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# **Journal of Spatial and Organizational Dynamics**

**Interdisciplinarity in Social and Human Sciences: Prospecting well-being in society**

Sense of Place, Risk Perceptions and Preparedness of a Coastal Population at Risk (Faro Beach, Portugal): A Qualitative Content Analysis  
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Ana Galvão and Marco Pinheiro

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Interdisciplinarity in Social and Human Sciences: Prospecting well-being in society

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## TABLE OF CONTENTS

Sense of Place, Risk Perceptions and Preparedness of a Coastal Population at Risk (Faro Beach, Portugal): A Qualitative Content Analysis.....	163
---	-----

*Rita B. Domingues*  
*Susana Costas*  
*Saul Neves de Jesus*  
*Óscar Ferreira*

1. Introduction .....	163
2. Methods .....	165
3. Results and Discussion .....	166
4. Conclusion .....	171

Green Infrastructure, Climate Change and Spatial Planning: Learning Lessons Across Borders .....	176
--	-----

*André Samora-Arvela*  
*João Ferrão*  
*Jorge Ferreira*  
*Thomas Panagopoulos*  
*Eric Vaz*

1. Introduction .....	176
2. Green Infrastructure and Climate Change .....	177
3. Conclusion .....	186

Spatial Effects and Externalities of the Rivals' Networks in Hungary .....	189
--	-----

*György Jóna*  
*Tamás Tóth*

1. Introduction .....	189
2. Theoretical Underpinnings and Empirical Overviews .....	190
3. Methods and Model of Network.....	193
4. Empirical Findings .....	195
5. Conclusion .....	203

Information Systems' Portfolio: Contributions of Enterprise and Process Architecture ..	208
---	-----

*Silvia Fernandes*  
*João L. Fragoso*

1. Introduction .....	208
2. Information Systems in Portugal.....	209
3. Which Information Systems' Portfolio?.....	213
4. Role of Enterprise and Process Architecture .....	214
5. Conclusion .....	219

How Experience, Attention and Ubiquity Economies Affect the Role of Digital Media Art and Artists .....	222
---	-----

*Pedro Alves da Veiga*

*Mirian Tavares*

*Heitor Alvelos*

1. Introduction .....	222
2. The Rise of the Individual, the Fall of Attention and the Reinvention of Curating .....	223
3. A Careful Mix of Entertainment and Activism .....	226
4. Ubiquity as a Blending Agent.....	229
5. From Ownership to Experience .....	232
6. Conclusion .....	233

The Alcalar Study: A Quality of Life Comparative Study on Institutionalised Elderly....	239
---	-----

*Jorge A. Malveiro*

*Saul Neves de Jesus*

*Rui Rego*

1. The Genesis of the Concept of Quality of Life and Its Application.....	239
2. The Architectural Influence on the Qol of the Elderly.....	244
3. The Typification of Portuguese Social Care Directed to the Elderly: RSS, DCI ... and the Alcalar Retirement-village Prototype .....	245
4. Methodology .....	250
5. Results .....	251
6. Discussion .....	256
7. Conclusion .....	259

Pragmatism, Need for Comfort and Need for Acceptance – Psychological Traits for Successful Entrepreneurship in Portugal .....	264
---	-----

*Ana Galvão*

*Marco Pinheiro*

1. Introduction .....	264
2. Method.....	266
3. Results .....	267
4. Discussion .....	274
5. Conclusion .....	275

Analysis of the Attachment-Aversion Model of Consumer-brand Relationships in a Different Cultural Background .....	278
--	-----

*Veranika Novik*

*Patrícia Pinto*

*Manuela Guerreiro*

1. Introduction .....	278
2. Theoretical Background .....	280

3. Methodology .....	287
4. Analysis and Results.....	289
5. Conclusion .....	292

Fast-Food Marketing Strategies and their Impact on Childhood Obesity.....	296
---	-----

*Afonso M. Herédia*

*João Hipólito*

*Odete Nunes*

*Luísa Ribeiro*

*Tatiana Moura*

*Tito Laneiro*

1. Introduction .....	296
2. Fast-Food Chains Marketing Strategies.....	297
3. Children's Understanding of Marketing.....	299
4. Marketing Regulation Aimed at Children.....	299
5. The Influence of Marketing on Children's Behaviour .....	299
6. The Impact of Fast Food on Childhood Obesity .....	300
7. Methodology .....	302
8. Results .....	303
9. Conclusion .....	306

# SENSE OF PLACE, RISK PERCEPTIONS AND PREPAREDNESS OF A COASTAL POPULATION AT RISK (FARO BEACH, PORTUGAL): A QUALITATIVE CONTENT ANALYSIS

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*Óscar Ferreira<sup>4</sup>*

## ABSTRACT

Faro Beach, a heavily urbanized settlement in Ria Formosa, southern Portugal, is highly vulnerable to coastal hazards, namely beach erosion and overwashes caused by storms, that have resulted in house and road damage on several occasions. Despite the risks, local residents accept to live there. Four semi-structured interviews were conducted to understand residents' beliefs, risk perceptions and preparedness regarding coastal risks. We used a qualitative content analysis to derive manifest contents from the interviews.

Three main themes were identified in the interviews: how residents feel about Faro Beach; how they perceive coastal hazards and risks; and how they deal with those risks. Positive feelings regarding Faro Beach were identified in all residents, reflecting a strong sense of place that includes high levels of place attachment, rooting, sense of community and place identity. Residents' personal experiences with hazards probably undersized their perceptions regarding the risks that they are exposed to. Their willingness to participate in disaster risk reduction measures seemed associated with behavioral barriers driven by mistrust in authorities and externalization of responsibility. Residents also revealed low levels of preparedness towards coastal hazards, probably due to their low risk perceptions and their perception of threats as distant in time.

Keywords: Place Attachment, Risk Perception, Coastal Management, Content Analysis.

JEL Classification: Q54

## 1. INTRODUCTION

Coastal areas are widely recognized as one of the most important ecosystems in the world; they provide a myriad of services and resources (Kennish & Paerl, 2010), whilst suffering from increasing anthropogenic pressures due to human population growth and economic development (Lloret, Marín & Marín-Guirao, 2008). Although attractive from natural and socioeconomic perspectives, coastal areas are dangerous places to live in. These regions, particularly low elevation coastal zones (<10 m altitude: McGranahan, 2007) are extremely vulnerable to natural hazards, such as erosion, overwash, cliff collapse, floods, harmful algal blooms, among others. In the last decades, human-induced climate change has been added to the myriad of threats that coastal populations are exposed to. At the same time,

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population growth in coastal regions and urbanization of coastlines have been increasing worldwide (Neumann, Vafeidis, Zimmermann & Nicholls, 2015). Thus, it is important to consider coastal areas as linked ecological-socioeconomic systems that co-evolve spatially and temporally (Crooks & Turner, 1999) and to balance the needs of development and the protection of ecosystem resources, by taking into consideration the public's concern about the environmental, socio-economic and cultural state of the coastline (EEA, 2006).

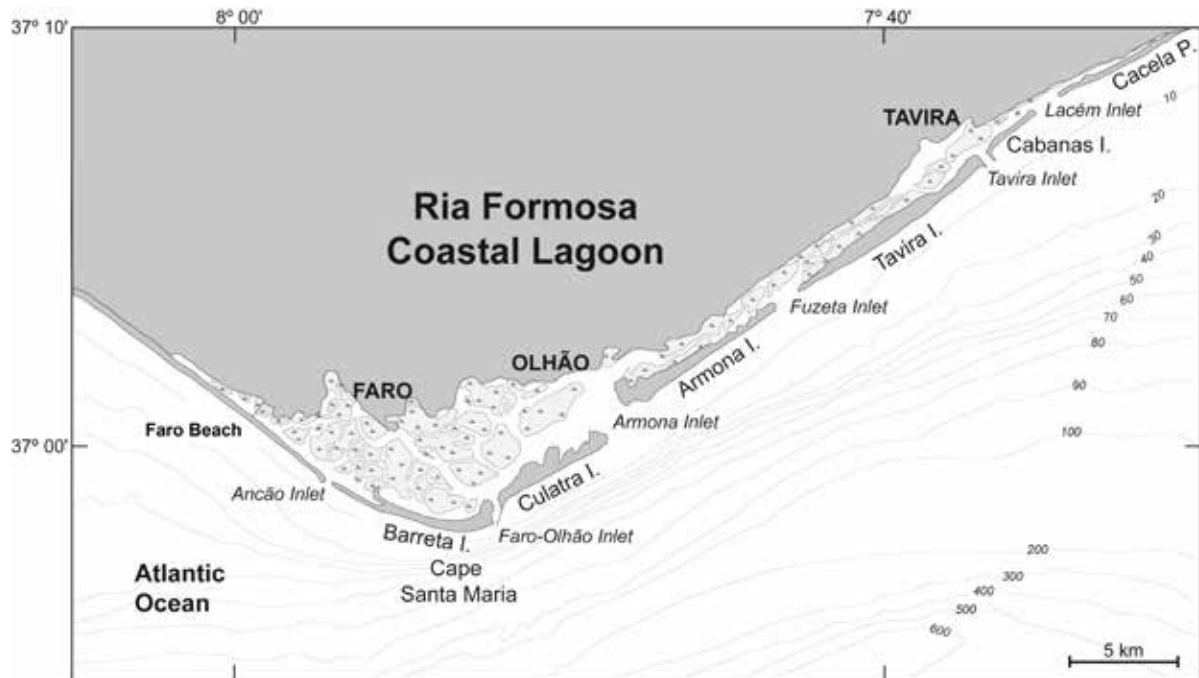
One of the most vulnerable areas in Portugal is the Ria Formosa coastal system, at the southernmost end of the Portuguese coast, which includes a coastal lagoon protected from the direct impact of ocean waves by a chain of sandy barrier islands and peninsulas split by several inlets. Due to its ecological and economic importance, the Ria Formosa and its hinterland were established as a Natural Park and, currently, a multitude of governmental organizations are responsible for its management, including national and regional organizations as well as municipalities (Guimarães, 2010; Costas, Ferreira & Martinez, 2015).

The sandy islands and peninsulas, particularly the Ancão Peninsula at the westernmost part of the Ria Formosa, have a history of human occupation that extends over the last five decades, although a significant increase in the number of buildings and population was only observed from the 1980's onwards. Faro Beach, located at Ancão Peninsula (Figure 1), is one of the most threaten locations of the Ria Formosa system (Figure 2) and it is also a major source of tension and disagreement among stakeholders. Land occupation at Faro Beach developed chaotically, in a disorganized manner, without consideration for aesthetical and urbanism principles (Dias, 1993). Nowadays it includes a traditional fishermen community and second residences occupied mainly during summer by Faro inhabitants and tourists. A total of 623 buildings and 245 all-year residents (and over 4000 residents during summer: Viegas, 2003) have been identified at Faro Beach (Costas *et al.*, 2015).

Coastal management plans such as POOC (Coastal Zone Spatial Plan) and POLIS Litoral (programme on integrated operations towards the renewal and enhancement of the coastal zone) contain several measures to prevent coastal risks and promote nature conservation and biodiversity in the Ria Formosa, through the protection and requalification of the coastal zone. Such measures include inlet relocation, beach nourishment, dredging of navigation channels, waterfront requalification, and the removal of houses. The latter has not been well accepted by local residents and homeowners, mainly because it does not consider all residents/owners equally, and has generated several public debates and confrontations with managers and policy-makers.

Despite the high risks, residents of Faro Beach have accepted to live there in exchange for benefits that they perceive as largely exceeding potential personal damages (Costas *et al.*, 2015). Although residents are aware of the hazards impacting the area, they do not seem worried or prepared to deal with the associated risks, hence showing low levels of risk perception (Costas *et al.*, 2015). Risk perception is a complex emotion-based construct, rather than a rational one, and it is influenced by many other psychological variables and, in turn, affects preparedness and coping behaviors (Gifford, 2014); therefore, a thorough knowledge on the psychological drivers of risk perception and the role of risk perception on people's preparedness is critical for the proper development and implementation of coastal management tools and disaster risk reduction strategies. A previous work identified the cultural, socio-economic and ecological framework of Faro Beach and the factors shaping risk perceptions, through in-depth interviews with selected stakeholders (Costas *et al.*, 2015). The present paper adds a psychological perspective to Costas *et al.* (2015), by re-analyzing the interviews through the use of a qualitative content analysis to derive manifest content from the interviewees' discourses. The main goal of this work is, thus, to understand the relationships between risk perceptions, preparedness and other psychological constructs in Faro Beach residents.

Figure 1. Location of Faro Beach at the Ria Formosa barrier island system



Source: Dr. Ana Matias, CIMA-UAIfg

## 2. METHODS

### 2.1 Participants and data collection

The material reported in this paper was collected within EU FP7 Collaborative project RISC-KIT (Resilience-Increasing Strategies for Coasts – toolKIT) that aimed, among other goals, to integrate stakeholders' risk perceptions into management tools, to reduce risk and increase resilience to hydro-meteorological events in problematic coastal zones (Costas *et al.*, 2015). Faro Beach was one of the case studies included in RISK-KIT project, due to its high vulnerability to coastal hazards.

Individual, semi-structured interviews were conducted in early 2014 with each of four selected stakeholders. Interviewed stakeholders were 1 local resident and fisherman (and leader of a fishermen association), 1 local resident and business owner, 1 business owner (non resident) and 1 second residence owner<sup>5</sup>. These individuals were selected due to their representativeness within the community and/or extensive knowledge of the area. Contrary to local managers, authorities, academics and other stakeholder groups, local residents may provide direct insights on the needs, perceptions and values of the local population, as well as on the occurrence and impacts of past hazardous events (Risc-Kit, 2016).

