Small, regional universities brands should think in regional terms for they have a very important role in the regional dynamism and innovation.

The first study also suggests that students consider attractive the relationships developed between their university and the internationally recognized universities like MIT or Carnegie Mellon University, with recognized research centers and companies that employ newly graduates.

In the second study, the use of quantitative methods allowed us to highlight a higher dimension called corporate brand identity formed by the proposed six dimensions by Kapferer. The culture dimension was included in this research as a nominal variable.

Using the findings revealed by Desphande *et al.* (1993) it was identified the perceived culture by each student regarding their university/institution. The findings reveal that cultures perceived as being performance oriented develop strong corporate brand identities. This conclusion is very important to the management of brand identity in universities and higher education institutions. It reveals the power of the students' perceptions and their influence in the corporate brand identity dimensions. The perceptions regarding brand culture must be managed by brand managers in order to create the desired perceptions in the students turning the desired corporate brand identity coincident with the existing one. This finding also reveals the influence of the culture dimension in the other dimensions of the corporate brand identity as stated by Kapferer (2008).

Because the culture dimension was tested as a nominal variable, we decided to test also the brand identity prism with only the other five factors: self-image, personality, relation, reflected consumer and tangible physical. The results revealed to be valid and reliable.

Corporate brands are much exposed to interaction of the different publics therefore it became urgent to determine if the external Corporate Brand Identity could be defined as a valid and reliable higher level of abstraction according with the statements developed by Kapferer (1986, 2008). This second research proves quantitatively that the external part of the brand identity prism: relation, reflected consumer and tangible physical make sense together and that there is a higher external dimension formed by these three dimensions. This study revealed the importance of joining qualitative and quantitative methodologies and proved that the latter is also applicable to the subjective concepts that are related with brand identity. This means that the investigation in this area must be developed by brand identity researchers and managers gathering the advantages of both approaches.

A significant conclusion of the third study is that the relationships between brands influence the external brand identity and consequently the brand reputation.

The management of the brand identity, especially in the case of the corporate brands, is highly motivated by the publics with who the brands are exposed to interaction. Therefore the management of the corporate brand identity should be carried out from a relational perspective, so as to create positive reputations in all the stakeholders. This third research also highlights the great value given by the students used in this sample to the intangible dimensions of the external Corporate Brand Identity. The Physical dimension (connected with features like the quality of the buildings) was less valorized than the Reflected consumer and the Relation suggesting that these dimensions are more connected with aspirations rather than with tangible features. Nevertheless this conclusion needs to be tested in other samples.

Managerial implications

This research provides a contribution for the management of the corporate brand identity in a higher education context.

The main managerial implication of the first paper is that corporate brand managers have to choose, design and invest in brand relationships that make for the value of the corporate brand and consequently increase the reputation of the most important stakeholders, the students.

Another goal of this research was to develop measurement issues to the Brand Identity applied to corporate brands. Higher education managers can now evaluate the Brand Identity of their corporate brand by using a measure that is easy to interpret and manage and based in a conceptual framework developed by one of the most recognized researchers in the field – Kapferer.

There are references in the literature to the influence of the relationships between brands on the identity of the organizations but, as far as our knowledge concerns, there are no empirical studies supporting it. Now, managers can use an empirically derived

framework that relates three measured relevant concepts: Brand relationships, external Corporate Brand Identity and Reputation.

Contribution to extant knowledge

This research provides major contributions to overcome the lacks of prior research. It will help to incorporate empirical findings into a coherent body of knowledge in the brand identity management of the corporate brands in higher education. The links between the relationships between brands, brand identity and reputation in higher education have not been much explored in the literature. This research is a contribution in this field.

The first study provides a set of concepts and relations derived from the interviews and focus groups. It also provides a wider understanding about the relationships between brands, of the influences of them in the brand identity of a corporate brand and the consequences in the brand reputation.

The second paper contributes to the literature by developing measures that, as far as our knowledge concerns, have never before been measured: the brand identity prism, and the external part of this framework as defined by Kapferer (1986, 2008). A large body of research fails to develop and validate scales for measuring the brand identity in the case of corporate brands. One of the greatest limitations of the development and validation of scales in this context has been the intangible nature of the features involved and the lack of previous valid measures.

Regarding the third paper structural relations between the three constructs involved are tested, proving that the relationships between brands influence the corporate brand identity and the brand reputation.

The research developed in this thesis fills the lacks of prior research by proposing a measure to characterize the relationships between brands and also the brand identity as

defined by Kapferer (1986, 2008). It also tests a causal relation between Brand relationships and the external part of the Brand Identity in the context of corporate brands in higher education resulting in a positive reputation in the eyes of the most important stakeholders – the students.

As far as our knowledge concerns, it is the first time that:

- a measure is provided to the brand identity framework using four new scales and the external part of the brand identity as defined by Kapferer (1986, 2008)
- are tested the perceptions of the students regarding the relation between the higher education institutions` performance and the brand identity salience in corporate brands;
- a measure is provided to the relationships between brands (Brand Relationships), and
- structural relations link the two previous constructs in a causal relationship that, if well managed, results in a positive Brand Reputation.

Limitations and future research

As it was previously mentioned a limitation of this research regards the second order models. The theoretical propositions justifying them were assumed directly to estimate the empirical models. Therefore, no further additional empirical tests were used.

The findings are based on a sample of engineering students that belong to different higher education institutions, therefore the generalizability is limited. Despite this limitation, the research provides important theoretical and practical contributions.

The mentioned limitation also suggests directions for further investigation. Future surveying diverse samples will help to confirm if the features that characterize the corporate brand identity, the relationships between brands and the connections between the three involved constructs: Brand Relationships, Corporate Brand Identity and Brand Reputation, are equivalent across other public. Also other services much exposed to interaction with different public and having high levels of consumer involvement should be tested for generalization purposes, such as insurance or medical services.

Another limitation of this research is that it focuses on the relationships between brands as a whole without paying much attention to other variables that also influence the management of the brand identity of a corporate brand in higher education and stimulates students' attraction. For example, the decisions of the students about what higher education institution to choose can be much influenced by the geographical proximity of home and family (location). This fact is very important in a context of severe economic constraints like the one the European Union is passing at this moment. The students can perceive a university/higher education institution as having a highly developed brand relationship network but still they prefer another institution for reasons of geographical proximity. Leaving home to attend a degree can become very expensive and even unbearable for most of the parents that support children studying.

Additional research is required regarding:

- the relationships between the higher education corporate brands and the companies that employ newly graduates to find, as expected, if they also influence the external part of the corporate brand identity and the extent of that influence;
- the perceptions of these companies regarding the corporate brand identity and reputation of the institutions of origin of the prospective graduates that they employ;
- other factors that influence the management of the corporate brand identity in contexts where the interaction with the publics is intense permitting co-creation and development of the brand identity.

Therefore, continuous research is needed.