Four main topics were addressed in the interviews (Costas *et al.*, 2015): (1) socio-cultural and environmental values and traditions in the community; (2) risk perception; (3) coastal disaster risk reduction knowledge; (4) participation and constraints to the application of coastal disaster risk reduction strategies. A guide with open-ended questions was used flexibly by the interviewer; participants were allowed to elaborate on their answers and they were not asked exactly the same questions with the same wording. The interviews took about an hour and all the content was recorded and transcribed.

<sup>5</sup> For the sake of simplicity, hereafter we refer to this group of stakeholders as "residents", even though two of the interviewees do not reside at the Beach the whole year.



**Figure 2. Storm at Faro Beach that led to loss of houses in 2010 (the house shown here is the same as in Figure 3)**



Source: <http://adefesadefaro.blogspot.pt/2011/02/ilha-de-faro-sob-risco-iminente.html> (used with permission)

## **2.2 Data analysis**

A qualitative content analysis based on an inductive approach was conducted to compile and analyse the interview data, following guidelines suggested by Gondim and Bendassolli (2014) and Mayring (2000). An inductive content analysis was used because the interviews were not structured around any previous psychological theory or model; therefore, an abstraction process that includes open coding and creating categories derived from the data is more suitable (Elo & Kyngäs, 2008). For that reason, the coding was primarily done by the first author and afterwards the co-authors checked the coding to ensure reliability.

The units of analysis considered were the interviews as a whole. The transcripts were read several times and meaningful units were gradually identified and open-coded. The codes were then formulated into sub-categories, and overarching categories were created out of the subcategories. Finally, main themes were identified.

## **3. RESULTS AND DISCUSSION**

The content analysis allowed the identification of three main themes: (a) how individuals feel about Faro Beach; (b) how individuals perceive coastal risks; and (c) how individuals deal with coastal risks. Each theme will be presented and discussed with quotations from the interviews to illustrate the different categories identified.

### 3.1 How individuals feel about Faro Beach

When asked about how long they have been living/working at Faro Beach, why they have decided to move/stay there, how would they describe Faro Beach to outsiders and what they think is truly special about the beach, interviewees demonstrated strong and multifaceted emotional bonds to the place that were categorized as “sense of place”. Despite the different terminologies that exist for such constructs (e.g., place attachment, place identity, place dependence, sense of community, etc.), we opted to consider “sense of place” as a broad construct that includes cognitive, affective and conative dimensions (Jorgensen & Stedman, 2001), and that were sub-categorized in our analysis as place attachment, rooting, sense of community and place identity (Michel-Guillou & Meur-Ferec, 2017).

Place attachment, generally defined as an affective bond or link between people and specific places (Hidalgo & Hernández, 2001), was clear in all individuals. They said *“We built a link to this place, I like the island<sup>6</sup> very much and I like living here”*, or *“I always felt a strong link to this area, I feel like I was born here”*. This bond is reflected on a desire to maintain closeness to the object of attachment, which is, ultimately, the main characteristic of the concept of attachment (Ainsworth & Bell, 1970): *“I don’t want to leave the island”, “That island... if they take this away from me, they take everything from me...”*. This strong emotional attachment to Faro Beach seems to be associated to the concept of rooting, a type of spatial anchoring often reinforced by temporality, memories, intergenerational transmission and heritage (Michel-Guillou & Meur-Ferec, 2017). Interviewees have been living or working at Faro Beach for many decades (*“I’ve been living at Faro Beach for 38 years”, “I’ve been living here for 40 years, since I was 8”, “The restaurant was owned by my father, since almost 40 years ago”, “I have a house at Faro Beach since I was born”*) and they demonstrated the effect of heritage and intergenerational transmission, not only the whole-year residents but the second resident as well: *“Part of the family died, and we stayed here, this is our land and homeland”; “My mom was born here, so was her family and we built our small house (...) I have four children that are also living here”; “I spent all my childhood there and all summers I come here, come rain or come shine”; “We come every summer, especially because of the kids – here, they are like I was, in a state of total freedom”*.

Interviewees also showed a strong sense of community, related to their connections to local social networks and the interactions between them (Raymond, Brown & Weber, 2010). These social ties are especially relevant within the fishermen community and were evident in residents’ discourses: *“The fishermen are a very strong community, they help each other”, “We help each other when something happens”, “We are a fishermen community, this is our heritage”, “This is a very small population, and we’ve known each other for many years, and sometimes you get the seafood from one and the fish from others”*.

Place identity is another construct that can be integrated in the overarching category of sense of place, and refers to a person’s sense of continuity, self-esteem, self-efficacy and sense of distinctiveness (Twigger-Ross & Uzell, 1996). The distinctive character of Faro Beach, i.e., the characteristics of the place the individual uses to differentiate it from others, was obvious in the discourses: *“I think that the Ria Formosa and Faro Beach are among the most beautiful things we have here in Portugal”, “This is the paradise, for us this is the paradise”, “The freedom you get by living here, you’d never have living in a city”, “I would say that it is the best beach in the world (...) and it is the best place for working”, “I’ve had the opportunity to visit several places in the world and I’ve never found anything as good as this”*.

We can argue that residents’ place attachment has had positive effects on their place perception, leading to a perceptual bias. Like Gifford (2014) puts it, *“being attached to a place is like wearing rose-colored glasses, and its flaws and dangers become less apparent”*. The inflation of

<sup>6</sup> Although not an island, but a peninsula (Península do Ancão), residents and outsiders usually refer to it as an island, because the attachment to the mainland is approx. 4 kilometers away from the end of Faro Beach and the only road connection between the mainland and the beach is a bridge.

the place's qualities can be explained by the social identity theory (Tajfel & Turner, 1986) as an unconscious process that people use to maintain their self-esteem, given that one's self-identity is strongly linked to the places that are important for the individual (Gifford, 2014). Consequently, place attachment, place identity and related constructs will influence risk perceptions; strongly attached people will most likely (but not always, see review by Bonaiuto *et al.*, 2016) minimize the risks associated to their place of attachment (e.g., Brown, Perkins & Brown, 2003; Billig, 2006).

Considering the person-process-place framework of place attachment (Scannell & Gifford, 2010), place attachment of Faro Beach residents seemed to be both at the individual level, mainly due to length of residence and familial heritage, and at the community level, due to the strong sense of community that has developed there, particularly among fishermen. The affective component is obvious from interviewees' answers and it comprises positive feelings about the place and the desire to maintain closeness to that place; indeed, in terms of behavioral outcomes, residents show no intention of leaving the beach, not even in the future to mitigate potential problems caused by coastal hazards (Costas *et al.*, 2015).

This resistance to relocation in Faro Beach residents has been viewed by coastal managers as a consequence of a misunderstanding of risks and, consequently, low risk perceptions (Costas *et al.*, 2015). The same have been observed in other coastal populations; for instance, in the Aveiro region in NW Portugal, the majority of residents considered that it would be difficult for the population to move and adapt to areas farther away from the sea, due to their affective connections and economic dependence (Martins, Betâmio de Almeida & Pinho, 2009).

Research has shown that high levels of place attachment lead to feelings of safety and security in individuals (Billig, 2006); people are usually well aware of the risks associated with their environment and they accept those risks (Michel-Guillou & Meur-Ferec, 2017), usually in exchange for the benefits they obtain by living there (Costas *et al.*, 2015). Individuals highly attached to a place also tend to view place change as negative (Anton & Lawrence, 2016), given that it may affect their place identity (Twigger-Ross & Uzell, 1996). This negative relationship between place attachment and risk perception has been observed not only for natural hazards and associated risks, such as seismic risks (Armaş, 2006) and volcano risks (Donovan, Suryanto & Utami, 2012) but also for war-related risks (Billig, 2006). However, positive relationships between place attachment and risk perception have also been found for volcano risks (Bird, Gísladóttir & Dominey-Howes, 2011), drought risks (Stain, Kelly, Carr, Lewin, Fitzgerald & Fragar, 2011) and other environmental risks.

Either way, place attachment and related constructs play significant roles as predictors, mediators or intervening factors in risk perceptions; therefore, people's attachment to their places should be addressed in natural hazard risk management (Bonaiuto, Alves, De Dominicis & Petrucci, 2016).

### **3.2 How individuals perceive coastal risks**

Participants were asked several questions that aimed to understand their perceived levels of threat in relation to coastal hazards at Faro Beach, such as which are the major risks they face at the beach, if they feel people should be concerned and if they feel at risk. All residents revealed awareness about risks and some concern, but their risk perceptions are low (Costas *et al.*, 2015). When asked if people in the region should be concerned about storms and coastal erosion, they answered "*We have to be concerned about the storms*", "*The wind can remove part of our roofs*", "*I am more concerned about waves suddenly coming in than about a large storm; (...) a storm is well predicted today and there are alerts*", "*The people living and working here are concerned about the storms*".

Being aware of risks, *i.e.*, having information and knowing about hazards and associated risks, does not necessarily lead to concern or increased risk perception. Concern about risks and risk perceptions are sometimes used interchangeably, but we consider concern a more rational, information-based process and risk perception an emotion-based construct or a subjective judgment that individuals make regarding the characteristics and severity of a risk (Gifford, 2014; Van der Linden, 2015). That is why the concern about risks that residents demonstrated was not reflected in high risk perceptions; despite being aware of risks, people feel safe at the beach: *"We feel safe here at the beach", "I was never afraid of the storms", "There is no risk for living here. We are not at risk; the houses are not at risk. Our houses do not fall, only if people don't take care of them", "I was not afraid, because I did not felt my life at risk", "I never felt at risk myself, because I felt everything was under control."*

Risk perception is influenced by many individual and contextual variables, such as age, gender, personality, social influences, information, education, etc. Another important variable that influences beliefs and perceptions is individuals' past experience with hazards (Qasim, Nawaz Khan, Prasad Shrestha & Qasim, 2015; Guo & Li, 2016; Takahashi, Burnham, Terracina-Hartman, Sopchak & Selfa, 2016). When asked how often they have experienced hazards and disasters in the region, all interviewees answered that they have witnessed storms at the beach and they described past episodes: *"I saw how the water passed over a car parked here at the back", "When we moved here and built our house, the sea came into the house... and we had to collect parts of the house (that were transported along the shore)", "It was very usual for strong winds to damage the roofs of the houses", "Two or three years ago, two very large waves came suddenly and the entire bar was inundated", "I remember huge storms, some years better, other years worse"*.

Although residents of Faro Beach have witnessed coastal hazards, most of them were not personally impacted by those hazards. The consequences of these events at Faro Beach have only been the destruction of houses (Figure 3) and roads that are usually rebuilt afterwards (Costas *et al.*, 2015). The absence of serious consequences, like fatalities, may have contributed to an optimistic bias, making residents believe that they are personally less likely to experience negative outcomes than other people (Breakwell, 2014). The availability heuristics (a simple information-processing rule that relies on immediate examples that individuals easily remember: Tversky & Kahneman, 1974) may have also contributed to an underestimation of more frequent, less serious events (such as storms and erosion at Faro Beach) in relation to rare and catastrophic events (such as earthquakes and tsunamis) that are more easily remembered and overestimated. Therefore, past experience with hazards at Faro Beach in combination with cognitive biases may have played a significant role in decreasing risk perceptions of Faro Beach residents, explaining why they still feel safe living there.

### 3.3 How individuals deal with coastal risks

This theme was divided in two overarching categories: public participation in disaster risk reduction measures and preparedness towards coastal hazards. Disaster risk reduction (DRR) measures such as beach nourishment, dune rebuilding, coastal armoring, relocation, among others, have been suggested by stakeholders for the Ria Formosa system and, particularly, for Faro Beach (Costas *et al.*, 2015). When asked about their willingness to participate in the implementation of such measures, interviewees demonstrated some openness and interest: *"We would like very much to help, I would like very much to help improve the island", "If they ask people to volunteer, they will help, and it will be very cheap", "The people living here have much to tell and they should be listened to", "The fishermen should be listened to, because they are pearls of wisdom."* However, residents are only willing to participate in the implementation of measures that

allow their permanence at the Beach, such as “planting plants and taking care of them” (to preserve the dune).

However, behavioral barriers to participation were also evident from residents’ discourses, mainly the threat perceived as distant in time, mistrust in authorities and the externalization of the responsibility/blame regarding coastal hazards and environmental problems. Regarding the latter, interviewees believe that *“All the risks from sea rise could be partially avoided if, for instance, the authorities plan or preserve the dune”*, *“The future of the beach will be black with what the authorities are planning to do”*, *“They should definitely take measures to avoid the risk”*, *“The administration only thinks about cleaning the beach, but not on keeping or maintaining the beach”*. Residents have shown disappointment for being invited only for informative sessions about measures to be implemented, but never to actual discussions about those measures: *“They should invite us to accompany the process of discussion, but no, they have only invited us once everything was decided; they never asked us anything”*, *“If we ask for a meeting, we have to wait forever”*, *“They have never communicated or asked us anything”*. The same scenario is observed in other coastal populations in Portugal, where people feel that their opinions are not considered by authorities, public meetings are not properly publicized and they consist more of public presentations of projects than discussions about them (Schmidt, Gomes, Guerreiro & O’Riordan, 2014). Indeed, public participation is usually very low in participatory strategies, because the majority of local people underestimates their potential influence (Schmidt *et al.*, 2014); this may lead to a low perceived self-efficacy regarding coastal management decisions, acting as behavioral barrier to participation in discussions and DRR plans. Consequently, the mistrust that residents feel towards authorities is obvious: *“The problems come from the relationship with the public institutions”*, *“I could say that we were abandoned by the institutions (in charge of the Ria Formosa)”*, *“(The politicians) promise but then they do nothing when they get to the power”*, *“The authorities have never met with us”*, *“They do not consider us anymore”*, *“There are too many conflicts of interests here that we are missing”*.

Figure 3. House threatened by storm-induced erosion at Faro Beach in the winter 2003 (the house seen in the photo is the same as in Figure 2)



Source: Author's photo

Besides the externalization of responsibility and lack of trust in authorities, interviewees also perceive coastal risks as distant in time. Perceiving a threat as distant in time or space

is a common psychological barrier that leads to a lack of concern and preparedness to act (Spence, Poortinga & Pidgeon, 2012). This psychological distancing has been most commonly observed for global scale risks such as climate change (Lorenzoni, Nicholson-Cole & Whitmarsh, 2007; Pidgeon, 2012), but it was also evident in Faro Beach residents regarding local coastal hazards: *“In the future, I think Faro Beach will stay like this, and if there are any changes they will take a long time, not during my generation or my children’s”, “We all think that someday the sea will come and it will make minor and major damages. Someday, the sea will take all the houses”*. Psychological distance is an important factor in shaping people’s concern and risk perception, and it should be considered in risk communication strategies and environmental politics (Spence *et al.*, 2012; Sacchi, Riva & Aceto, 2016). The large psychological distance that residents of Faro Beach demonstrate towards coastal hazards may have also contributed to their low risk perceptions.

Finally, considering that residents’ risk perceptions regarding coastal hazards are low, the externalization of responsibility and the psychological distancing, it is no surprise that their preparedness in case of disaster is also extremely low or even non-existent. When asked if they have measures or plans in case a storm or other event affects their houses or businesses, they said *“I don’t have a plan B”, “I don’t have another hypothesis, I’ll just wait and see what happens”, “We never had any problems, so we have no alternative plans”, “No, I don’t have any sort of preparation in case something happens; I cannot do anything against nature”*.

Given that a major goal of coastal management is to increase people’s preparedness and resilience to coastal risks, it is crucial to understand how and why individuals engage in preparation strategies (Lindell & Perry, 2000). Research has shown that preparedness is positively associated with risk perception (Miceli, Sotgiu & Settanni, 2008); given that risk perception is an emotional construct and it is affected by other variables that are mostly emotion-based, such as place attachment, it is clear that emotional factors are more important than cognitive ones in convincing people threatened by hazards to engage in preparation strategies. This is why giving people more information and education about hazards may not increase their risk perception, as intended. In fact, informed people, particularly those who expose themselves voluntarily to risks (Twigger-Ross & Breakwell, 1999), develop illusions that allow them to psychologically cope with the threats, and thus maintain their mental health and psychological well-being (Luís, Pinho, Lima & Roseta-Palma, 2016). This process, known as risk normalization, often results in a decrease in risk perception (Lima, 2004; Lima, Barnett & Vala, 2005; Luís *et al.*, 2016).

#### 4. CONCLUSION

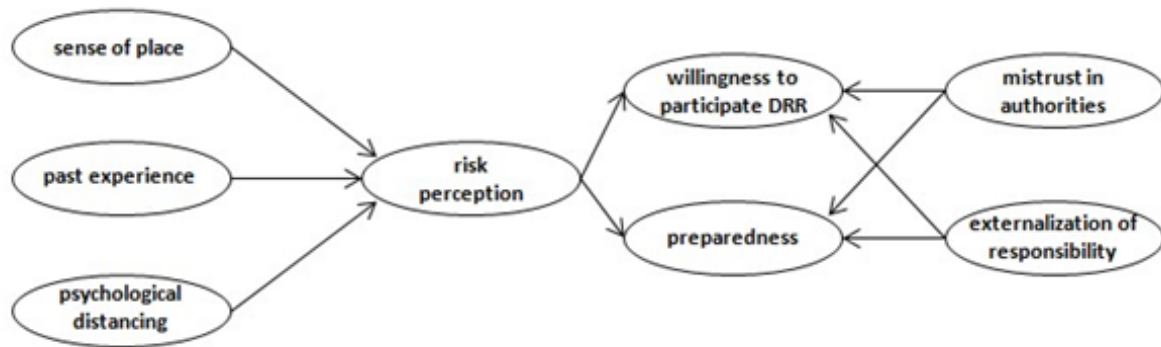
Faro Beach is an intricate case in terms of coastal management and implementation of disaster risk reduction (DRR) strategies. It is located in a highly ecologically and economically valuable ecosystem, subject to multiple anthropogenic stressors and highly vulnerable to extreme storm events that often result in house and road destruction. Local residents seem to be aware of the risks to which they voluntarily expose themselves to and all interviewees have witnessed coastal hazards, but given that there were never fatalities or serious consequences, they have low risk perceptions. Residents feel safe living at the beach and show no intentions of ever leaving, mostly due to their strong emotional attachment to the place, based on decades of residency, familial heritage and social ties.

Based on the qualitative content analysis, a conceptual model of risk perception, preparedness and related variables in Faro Beach residents was developed (Figure 4). Residents’ risk perceptions seem to be negatively influenced by their sense of place (includes place attachment, rooting, sense of community and place identity), their past experience



with hazards and their perception of threats as distant in time. Risk perception, in turn, influences residents' willingness to participate in disaster risk reduction strategies and their preparedness towards hazards. The mistrust that residents feel towards authorities and their (seemingly contradictory) externalization of responsibility also impact negatively their preparedness and participation in DRR measures. A psychometric approach should follow to quantitatively evaluate the proposed relationships.

**Figure 4. Conceptual model of risk perceptions, preparedness and related psychological and behavioral variables, based on interviews conducted with Faro Beach residents**



Source: Own Elaboration

In terms of socio-political implications, knowledge on the psychological dimensions of coastal hazards is critical for an informed and sustainable management. Education and information are not a panacea to solve environmental problems and may even have the opposite effect, by decreasing risk perceptions through the process of risk normalization (Luís *et al.*, 2016). Indeed, “people are not logical, they are psychological” (anonymous) – in order to increase awareness, risk perception, preparedness and resilience of coastal populations, *i.e.*, to change beliefs, attitudes and behaviors, a thorough understanding of the emotional, cognitive and conative processes that drive individuals is a critical component. Therefore, a holistic approach that integrates not only sociological, economic and ecological perspectives, but also a psychological one is critical to increase the effectiveness and feasibility of management plans and the implementation of DRR measures in vulnerable coastal regions.

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# GREEN INFRASTRUCTURE, CLIMATE CHANGE AND SPATIAL PLANNING: LEARNING LESSONS ACROSS BORDERS

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## ABSTRACT

Climate change will further induce a generalized rise in temperature, heat waves, exacerbation of heat island effect, alteration of the precipitation regime variability with higher occurrence of high precipitation and flood events, reduction of quantity and quality of freshwater resources, disruption of agricultural production, leading to food security risk, degradation of recreational and aesthetic amenities, and loss of biodiversity.

On other hand, Green Infrastructure, that is, the network of natural and semi-natural spaces within and around urban spaces, brings a constructive and protecting element that may mitigate and adapt to the local level impacts of climate change, strengthening local resilience.

This paper presents a comparative study of various green infrastructures' implementation based on analytics in the United States of America, United Kingdom and Portugal, and focuses on the degree of its alignment with the public policies of mitigation and adaptation to the impacts of climate change. Pursuant to the identification of successes and failures, this paper infers common strategies, goals and benchmarking on outcomes for more adequate decision implementation and sustainable spatial planning, considering the importance of green infrastructure.

Keywords: Green Infrastructure, Climate Change, Spatial Planning.

JEL Classification: Q01, R52

## 1. INTRODUCTION

Climate change will imply, with greater confidence a generalized increase in temperature, heat waves and exacerbation of the heat island effect, alteration of the variability of precipitation regime with higher occurrence of high precipitation and flood events (IPCC, 2012), reduction of quantity and quality of water resources, disruption of agricultural production with food security risk, loss of biodiversity and degradation of the landscape's aesthetic and recreational amenities (IPCC, 2014).

In turn, the Green Infrastructure, that is, the network of natural and semi-natural spaces within and around urban spaces, presents itself as a structuring element, whose enhancement

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contributes, offensive, defensively and opportunistically, to combat to the impacts of climate change, either in the order of mitigation or in the adaptation perspective.

Therefore, this article reviews the evolution of the Green Infrastructure (GI) concept, studies what elements can constitute a GI and its beneficial contributions to mitigation and adaptation, and compares the American and European GI Implementation Strategy through the analysis of three case studies (United States of America, United Kingdom and Portugal) in order to find learning opportunities across borders to inform the current spatial planning approach in Portugal.

## 2. GREEN INFRASTRUCTURE AND CLIMATE CHANGE

### 2.1 Concept

Although the concept of Green Infrastructure is relatively recent, it has underlying notions that go back to the beginning of Environmentalism, Nature Conservation and the intervention of Landscape Architecture in 19th century urbanism (Sussams, Sheate & Eales, 2015).

In the nineteenth century, the industrial revolution led to an enormous demographic and urban growth, which was associated with a growing increase in insalubrity in cities. Thus, it emerged the foundation of the first hygienist doctrines in urbanism (Campos & Ferrão, 2015). Patrick Geddes, botanist and urbanist, progenitor of modern urban planning, noted the important interdependence between cities and the surrounding territory, attempted to understand city-region relations and proposed, for England, the Town Planning Movement (Fadigas, 2010), a system of regional inventories based on the complex relationships between the actions of Man and the Environment.

The Green Infrastructure has its origin in two basic concepts, namely the establishment of connections between green spaces and parks, in order to benefit populations and biodiversity preservation through the delineation of counterpoint corridors the habitat fragmentation. This was the corollary of the architect Frederick Law Olmsted through the introduction of the concept of “*green lungs*” and park systems: Central Park in New York (1857) and the Boston Parks System (Emerald Necklace, 1887) (Benedict & MacMahon, 2001).

Later, Ebenezer Howard presented the concept of garden city in 1898, proposing a model of urban organization through a symbiotic structure between city and countryside, where a polynuclear constellation of low density settlements, self-sufficient in agricultural production linked by green corridors and railroads, surrounded the large cities, providing them with the necessary inputs (Fadigas, 2010; Scott & Lennon, 2016). Howard’s ideas propelled the Greenbelts Movement, being expressed in the radial and concentric green rings of Vienna (1859-1872) and in the linear city concept of Madrid, idealized by Arturo Soria (1894). All these movements would be the origin of the concept of *Continuum Naturale* between urban and rural space, as a link between the respective landscapes, approaching the two respective modes of life (Magalhães, 2001).

In the 1920s and 1930s, the modernist functional city model, really popularized by Le Corbusier in his proposal of *Ville Radieuse*, emerged in an attempt to segregate large areas through distinct functionalities, based on the renunciation of Baroque urban continuity and the densification of the residential, commercial industrial and services buildings, neglecting green spaces, mainly destined to recreation and leisure, which were allocated between urban areas dedicated to labour and housing (Correia, 2012). Functional cities were drawn without respect for topographic and climatic conditions, resulting in grotesque concrete landscapes (Scott & Lennon, 2016).

If this was the model adopted in Europe, the United States demarcated by the adoption of a new one, postulated by the architect Frank Lloyd Wright, namely the Broadacre City,

a dispersed city, consigning the dissolution between the rural-urban binomial and the organization of an efficient system of highways (Scott & Lennon, 2016).

One might think that the benefits of this intertwinement with Nature would find their climax through the scattered city of Wright, but the praxis proved somewhat different.

The oil crisis of the 1970s denounced the unsustainability of this dispersed city, since urban expansion had been made in such a vast space extent and sparse density, that is, a suburbanization oriented by the stimulus of locomotion became unbearable due to the costs of management and living within it (Scott & Lennon, 2016).

Postmodernism introduced a concept of New Urbanism, an approach that advocated the compact city, driven by a dense transport network, creating a city of locomotion at short distances. Urban intensification has had obvious benefits, such as conserving rural areas, reducing the need for car transport, and consolidating greater efficiency in city infrastructure (Scott & Lennon, 2016).

This renunciation of urban dispersion was followed by the ecology crisis of the 1960s and by the rise of landscape ecology in the 1980s. Phill Lewis (1964) introduced the concept of Environmental Corridors, delineated along hydrographic lines, wetlands and coastal zones, ensuring the mobility of species through the interconnection of habitats and safeguarding the areas with the highest ecological sensitivity to anthropogenic degradation (Correia, 2012), a reference that would be homologous to the evolution of the concept of Green Corridors and Greenways. As a result of the emergence of Geographic Information Systems, biophysical planning emerges in this period, influencing all planning approaches since then, of which the McHarg method of landscape attributes layer overlapping is the ultimate example.

Citing Correia (2012), the recognition of the need to reverse the growth paradigm through the emergence of the concept of sustainable development emanated from the *Brundtland Report* and, since then, the environmental component in planning has been increasing (Partidário, 1999).

In 1991, the State of Maryland developed a plan to delineate an GI, the first with the intent of permeable biodiversity movement, conservation of sustainable land use structure, establishment of recreational pathways and alternatives to human locomotion within a context of urban expansion that tended to govern this US state (Benedict & MacMahon, 2006).

However, in addition to stimulating connectivity between habitats, other concerns came up within green infrastructure planning, such as mitigation and adaptation to climate change, for which the new compact city was found to be deeply vulnerable (Scott & Lennon, 2016). The urban model did not fail to have a high energy and emitter of greenhouse gases (GEE) consumption profile. Therefore, it is not surprising that the concept of Green Urbanism (Beatley, 2012) grew up, which states that human systems must exist through their ecological limits and in self-sufficiency, functioning analogously to Nature and developing nature-based solutions to solve the present and future problems through a biophilic relationship between Nature and Man. This idea was idealized also by the concept of Global Landscape, in which “the organic interpenetration between the building and the outer space, urban or rural, complement each other, through the continuity of existing mass and energy flows in them and between them” (Magalhães, 2001: 320).

Benedict & MacMahon (2006) define Green Infrastructure as an interconnected network of natural areas and other spaces that conserve the values and functions of natural ecosystems, sustaining the purification of air and water, providing a series of benefits for the population and protecting biodiversity.

The European Union have used a concept more focused at the scale of the regional landscape, and, at urban level, the term has been deprecated by the recurrence of “Green Spaces” and “Green Systems” (EEA, 2011: 33).

Matthews, Lo and Byrne (2015) and Sussams *et al.* (2015) assume the difficulty of conceptualizing the term of Green Infrastructure and the problem of communication among the spatial planning experts and stakeholders, since there are many examples of the definition of Green Infrastructure that have appeared in the scientific and technical literature (EEA, 2011).

Sussams *et al.* (2015) points out that the Green Infrastructure concept is in line with the ecosystem approach developed in the Convention on Biological Diversity (CBD) COP5, which adopted a strategy for integrated management of soil, water and living resources, emphasizing the need for increased cooperation at all levels. The Millennium Ecosystem Assessment (MEA), by bringing the importance of ecosystem services to the economic sphere, represented an opportunity to recognize the importance of green infrastructure planning. The converging bridge between the concept and the adaptation to climate change was made by the White Paper on Adapting to Climate Change, which recognized Green Infrastructure as crucial for the provision of social and economic benefits in extreme climatic conditions.

Drawing on concepts emanated from various academic and institutional forums, the European Commission, in 2013, delineate the Green Infrastructure Strategy and defined GI as a strategically planned network of natural and semi-natural areas, designed and managed to provide a wide range of ecosystem services. It incorporates green spaces (or blue, involving aquatic ecosystems), and the terrestrial green infrastructure is present in both rural and urban space. Today, it is considered a “Europe 2020” priority and is reiterated by the European Union’s Biodiversity Strategy for 2020 (EC, 2013).

Thus, the pertinence of defining which concept of Green Infrastructure will guide the development of the work that is here presented. As such, it is understood that Green Infrastructure can be defined as a network of natural and semi-natural spaces within and around urban spaces including gardens, lakes, parks, cycle paths, green roofs, green corridors, rivers, wetlands, agricultural fields and forest areas of sustainable use, among others, whose interconnection confers additional benefits and strengthened resilience (EEA, 2011). This network is based on the preservation and enhancement of ecosystem connectivity in order to maintain or increase the provision of ecosystem services and their resilience, including mitigation and adaptation to climate change. It is, of course, a territorial strategy to minimize the risks of natural disasters, based on solutions inspired by the integration of Nature, rather than heavy engineering solutions. The delineation of GI is part of the identification of multifunctional areas that incorporate not only the regeneration and the perpetuation of ecosystems, but also the food and forest production, recreation and leisure of the populations (EEA, 2011).

## 2.2 Constituent elements

It is now important to uncover and systematize the potential components of the green infrastructures (EC, 2010), both on regional landscape or urban scale:

- Protected areas;
- Healthy ecosystems and areas of great natural value beyond protected areas, such as flood plains, wetlands, coastal areas, forests, among others;
- Natural landscape elements, such as waterways, wooded areas, hedges and natural passages that function as ecological corridors;
- Areas of recovered habitats for the preservation of certain species, either by the expansion of the protected areas or areas of feeding, rearing, resting and of favouring migration and geographical distribution;
- Ecoducts and ecobridges, that is, artificial elements designed and constructed to allow the movement of species through insurmountable landscape obstacles;

- Urban elements, such as parks, walls and green roofs, which are still niches of biodiversity and provide a series of urban services, linking urban, peri-urban and rural areas;
- Multifunctional areas, where the sustainable agricultural and silvicultural used is practiced, allowing the maintenance and regeneration of ecosystems, based on the prohibition of practices that lead to their degradation.

### **2.3 Benefits**

Green Infrastructure provides a series of multiplicity of abiotic, biotic and cultural benefits, such as (Ahern, 2007; Boyd & Banzhaf, 2007; Madureira, 2012): provision of food, provision of raw materials, pharmaceutical products and others, provision of drinking water, assimilation of waste and pollutants, benefits for public health, lower the risk of natural disasters, existence of habitats and biodiversity, recreation and tourism, landscape aesthetic quality, inspiration, cultural, religious and emotional value, education and knowledge.

The main mitigation benefits of GI are: atmospheric gas regulation through carbon sequestration (Nowak, Greenfield, Hoehn & Lapoint, 2013), reduction of energy use in heating and/or cooling of buildings by increasing the area in green spaces, green roofs and green walls (Alexandri & Jones, 2008; Demuzere, Orru, Heidrich, Olazabal, Geneletti, Orru, Bhawe, Mittal, Feliu & Faehnle, 2014), proximity agricultural and other materials production (Beatley, 2000) and encouraging sustainable locomotion (NDRA, 2010). On other hand, the essential adaptation benefits based on GI are: reduction of urban heat island effect and increased thermal comfort (Gill, Handley, Ennos & Pauliet, 2007), regulation of water quantity and quality (NDRA, 2011), storage and drainage of water, reducing floods (Demuzere *et al.*, 2014), connectivity between habitats (NDRA, 2010; EEA, 2011), alternative recreational and leisure opportunities beyond sun and beach, public health contribution, stimulation of adaptive capacity and education (Tzoulas, Korpela, Venn, Yli-Pelkonen, Kazmierczak, Niemela & James, 2007; Demuzere *et al.*, 2014).

### **2.4 American strategy**

The United States Environmental Protection Agency (EPA) is the institution that ensures that federal environmental protection laws approved, in Congress, are implemented within each state through the formulation of regulations, programs, scientific research, education and information.

In the absence of a respective GI federal strategy, the implementation of urban and rural green infrastructures has been essentially oriented and encouraged by the EPA GI Municipal Handbook and, at the level of each state and municipality, by policies, laws and funding programs focused on the capacity of the same GI mitigate the risk of weather damage, reduce the runoff, gray water volumes that reach sanitation systems and floods, and filtrate pollutants. So, Green Infrastructure, as a tool for territorial management, has been, mainly, assumed on storm management regulations, in which the more or less ambitious implementation has depended, immensely, on the good will of each state and/or municipality.

Already focused on the interrelationship between Green Infrastructure and Climate Change, the EPA in its report “*Green Infrastructure and Climate Change - Collaborating to Improve Community Resilience*” (2016) already signalizes several initiatives that, in the absence of a binding federal strategy, have emerged in the country by voluntarism of some states and municipalities:

- *City of Albuquerque, New Mexico*: in order to face the expected impacts, namely and mainly, the continued flooding, hotter temperatures, longer and more severe droughts,

significant stream flow reductions and reduced surface water allocation, green infrastructure has been enhanced on public and private property as a way of meeting stormwater permit for on-site detention and treatment, supplying irrigation water, reducing impacts of flooding and peak stormwater flow, shading and cooling buildings, providing parking areas and increasing habitat areas through the identification of potential and permit compliance projects and the education of stakeholders about the concept and benefits of green infrastructure and funding programs (EPA, 2016);

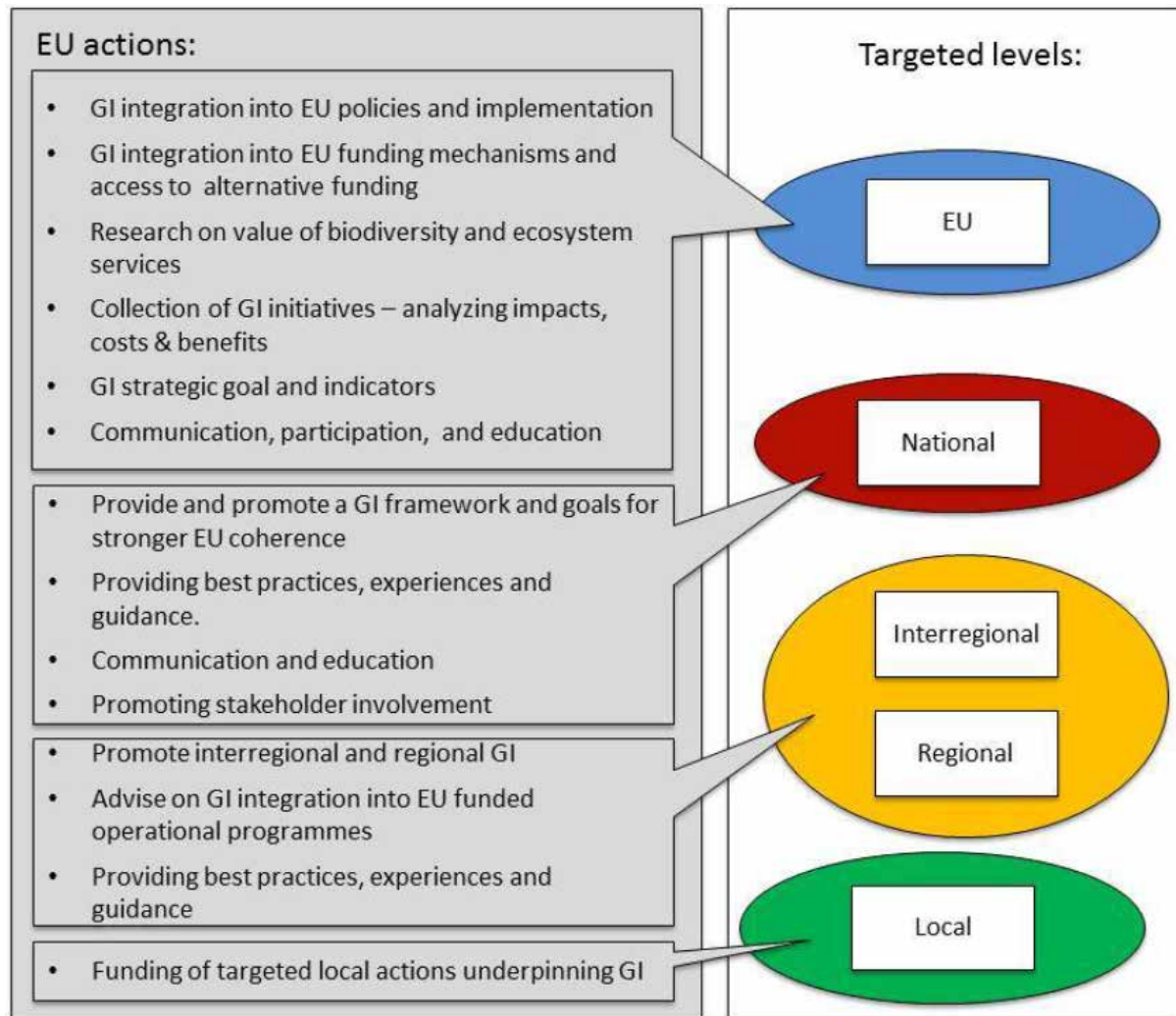
- *City of Grand Rapids, Michigan*: green infrastructure practices have been used to increment climate resilience through the storage of rainwater for groundwater reserves, harvest of rainwater on site for irrigation or other uses, usage of green engineering solutions like bioretention areas that mitigate floods and improve the water quality, and trees and green roofs for lowering the energy use consumption, and reducing heat island effect (EPA, 2016). Therefore, to reinforce community resilience, the city of Grand Rapids implemented a series of plans, such as the Grand Rapids Master Plan (2002), Green Grand Rapids (Grand Rapids, 2012), Grand Rapids Climate Resiliency Report (2013), Grand Rapids Forward – Downtown and River Action Plan (2015) and the Sustainability Plan (2015);
- *City of Los Angeles, California*: presently, the City imports an average from 385,500 acre-feet of water from Northern California and the Colorado River, an unsustainable system and ineffective due to the persistent drought. Thus, the Mayor's Sustainable City Plan defined the goal to reduce imported water by 50 percent by 2025, increase the percentage of water sourced locally by 50 percent by 2035 and reduce overall water consumption by 20 percent by 2017. To achieve these goals, it has been planned to use green transportation corridors to capture, treat and store stormwater for multiple uses and to infiltrate runoff into the aquifers for eventual use as drinking water, enhancing, simultaneously, recreation spaces (EPA, 2016);
- *City of New Orleans, Louisiana*: with a huge vulnerability to sea level rise, storm surge, extreme heat and intense precipitation, impacts that will increase wetland loss, New Orleans planned a green infrastructure throughout the enhancement of parks and recreation lands, schools and other institutional sites, public right-of-way corridors and city-owned vacant lots for reduce water pollution, flood volume, energy use, greenhouse gas emissions, and urban heat island impacts (EPA, 2016).

## 2.5 European strategy

With 82% of Europe's territory outside the Natura 2000 Networks and through the risks inherent to climate change, the European Green Infrastructure Strategy (EC/CIRCABC, 2012), defined by the European Union in 2013, is an approach to stimulate interconnectivity between ecosystems and to encourage nature-based solutions to meet environmental, economic and social needs through the fulfilment of the challenging objectives of mitigation and adaptation to climate change, biodiversity conservation and the delivering of provision, regulation, support and cultural ecosystem services.



**Figure 1. Multiscale tasks of European Green Infrastructure Strategy implementation**



Source: EC/CIRCABC (2012). Recommendations for an EU Green Infrastructure Strategy. GI tasks – Recommendations. Accessed in 4th January 2017 in: <https://circabc.europa.eu/d/a/workspace/SpacesStore/bd0f71b6-e38f-4580-8d50-3dcb16eccc1b/GI%20TASK%201%20RECOMMENDATIONS.pdf>.

In addition to the strict mapping of the constituent elements of the Green Infrastructure, this territorial figure should be guided by its strategic integration, not only, in environmental policies. It should be sought for integrated management in the energy, transport, agriculture and territorial cohesion policies, the study of best practices, communication, education and promoting the participation of all stakeholders. Beyond the convergence of this strategy within each national legal structure, other mechanisms and strategies may also promote GI as territorial management tool, namely the White Paper on Adaptation to Climate Change, Habitats Directive, Birds Directive, Directive Water Framework, Flood Risk Assessment and Management Directive, and Environmental Impact Assessment and Evaluation.

The planning of green infrastructures is, therefore, not only been guided by the school of modern Land Use Planning, but also integrating a strategic and flexible approach where different actors interact and cooperate, namely through the Spatial Planning approach (Ferrão, 2014).

But at to what extent this strategy influenced the recognition of the importance of GI? Two case studies are studied in the present article: United Kingdom (UK), by the analysis of the kingdom of England, and Portugal.

### 2.5.1 Case study: England (UK)

Despite the referendum over the past months, the United Kingdom is an example of recognizing the interrelationship between green infrastructure and climate change. It's Natural England, a non-departmental public institution, that oversees England's environment protection. This kingdom is the only one to be analysed, since it's the most representative of United Kingdom territory, where spatial planning policy is very diversified between England, Wales, Scotland and Northern Ireland kingdoms.

Natural England distinguishes the design of the green spaces dedicated to sport and recreation from GI, considering the "big picture", that is, GI at regional landscape scale. There are a number of policy instruments for GI spatial planning and adaptation to climate change (Natural England, 2010):

- Planning Policy Statement 1 (PPS1): defined in 2007, green infrastructure and biodiversity as key factors in mitigation and adaptation;
- Local Spatial Planning (PPS12): request local authorities to establish a green infrastructure at local level (2008);
- Climate Change Act: this 2008 law also assumes GI's as a structuring element in mitigation and adaptation to climate change;
- The North West England region assumed the recognition of green infrastructure services in climate change mitigation, since 2007, when defined North West Climate Change Action Plan.

### 2.5.2 Case study: Portugal

The Green Infrastructure, conceptually, are homologous to the Portuguese territorial management instrument of Ecological Structure (Magalhães, 2013). The Green Infrastructure consists of a structure of natural and semi-natural areas, urban green spaces, agricultural and forest non-disruptive areas, rivers, wetlands, green hedges, ecobridges, ecoducts and bicycle paths (Naumann *et al.*, 2011). Coinciding with the same objectives, the Ecological Structure is understood as areas and fundamental systems for the protection and environmental enhancement of rural and urban spaces, namely the ecological reserve areas (article 14 of Decree-Law n.º 46/2009 of February 20th). Both converge in the contribution to the conservation of the biodiversity and the enhancement of the ecosystems services provided to the populations. There are, already, several territorial management instruments (IGT) that assume GI's environmental safeguard assumptions (Magalhães, 2013):

- *Water Public Domain (DPH)*: comprises the public domain of the sea, lake and rivers and its contiguous areas, as well as lakes, lagoons and navigable or floatable waterways;
- *National Agricultural Reserve (RAN)*: it includes the areas that, in terms of agro-climatic, geomorphological and pedological suitability, are more apt for agricultural activity;
- *National Ecological Reserve (REN)*: it is considered as a biophysical structure that integrates the set of areas that, due to ecological value and sensitivity or susceptibility to natural hazards, are protected;
- *National System of Protected Areas (SNAC)*: including the National Network of Protected Areas, Sites of the National List of Sites, Natura 2000 Networks and other protected areas under international commitments assumed by the Portuguese State, namely Important Bird and Biodiversity Areas, Ramsar Sites, Biosphere Reserves, Biogenetic Reserves and Goessites.

The Ecological Structure was inserted in the Portuguese legal framework, through Decree-Law n.º 380/99 of September 22th, recognizing the urgency of its integration at

national, regional and municipal level, and was later amended by Decree-Law n.º 46/2009, of February 20th.

The attempt to delineate a national ecological structure was carried out within the scope of the scientific project PTDC/AUR-URB/102578/2008 - “*National Ecological Structure - a proposal of delimitation and regulation*” of Superior Institute of Agronomy, University of Lisbon.

At the regional level, this aim was fulfilled through the delimitation of the Regional Structure of Environmental Protection and Enhancement (ERPVA) in the Regional Strategic Plans.

Regarding the municipal scope, the ecological structure was defined just in some municipalities. The 1992-93 Lisbon Green Plan was the first to use the concept of ecological structure, and, today, the *Ecological Structure* is delimited for the Lisbon Metropolitan Area (Magalhães, 2013). However, the definition of a Municipal Ecological Structure, a gap evident in most portuguese municipalities, is still an unreachd goal.

Following the establishment of the general bases, land use planning and urbanism by the Law n.º 31/2014 of May 30th, the revision of the Legal Regime of Territorial Management Instruments (IGT) by the drafting of Decree-Law n.º 80/2015, of May 14th, stipulates that in regards to Ecological Structure, so that “*territorial programs and plans should identify the areas, values and fundamental systems to the protection and environmental in rural and urban spaces, including regional and municipal environmental protection and enhancement networks*”.

In the future, an effective systematization of all the concepts and instruments related to the ecological structure is expected. That should be made through the alignment of GI's territorial management instruments with the strategic axes and sectoral measures of the National Adaptation Strategy to Climate Change (ENAAAC) (APA, 2015).

## **2.6. Comparative analysis**

The following table presents a learning comparison between the implementation of Green Infrastructure in United of States of America, England (UK) and Portugal.

Table 1. Learning comparison of Green Infrastructure implementation in USA, England (UK) and Portugal

<i>Green Infrastructure Implementation: learning comparison across borders</i>	USA	ENGLAND (UK)	PORTUGAL
<b>Robustness of the Green Infrastructure planning approach</b>	<p><b>+/-</b></p> <p>(depends, strongly, on the voluntarism of each state and municipality; not bidding)</p>	<p><b>+</b></p>	<p><b>+/-</b></p> <p>(lacks municipal congruent implementation)</p>
<b>Alignment of GI with Mitigation and Adaptation Policies</b>	<p><b>+</b></p> <p>(depends, strongly, on the voluntarism of each state and municipality; not bidding)</p>	<p><b>+</b></p>	<p><b>+/-</b></p> <p>(although it does lead to enhanced resilience of ecosystems, it was not, purposely, planned for it)</p>
<b>Public initiative</b>	<p><b>+</b></p>	<p><b>+</b></p>	<p><b>+</b></p>
<b>Influence of American or European Green Infrastructure Strategy at state level</b>	<p><b>-</b></p> <p>(there is no strong or bidding strategy)</p>	<p><b>-</b></p> <p>(historical background of other previous initiatives has led to the consolidation of Statements and Acts and act that reflect already GI objectives)</p>	<p><b>-</b></p> <p>(historical background of other previous initiatives has led to the consolidation of IGT that reflect already GI objectives)</p>

Source: Own Elaboration

### 3. CONCLUSION

As final reflection, it is assumed that the concept of Green Infrastructure is not, at all, new, since it comes from the very historicity of the schools of Landscape Architecture, Urbanism and Geography in the *praxis* of Spatial Planning.

Such convergence does not contribute to the loss of the variety of approaches that are more regulating, sometimes more strategic, which are increasingly efficient and enrich the current territorial planning policy (Ferrão, 2014).

It's acknowledgeable that USA doesn't have a congruent strategy, depending, in this matter, on the voluntarism of each state and/or municipality, with few examples of Green Infrastructure being used in mitigation and adaptation to climate change.

It has been found that England is the only case study that already outlines a strategy of enhancing green infrastructures as a factor of mitigation and adaptation of the territory, whereas Portugal do not yet conjugate the recognition of this interrelation. This premise derives from the existence of different cultures of territory and still persistent land-use planning approach, which are inherent to different cultural backgrounds and respective governmental structures (Ferrão, 2014).

The converging influence and stimulus of the European Green Infrastructure Strategy was not strong, because it, at that time, was already, in a sense, fulfilled in the States studied, before the definition of this strategy implementation.

However, the greatest challenge now, for Portuguese spatial planning policies, is the combination of territorial management instruments that shape green infrastructure with the measures envisaged by ENAAC as a counterpoint to the inherent environmental, economic and social degradation of climate change.

In this line of thought, which is also consonant with the restructuring of the legal framework of Portuguese IGT to an increasingly strategic approach, green infrastructures are reiterated as factors of territorial flexibility, as opposed to the strict and former prohibitive character of use in order to allow development through the sustainable production of region's endogenous resources, ecotourism, recreation, generation of renewable energy among many, redefining the paradigm between the old and new values in regional spatial planning, that is, building the transition from the idea of the *static constraint* into its transformation in an opportunity for sustainable development (Correia, 2012).

In Portugal, being the Green Infrastructure already mapped at national and regional level, the greatest challenge now will be its delineation at local level through the design of Municipal Ecologic Structures at the revision of Master Plans, in line with the strategy of mitigation and adaptation to climate change, similarly how it's done in England. This implementation should not, strictly, focus on the building prohibition, but fundamentally on planning the biophysical and economic suitability to green roofs, green walls and green spaces in urban areas, while in rural areas it's capital to plan and manage a proximity agricultural and forestry production and to unveil, sustainably, recreation, leisure and tourism spaces based on nature and landscape as a diversifying alternative to the sea level rise highly vulnerable sun and beach cluster. Without waiting for voluntarisms, the public initiative for planning these municipal green infrastructures must, under the risk of not going beyond the former and strict land-use planning approach, go forward strategically, not only mapping, but also assuming incentive mechanisms, education programs and auscultating the concerns of private stakeholders, an eminent condition for the public policy success.

That said and despite the fact that the multifunctionality of green infrastructures appears as a shield to climate degradation, it should be noted that their contribution is not unlimited. As such, only a transformative biophilic approach to the planetary ecological limits (Wilson, 1986; Beatley, 2000) and the reach of a circular metabolism of human systems can solve the ultimate question, a resolution of which Green Infrastructure can, to some extent, assist.

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# SPATIAL EFFECTS AND EXTERNALITIES OF THE RIVALS' NETWORKS IN HUNGARY

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## ABSTRACT

Empirical results of the concept of territorial capital suggest that the Hungarian regional economic development is defined by the coopetitive networks of small- and medium-sized enterprises (SMEs). Therefore, overall purpose of this paper is to scrutinize theoretically and empirically on one hand the structural characteristics of the Hungarian coopetitive networks of SMEs, on the other hand is to analyze effects of the networks of same firms on regional economic development. Altogether three Hungarian coopetitive networks of SMEs were found and analyzed longitudinally embracing 127 entrepreneurs thus 127 interviews and 127 questionnaires were conducted as well. Since the coopetitive networks of enterprises have territorial extension, the advanced methods of network science and spatial econometrics were combined. The key findings show that focal firm plays outstanding role in redistributing market information, organizing mutual transportation and guarantees robustness of the coopetitive networks. Finally, the coopetitive networks of SMEs determine significantly the new jobs creation and pay raise, in general, the accumulation of territorial capital at regional scale as well.

Keywords: Nodal regional economic growth, Spatial network analysis, Coopetitive networks, Power-law degree distribution

JEL Classification: D62, F12, L24, P13

## 1. INTRODUCTION

The Hungarian regional economic development and growth are determined by the inter-firm relationship (Jóna, 2015a; Jóna, 2015b), thus the paper theoretically and empirically concentrates on scrutinizing the Hungarian coopetitive networks of SMEs and the effects of the networks of rival firms on the regional economic growth. The coopetition has occurred as a new category in the terminology system of social sciences that refers to the special dynamic interplay between same firms in which the competitors collaborate and compete with each other simultaneously (Bradenburger & Nalebuff, 1996; Gnyawali & Park, 2011; Pathak-Wu & Johnston, 2014; Raza-Ullah, Bengtsson & Kock, 2014; Lindström & Polsa, 2015; Gnyawali, Madhavan, He & Bengtsson, 2016). By applying coopetition, the market automatism does not disappear from economic structure, of course. The competition remains in hegemony in the economic setting but in some place of business life the enterprises in network of SMEs collaborate to achieve effectively their purposes. The paper concentrates only on effects of coopetitive networks on regional economic development but does not consider the network evolution.

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Moreover, well-known fact that every cooperative network has territorial extension so a territory which is covered by a network is has to be named as a *nodal region* (Nystuen & Dacey, 1961; Thilenius, Havila, Dahlin & Öberg, 2016). Since economic networks, economic relationships and the territorial concentration of economic activities create nodal region, it must be scrutinized by combining toolkits of network science and spatial econometrics. Taken together, the paper thus describes impacts of the cooperative networks on the economic development of nodal regions (hereinafter: regions). Spatial extensions of the cooperative networks are illustrated by maps in the paper.

The overall purpose of this paper is on one hand to scrutinize theoretically and empirically operational automatisms of three Hungarian bottom-up cooperative networks. Whereas every cooperative network possesses geographical extension, these are dissected by applying advanced (both basic and novel) toolkits of spatial network analysis to understand architectures and territorial impacts of cooperative networks. On the other the paper elaborates a network measurement model with which spatial effects of cooperative networks can be operationalized longitudinally as well.

## 2. THEORETICAL UNDERPINNINGS AND EMPIRICAL OVERVIEWS

Empirical results of the concept of territorial capital suggest (Jóna, 2015a; Jóna, 2015b) that the Hungarian regional economic growth and development have been determined by networking of the small- and medium-sized enterprises (SMEs)<sup>3</sup>. More precisely, the inter-firm relationship has outstanding role in the regional economic growth therefore the methods of network science must be applied to analyze trajectory of regional economic development (Stimson, Stough & Nijkamp, 2011; Stimson, 2014).

At first time Hakansson and Snehota (1995) concentrated on examining the evolving of the business networks theoretically and empirically, the basic information and characteristics of the entrepreneurial networks were mustered by them. They stress that the business network is not 'an island but a multiple system' encompassing human being with emotion, regional past, traditions, special socialization, etc (Hakansson, 2015). It is clear, the entrepreneurial decisions, performances and the networking can be determined by on one hand exogenous and endogenous assets and on the other hand regional proximities as well (Boschma, 2005; Torre, 2008; Torre, 2011; Bernela & Levy, 2015); these usually have to be taken into account by the regional economic analysis.

It has to be emphasized that the networks of companies have spatial components and dimensions, in the early 1960s so many scholars described and concentrated on it (Haggett & Chorley, 1969). Notwithstanding, this perspective had lasted only a few years and the academic investigations subsequently focused on innovation potential of networks. Nowadays, increasing number of papers has again dealt with territorial effects and patterns of the network of SMEs; the network approach in researches has been shifting fast in this field.

Furthermore, the networking of firms has been configured in every type of regions, numerous empirical studies corroborate that social and economical bonds have been formed among local small enterprises in peripheral, semi-peripheral and core regions as well (Dubois, 2015). Eventually, it seems nowadays the SMEs' networking can be revealed irrespective of territorial development level.

Moreover, as the network structure is analyzed intensively in the next chapters, the scale-free architecture of network has to be understood adequately. Obviously, the random graph theory cannot describe the network scheme in the nature but the Barabási-Albert model

<sup>3</sup> According to the Hungarian law system, the SMEs can be defined as firms that have no more 250 employees or its balance sheet total is no more the 43 million Euro/year. The paper accepts this definition.

can grab it (Albert & Barabási, 2002). Fundamentally, the scale-free network structure can be defined as power-law degree distribution. The degree distribution illustrates how often nodes occur with varying edges in a certain network. Simply put, usually one or only some nodes have a large number of connections in the network, in so doing, most of the agents have only a few links thus hubs (high degree nodes is called hub) are formed that guarantee the robustness and integration of the network. The power-law degree distribution system is usually evolved by preferential attachment automatism referring to the more connected players, the more likely it is to receive new and new ties (Albert, Jeong & Barabási, 2000). Consequence of the scale-free network topology is that the robustness of network becomes high. More precisely, in the network of SMEs there is a focal firm that is known by everyone in the network, playing prominent role in the allocation of information, organizing, coordinating and integrating the actors of network. Ultimately, the dominant firm (the hub) is defined as the Achilles Heel of network of SMEs (Albert *et al.*, 2000; Albert & Barabási, 2002) since it is the main actor in the network.

The scale-free network structure has advantages and drawbacks as well. Barabási (2015) accentuates advantages of scale-free network architecture finding out that the power-law degree distribution can protect network against random attacks. In general, if an actor is gone out of the network by a random attack, the network can operate on because the network loses a node with a few connections. It is because, most likely, a member with a few connections would be attacked thus the network lost low value. Moreover, the paper emphasizes that scale-free property shows that the focal firm that integrates and manages the network.

Finally, the functions of focal firm belong to intensive academic dispute. On one hand numerous scholars (Hakansson-Snehota, 1995; Hakansson, 2015) argues that central firm can create dictatorship within the network, on the other hand Barabási (2015) notes that scale-free topology provides robustness of graph thus it can protect itself against different attacks.

Nowadays, the entrepreneurial alliances have meaningful role in the bargaining, by collaborating with each other so that SMEs could take the best bargaining power against certain service providers (such as electricity, gas and central heating companies). For example, if local SMEs corporate with each other to reach cheaper services, certain services provider may treat them as a vast venture thus the lower prices will be provided for the players of networks. The Hungarian law system absolutely permits the entrepreneurs to corporate with each other in such way and to decrease their expenditure. Actually, the corporation of competitors brings confidence relations, new possibilities and positive externalities for enterprises by at interregional level as well (Karlsson, Johansson & Staught, 2005).

The networking of SMEs facilitates the cooperation in some fields such as cost transaction and mutual transportation, risk reducing, collective learning (Hakansson, 2015), knowledge spillover (Carrington & Scott, 2005), product development (Jackson & Watts, 2002), technical shifts, information changes, R&D collaboration and adaptation of innovation (Karlsson *et al.*, 2005). Moreover, within the inter-firm network so many formal and informal communication channels can be formed so that the entrepreneurs could share market information and knowledge spillover effect could be evolved as well. Marshall's early profound work argues that the regional inter-firm relationship might promote to the internal economies of scale and the accumulation of endogenous assets as well (Marshall, 1930).

In this respect, the proximity has meaningful function in the networking of SMEs. The proximity has so many types in the modern regional studies; Boschma (2005) distinguishes social, cognitive, organizational, institutional and geographical proximities. Those networks of SMEs manage to work successfully in practice which struggle that the above mentioned proximities prevail between firms. The related literature, in particular the French School of

Proximity (Torre, 2008; Torre, 2011; Bernela & Levy, 2015), accentuates that in these days the role of technological proximity has been emerging so the combinations of proximities define evolution and function of the networks of entrepreneurs. When these proximities evolve at inter-firms level, bottom-up networks can be established contributing to the accumulation of territorial capital and to the equilibrium of regional economic development. For example, Czernek and Czakon (2016) underscore in their case study that some Polish cooperative networks of SMEs (for instance in the tourism sector) can operate well if among firms exist emotional and physical proximities; this condition causes trust-building between firms defining regional economic growth. In such socioeconomic circumstances the networks of SMEs could be easily formed as well. Moreover, other scholars highlight that the physical and cognitive proximity determine the knowledge sharing, investments and complementary capabilities, furthermore 'when cultural sensitivity is low, psychic distance takes on greater importance in attenuating relationship value, whereas when cultural sensitivity is high psychic distance has no discernible effect' (Skarmeas, Zeriti & Baltas, 2015). To sum, the proximities can impact significantly on the qualities of inter-relations in the networks of firms.

Significant close connection is recognized between the networks of SMEs and regional economic growth; it can be proved by not only conceptually but also by empirically as well. Tangible examples of the economic networking are the Silicon Valley and Hollywood (Cohen & Fields, 1999); 80 percent of the Italian agricultural sector based on small family business (Ciravegna, Lopez & Kundu, 2014; Gurrieri, 2014; Campopiano, Massis & Cassia, 2016) and almost whole Danish economic structure has been based on the networks of SMEs (Chetty, Partanen, Rasmussen & Servais, 2014). Finally, the network of SMEs and its spillover effects are found in all economic systems around the world so it works in practice as well.

A large number of theoretical and empirical investigations confirm that the SMEs' networking has meaningful role in the regional economic development but only the networking is not enough. The network of SMEs has to be embedded in the social and economic structure in order that the synergy effect could escalate and thus a region can step on a stable and harmonic development trajectory (Meschi & Wassmer, 2013). Embeddedness of a network means that the entrepreneurs of network and their acts are accepted fully by the local residents and communities thus the networks are integrated in the multiple regional settings (Granovetter, 1985); the networks of SMEs become the organic component of the local traditions, characteristics and milieu. Malecki (2012) suggests that the local embeddedness can be defined by social capital that refers to 'the overlap between the social and economic spheres of human life.' (Malecki, 2012: 1025). Eventually, the topic of local embeddedness seems relevant, however, operationalization of its elements are still vague.

On one hand, the structure of economic networks is needed to be analyzed by graph theory (Jackson-Watts, 2002), on the other hand, network dynamic formation can be scrutinized by the game theory – particularly (non)corporate game theory (Rosen & Hubert, 2015) – and dynamic models of collective behavior theory (Peter & John, 2005; Vega-Redondo, 2007; Goyal, 2007; Jackson, 2008; Bramoullé & Kranton, 2016). The core characteristics of complex network method have been improved and summarized by König's so many profound and fundamental papers (König & Battison, 2009).

As above mentioned, the driving force of the Hungarian regional economic growth is the networking of SMEs. However, establishment of SME was forbidden in the socialist area, meaning that enterprises did not exist formally and there were no networks of companies, of course (Kornai, 2008). Furthermore, as the social relationship and face-to-face partnership were controlled and managed intensively in total communist dictatorship, the mutual trust and personal support, confidence relations and respect were eliminated from the local

society and thus the bridegroom entrepreneurs (Hankiss, 2014). After the regime change (in 1990) the Hungarian local residents could establish firms but they did not have links and enough relational capital; SMEs were allowed to be formed but the SMEs networking was restricted on account of early wrong political and social experiences (Berend, 1996). This multiple situation determined significantly both the fluctuation of entrepreneurship and the networking of SMEs. After the regime change, numerous enterprises were established in Hungary but these had to functionalize almost total alone because entrepreneurs did not believe in each other, the inter-firm nexus has not been configured easily. Ultimately, the social network of entrepreneurs has been specified by the communist heritages. The communism had been over but the socialist socio-cultural and personal effects have remained in the Hungarian patterns of connections.

Notwithstanding, I managed to find three bottom-up, supply-oriented coepetitive networks of SMEs (hereinafter coepetitive networks of SMEs) that have been functionalizing as real networks; it proves as well that the Hungarian SMEs' networking has already begun.

In the next sections the paper demonstrates on one hand how dataset of the networks was collected and analyzed; on the other hand the paper focuses on investigating structural features of the coepetitive networks of SMEs such as topology, robustness, functions, centralities and small-world-effects of the networks. Afterwards, the chapter of result characterizes and compares above mentioned three Hungarian coepetitive networks of SME and describes how SMEs' networking impact on regional economic growth.

### 3. METHODS AND MODEL OF NETWORK

The primary network dataset was assembled as follows. Employing my informal friendship including so many enterprises I found four collaborating same firms. Firstly I fixed up and conducted interviews separately with them and after that I asked entrepreneurs for telling me who else belong to this informal network. By following snowball method, three bottom-up, coepetitive networks of SMEs were revealed. Nevertheless, quantitative (questionnaires) and qualitative (sociological semi-structured interviews) methods were applied simultaneously in order to the characteristics of the coepetitive networks can be understood in-depth (Paula, 2015; Smith & McKeever, 2015; Sanou, Le Roy & Gnyawali, 2015); the paper prefers micro-geographic approach. Basically, the primary database includes 127 interviews and 127 questionnaires. In general, the questionnaire consists of basic information of firms such as postal code, street, house number of firm location, number of employees, annual income, etc., while the interviews map out the nature of links between same companies. The interviews lasted 110 minutes on average, the longest one is 4 and a half hours, the shortest one is 55 minutes. The database was collected between April and September 2015.

Nevertheless, the paper accepts statement that almost every network of SME has spatial extension thus toolkits of network science and spatial econometrics are combined. The first network is located from Tihany to Budapest (network of Budapest and Tihany: NTHBP), the second one exists in Nyíregyháza (network of Nyíregyháza: NNYH), and the third network is situated in Budapest (network of Budapest: NBP). NTHBP embraces 72 firms, NNYH consists of 14 firms, and NBP includes 41 firms, all together ( $72+14+41=127$ ) 127 enterprises belong to the research model. In a nutshell,  $NTHBP=\{1,2,3...72\}$ ,  $NNYH=\{1,2,3,...14\}$ , and  $NBP=\{1,2,3,...41\}$ . Moreover, these have to be defined as disjoint sets, so  $NTHBP \cap NNYH \cap NBP$ , meaning that the networks could be analyzed separately and compared to each other in the next sections.

All of three unintentional coopetitive networks of SMEs are regarded as unweighted and undirected graphs<sup>4</sup> referring to the interaction is mutual among firms, nodes are in symmetric relationship. In this model:  $G_{NTHBP,NNYH,NBP}=(V,E)$ , where G is graph, V are vertices and E is edge. In this case V means firms and E means link among firms. More precisely, the vertices mean premises of firms and the edge refers to coopetitive interactions between firms. Basically, on one hand the paper scrutinizes relation structure of inter-firms and quality of bonds, on the other hand quantifies how inter-firms nexus affects regional economic development.

The structural properties of the coopetitive networks of SMEs can be gauged by degree centrality, betweenness centrality, closeness centrality, the Duranton-Overman index, geodesic distance, average degree, small world, graph density, scale-free network topology and the large of network (Wasserman & Faust, 1994; Vega, 2007; König & Battison, 2009; Barabási, 2015; Jackson, 2016). In this vein, the paper accepts that the network structure determines significantly the network functions. In this chapter their calculations are demonstrated.

The actor centrality and player position in the network can be operationalized by three paths, such as degree centrality, betweenness centrality and closeness centrality. The degree centrality with Freeman centralization ( $C_D$ ) stresses that the network activity depends on in-degree (how many players choose him/her) (Wassermann & Faust, 1994), it has to be calculated:  $C_D = \frac{\sum_{i=1}^g [C_D(n^*) - C_D(n_i)]}{[(n-1)(n-2)]}$ , where  $C_D$  is the group centrality,  $C_D(n^*)$  is the highest degree in a certain network and g expresses the number of players of network.  $C_D$ 's value can be 0 and 1, where theoretical value 1 demonstrates that the focal firm belongs to every enterprise but others do not know each other (Scott, 2000). Moreover, the closeness centrality  $C_c$  highlights that a firm has central position in the graph if a company can be accessed easily thus it can gather and distribute directly adequate and important market information. The closeness centrality has a well-known formula:  $C_c(n_i) = [\sum_{j=1}^g g(n_i, n_j)]^{-1}$  where g is a distance and i and j show the distance between actors. In addition, the betweenness centrality  $C_B$  expresses that those player has power in the graph and can control network evolution as well who is located among numerous other actors. Its equation can be described as this way  $C_B(n_j) = \frac{\sum_{i,l} g_{ij}(n_j)}{g_{ij}}$  where  $i \neq j$ ,  $l \neq j$  and  $g_{ij}(n_j)$  expresses the number of the shortest edges between i and j (Balakrishnan & Ranganathan 2012).

The paper emphasizes that eigenvector is not being calculated because a few number of agents take part in these coopetitive networks.

Furthermore, in the spatial econometrics well-known Duranton-Overman index [ $\hat{K}(d)$ -index] is employed to analyze the territorial concentration of SMEs. Its formula can be described as  $\hat{K}(d) = \frac{1}{Eh} \sum_{i=0}^n \sum_{j, g(i,j) \in E} f\left(\frac{g-g_{i,j}}{h}\right)$ , where f is a Kernel function, h stands for the optimal bandwidth, i and j show the geographical distance between firms (Scholl-Garas-Schweitzer, 2015: 8).

The small world of network refers to the distance between hubs so it can be obtained if we divide local clustering coefficient by average path. In case of undirected graph the local clustering coefficient ( $C_i$ ) refers to 'the extent to which one's friends are also friends of each other' (Watts & Strogatz, 1998) so  $C_i = \frac{\text{number of pairs of neighbors connected by edges}}{\text{number of pairs of neighbors}}$ . Finally, the global value of  $C_i$  is obtained:  $CL_t = \frac{1}{N} \sum_{i=0}^n C_i$ . Nevertheless, in the case of undirected graph the average path AP can be counted this way:  $AP_{i,j} = AP_{j,i}$  so the well-known formula

<sup>4</sup> The notions of graph and network emerge synonyms in this paper.

can be obtained:  $AP = \frac{\sum_{i=1}^n \sum_{j=1}^n g_{ijt}}{N(N-1)}$ . It contributes to calculate the small word (SW) by employing above mentioned equitation:  $SW = \frac{CL_t}{AP_t}$  (Watts, 2016).

Moreover, the graph density (D) compares the number of edges to the maximal number of edges, so:  $D = \frac{E}{N(N-1)}$ . Besides, the average degree of undirected graph:  $\langle k \rangle = \frac{1}{N} \sum_{i=1}^N \frac{2L}{N}$  and the large (L) of network can be obtained:  $L_{max} = \frac{N(N-1)}{2}$ .

Finally, the scale-free network architecture can be measured by the well-know mathematical formula (Csermely, London, Wu & Uzzi, 2013; Barabási, 2015):  $P = kT^{-\alpha}$ , P presents probability, k is a constant, T is a certain variable, and  $-\alpha$  is exponent of power function. In the nature, the value of  $\alpha$  is between 2 and 3 consistently. The paper accepts and applies this premise.

After the presentation of quantitative methods, now the qualitative toolkits are illustrated. The face-to-face sociological, semi-structured interviews were conducted as well. By applying the qualitative design, on one hand, the personal narratives and the socioeconomic circumstances can be taken into account (Yin, 2011). On the other hand, the interviews serviced to map out informal relationships and positions of agents in network; the informal bonds of network can be investigated scientifically with qualitative method (Gilleskie & Zhang, 2009; Badev, 2013; Qu & Lee, 2015; Ciliberto, Murry & Tamer, 2015) and it is applied systematically.

The qualitative dataset is elaborated by both the structured content analysis and qualitative input-output analysis. The dimensions of interviews are structured as follows:

- introduction,
- network evolution,
- collaborating with competitors,
- horizontal network structure,
- business model,
- the network effect on the income and establishing of new jobs.

The next chapters provide insight into the empirical results, more precisely, the topology of three Hungarian cooperative networks of SMEs and the impacts of the networks on the regional economic growth.

## 4. EMPIRICAL FINDINGS

### 4.1 The coopetitive network of SMEs between Tihany and Budapest

Tihany has always been a typical ecclesiastical and historical middle-sized town in Hungary; it is located in a peninsula of the north-Balaton Lake approximately 140 km far from Budapest (capital of Hungary). The local society of Tihany can be called special too, consisting of few priestly elite and a large number of citizens who had been living under the Hungarian average living standards (Horváth, 2015). Of course, in center of Tihany can be found some popular and rich tourist destinations but the old and bigger element of the settlement is underdeveloped; huge territorial and social disproportion appeared in Tihany. Nevertheless, this sad socio-economic circumstance has been reshaped basically by a very successful entrepreneur of Budapest who was born in Tihany. He decided on establishing a new local market in Tihany where the poor local inhabitants could sell their old and handmade products, odds and ends, vegetables and fruits from home gardens etc. Put another way, because of the new local market overwhelming of unemployed local people

started working at new market and became entrepreneur and taxpayer citizens, moreover, they have been able to sign on further unemployed people of Tihany. Spread of the local entrepreneurship and the new marketplace have led to eliminate the poverty and regional inequalities. As a whole, the regional economic development could start in Tihany because of the coopetition.

It has to be emphasized that the local market was formed in 2008 but the solvent demand misses therefore owner of new market managed to invite his VIP friends from Budapest so that elite of capital could purchase local residents' productions and as a result the local market has expanded; relational capital of the owner has been converted into economic capital. As a consequence, some successful enterprises of Budapest have been interested in selling products at new market of Tihany so nowadays approximately 20% of the NTHBP come from Budapest.

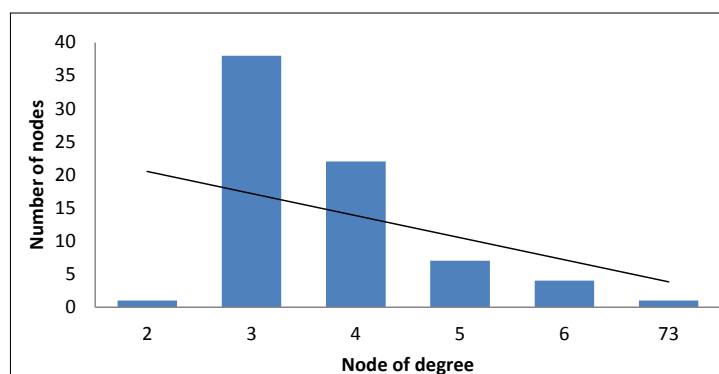
Interestingly, the NTHBP is similar to the [www.amazon.com](http://www.amazon.com), that is based on coopetition business strategy, both offer places for actors of supply side so that customers and sellers could meet and do business with each other (Ritala, Golman & Wegmann, 2014). The core difference between both is that the NTHBP provides physical market for firms while the [www.amazon.com](http://www.amazon.com) offers only Internet territory.

Indeed, the NTHBP has to be defined as an unintentional coopetitive network of SMEs because its counterparts collaborate with each other to mutual transportation of goods so as to reach higher profit. Since the mutual transportation, a typical form of coopetition, prevails in the all three Hungarian coopetitive networks, the mechanisms of mutual transportation of goods have to be scrutinized thoroughly at this point.

Initially, SMEs of the coopetitive network understand that the price of transportation (expenditure) can be reduced by mutual transportation. So, when products start running out, an entrepreneur (usually focal firm of the network) books orders and musters the needed list of goods. Just as many trucks are used for transporting goods that is enough for delivering the ordered volume of products, as a result, savings can be realized collectively. For example, in the NTHBP usually 57 trucks deliver goods for 72 firms thus the cost of transportation and amortization of 57 trucks have to be paid by 72 enterprises. By sharing and reducing transportation cost, firms can save financial resources to establish new workplaces or to increase income of their employees.

Arguable, the focal firm has crucial function in the coopetition in Hungary. The role of dominant firm (sometimes it is called as broker by Madhavan, Gnyawali & He, 2004; Choi & Wu, 2009; Pathak *et al.*, 2014) can be identified adequately by scrutinizing architecture of the NTHBP. As Figure 1 shows, the NTHBP has scale-free property referring to that only one agent (namely the focal firm) in the network has a large number of coopetitive connections, conversely, numerous nodes have only a few coopetitive links.

**Figure 1. Topology of the NTHBP**



Source: Own Elaboration



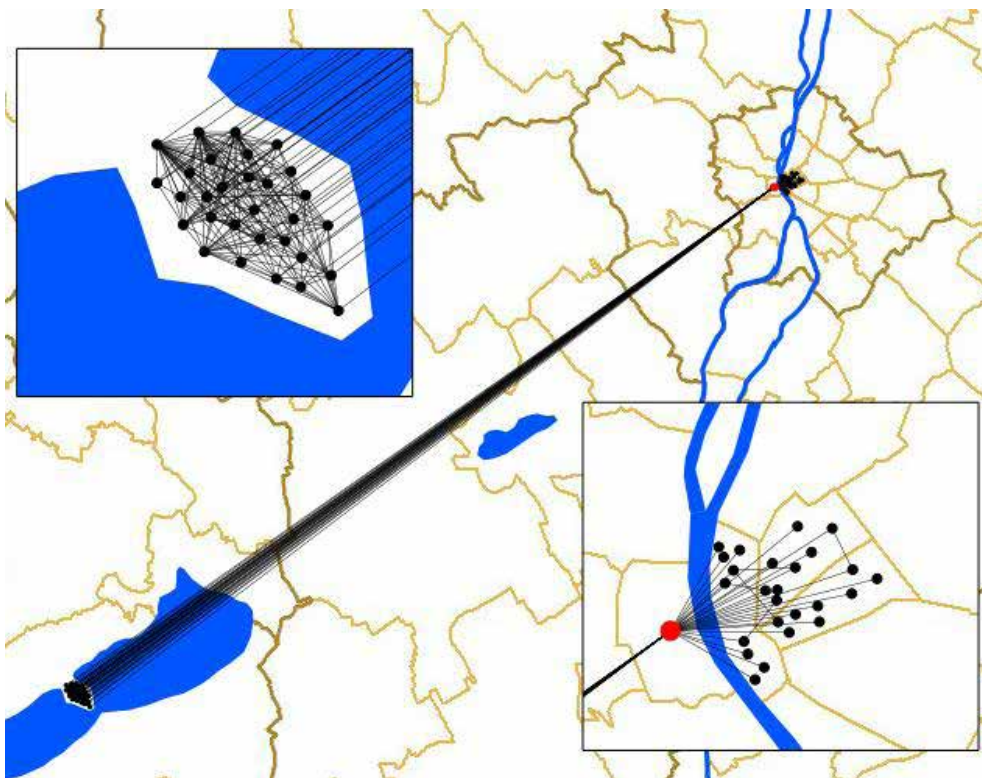
Simply put, the dominant firm, owner of new marketplace, is known and trusted fully by everybody in the NTHBP but the entrepreneurs do not trust in each other. As already indicated, it is because on one hand these entrepreneurs have been socialized in distrustful milieu of communism, on the other the rivals' relationships are not friendly. Therefore, the focal firm mediates among firms in the network and can build bridge among competitors; the hub is the Achilles Heel in the cooperative network. It can be lighted by a part of an interview.

'I hate C. J. (name of an entrepreneur was mentioned) because she deceived me a lot earlier. We hate each other. But I know A. P. (name of focal firm of the NTHBP was mentioned) who also knows C. J. I know that mutual transportation always brings me huge profit but I cannot negotiate with her so A. P. manages transportation between us. A. P. is a really good man, I trust him. He asks me and C. J. what we need next weekend and these are transported for us. But I never negotiate with C. J. but the mutual transportation works because A. P. helps and mediates between us!' (121<sup>st</sup> interview)

Basically, the focal firm guarantees integration and robustness of the network (Pachura, 2010). Formally, the central firm organizes mutual transports so that price reduction and profit maximization can be reached by all entrepreneurs in the NTHBP.

The NTHBP is defined territorially because it consists of 72 enterprises (57 from Tihany and 15 from Budapest) but only some firms of Budapest have cooperative nexus with enterprises of Tihany. More specifically, the NTHBP might be divided into two subgraphs territorially. The first subgraph can be found in Budapest, another one is revealed in Tihany and the two subnetworks are integrated by the focal firm (red point in Figure 2) thus the NTHBP become a connected network.

Figure 2. Spatial extension of the NTHBP



Source: Own Elaboration



In other words, numerous inter-relation ties can be emerged within both subgraphs but only a few bonds exist between subgraphs but everyone knows focal firm. Framework of the coopetitive networks is illustrated by the Table 1.

Table 1. Some spatial parameters of three coopetitive networks

	N	L	$\langle k \rangle$	$C_{DF}$	$C_B$	$C_C$	$\hat{K}(d)$ -index	D	$AP_t$	$CL_t$	$SW_t$	P
NTHBP	72	1742	48,38	0,73	1,93	0,82	0,19	0,69	1,36	2	0,4264	1,6314T <sup>-2</sup> ,135
NNYH	14	91	13	1	4	1	0,41	1	1	1	1	-
NBP	41	431	21,02	0,64	1,11	0,71	0,23	0,53	1,44	2	0,2361	1,4871T <sup>-2</sup> ,018

Source: Own Elaboration

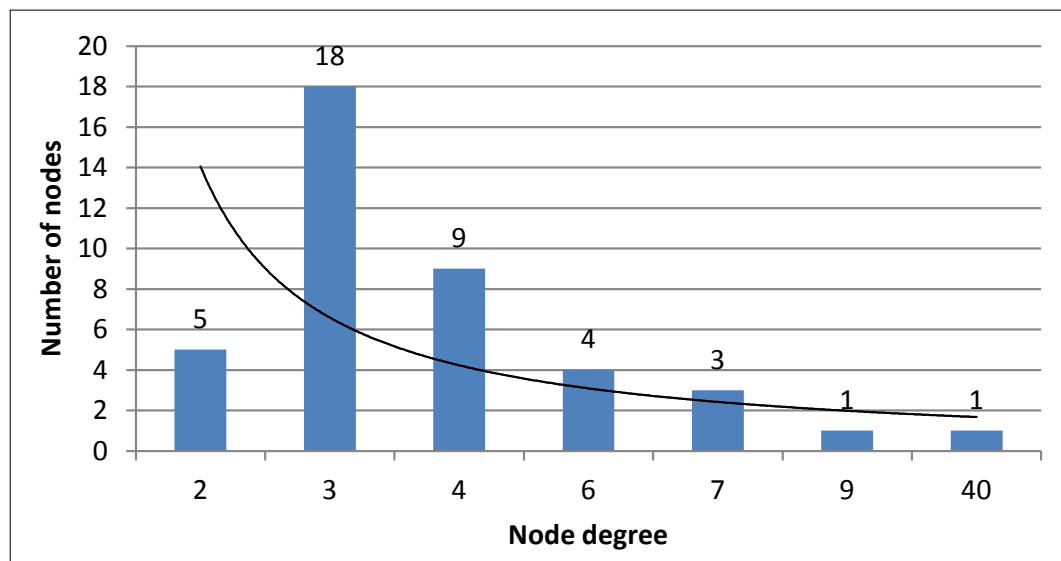
To date, the NTHBP possesses domestic and international reputation showing a large number of the elites, VIPs and celebrities have already visited to purchase and meet friends at local market. The solvent demand and urban milieu can be improved intensively and the NTHBP promotes to the value creation, values capture and value appropriation at regional level.

#### 4.2 The coopetitive network of SMEs in Budapest

The actors of the NBP sell wine establishing in 2008 and encompass 41 same firms. The unintentional coopetition of NBP was constituted for mutual transportation so NBP similar to the NTHBP. A central firm of the NBP manages mutual transport thus wine has not been needed to transport separately so the partners of the NBP could save price of fuel to invest in creating new workplaces (Thornton, Henneberg & Naudé, 2015). Basically, partners of the NBP compete fiercely on quality, price and value but collaborate in the sphere of mutual transportation simultaneously so it has to be called a dynamic coopetitive network of SMEs.

By dissecting architecture of the NBP, scale-free network topology can be found again. Dominant firm in the NBP is the Achilles Heel so robustness of the NBP is so high. The  $R^2$ , coefficient of determination, demonstrates how regression line fits the primarily database so it is able to describe the real conditions in the NBP statistically (see Figure 3).

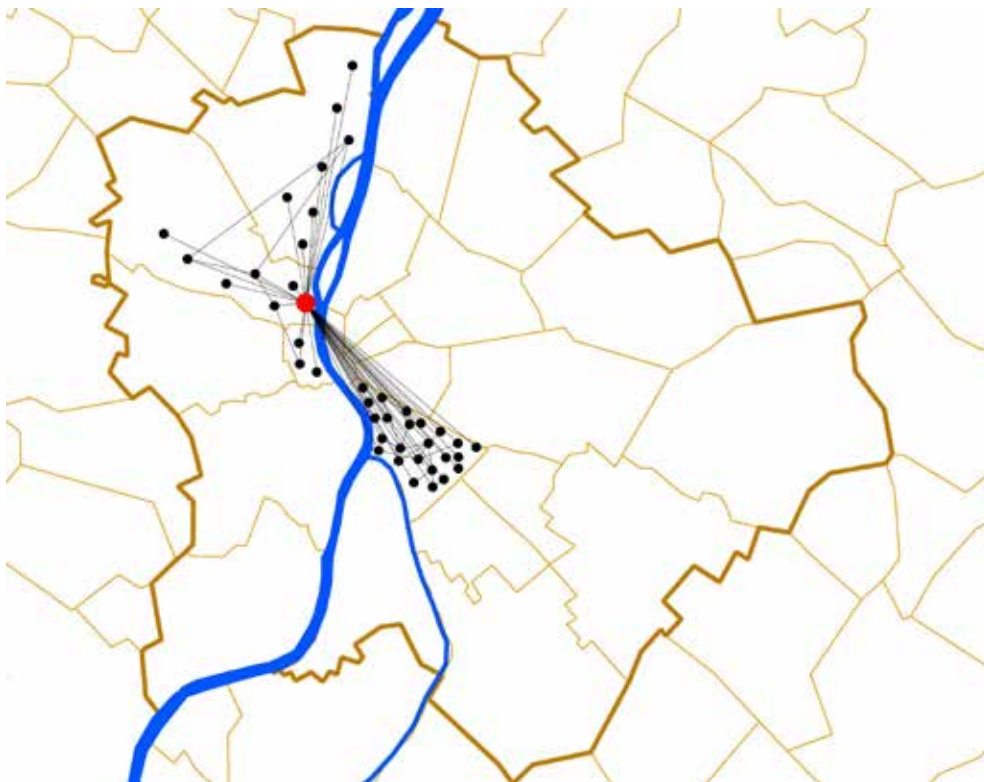
Figure 3. Topology of the NBP



Source: Own Elaboration

The NBP is determined territorially meaning that actors of the network locate in the 5<sup>th</sup>, 6<sup>th</sup> and 9<sup>th</sup> (the most developed) districts. Besides, the focal firm (red point in Figure 4) is situated in the 2<sup>nd</sup> district, the richest place of Budapest. In this respect, the Hungarian elite prominent function in the regional economic development nowadays. This map (Figure 4.) suggests that focal firm organizes coopetition in the NBP; all entrepreneurs of this network operate as ‘an island’ in practice (Hakansson & Slehota, 1995) due to mistrustful of inter-firms. Irrespective of salient tension, the NBP can functionalize because the central firm brings so strong cohesion power and high robustness in the network.

Figure 4. Spatial extension of the NBP



Source: Own Elaboration

Finally, the Marshall-Arrow-Romer specialization externalities (so-called the localization economies of scale) has been revealed on territory of the NBP because of coopetition and that has led regional economic growth.

#### 4.3 The cooperative network of SMEs in Nyíregyháza

The entrepreneurs of NNYH sell perfumes, establishing with 14 members in 1993, so far the number of entrepreneurs has not been changed and the NNYH has been operating without any formal contracts. The NNYH can be named as very special cooperative network of SMEs due to entrepreneurs of the NNYH are Christians following strongly the dogmas of Church thus it should be called as a closed network of companies. This closeness has to be explained by the religion since Christian entrepreneurs of the NNYH do not cooperate with non-Christians. The results of structured content analysis and qualitative input-output analysis of interviews suggest clearly that non-religious entrepreneurs attempted to engage in coopetition but the Christian entrepreneurs did not trust them.

‘A lot of local entrepreneurs have been trying to enter our informal alliance but we refused it because we do not believe in them. We have special Christian value-system, they do not have like this. We are afraid that they would abuse harmfully our network so we protect our Christian system and thus network.’ (39<sup>th</sup> interview)

Evolution of the NNYH is so interesting. Initially, an entrepreneur’s truck broke down and could not purchase products but a same firm in Nyíregyháza brought goods to him irrespective of competing with each other on the market. The competitors have afterwards begun to distribute market information relating to which wholesale provide discount. He did it because they were Christian; in the first period the coopetition was configured and inspired by Christian theorem and not by economic interdependence in the NNYH. Nowadays all entrepreneurs in the NNYH engage in coopetition because they have understood that rivals’ cooperation can bring mutual benefits. To be precise, two coopetitive activities can be distinguished in the NNYH such as mutual transportation and allocation of market information.

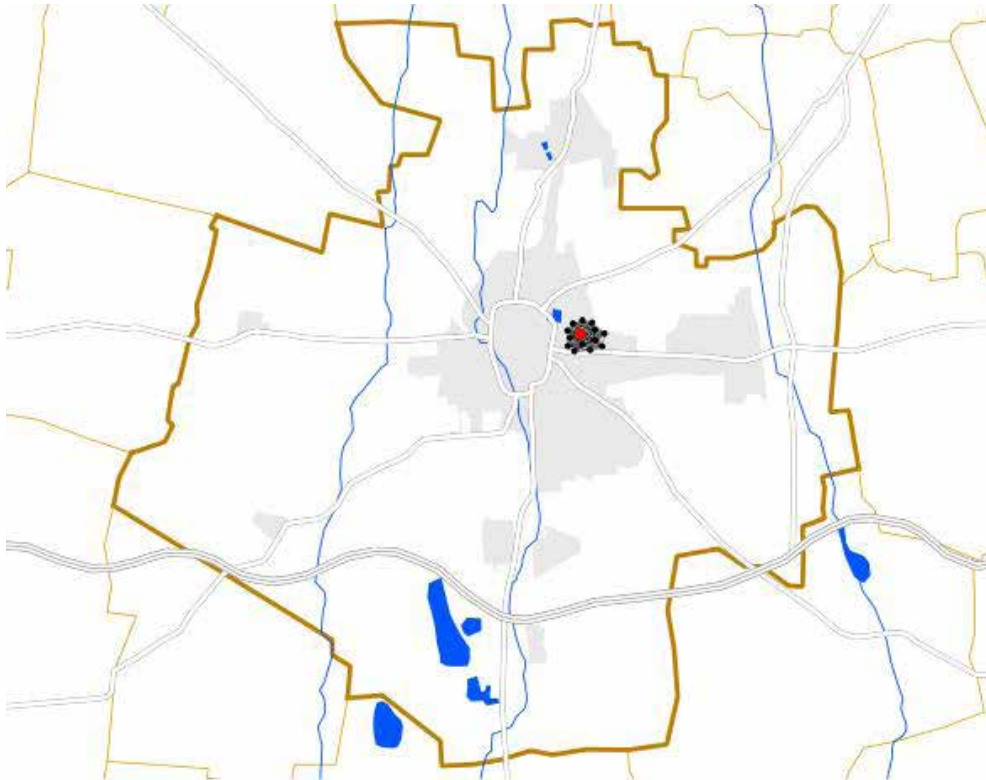
For the first time, the NNYH had scale-free property referring to a focal firm had been organizing mutual transportation and allocating market information among same firms. However, after a short time, all rivals started cooperating with each other intensively in some fields of business life thus they did not need more dominant firm. The central firm disappeared because all entrepreneurs of the NNYH trusted in each other and could make coopetitive interactions. Trust-building of the NNYH has been accelerated by mutual faith therefore the role of central firm was marginalized gradually and the NNYH became a complete graph. In the complete network every actor is connected to every other actor; every entrepreneur has coopetitive interaction with every entrepreneur in the NNYH. In general, the NNYH might have become complete graph so quickly because its entrepreneurs have been Christians preferring reciprocal trust and respect as well.

Indeed, the NNYH has been effective but a static and closed network with only 14 nodes in which everyone knows each other; the NNYH has not scale-free scheme. The complete graph referring to determines functionalizes of network (Knieps, 2015), on one hand the robustness of NNYH is relatively low, and on the other hand it works democratically as horizontal bonds emerged among them.

‘This is a little alliance in Nyíregyháza, we know. Everybody knows each other, but K. D. (the monograph of focal enterprise in NNYH) had been managing every issue for some years but later we, all member of the network, have taken part organizing mutual transportation. He was the central point in our alliance but now we have been able to organize transportation. By doing that, we can save a lot of money because eight or nine trucks are enough for moving new goods, perfumes, you know... Basically, we do not need contracts; we trust in each other regardless of competing with each other too. We collaborate with each other in field of transportation and sometimes distribute market information where we can buy perfumes cheaper and that’s all but we compete with each other in a lot of fields.’ (7<sup>th</sup> interview)

In addition, the NNYH is located on Örkösföld situated in the most developed district of Nyíregyháza (see Figure 5) meaning that the driving force of regional economic development comes from the richest areas.

Figure 5. Spatial extension of NNYH



Source: Own Elaboration

In a nutshell, vertical competition and horizontal cooperation can be revealed and merged among entrepreneurs of the NNYH and it has brought financial success to them. The cooperation of rivals significantly contributes to appear the localization economies of scale (Marshall-Arrow-Romer specialization externalities) on territories of the NNYH (Panne, 2004).

#### 4.4 The networks' effects and regional economic development

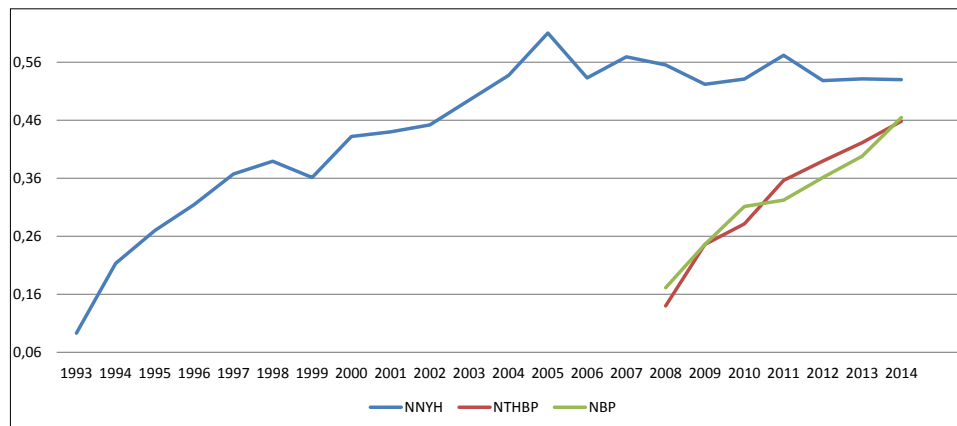
Now paper focuses on quantifying longitudinally how the cooperative networks of SMEs define trajectory of regional economic growth. To date, there is no standard spatial econometrics method how the effects of the cooperative networks of SMEs can be gauged on regional economic development (Boucher & Fortin, 2016). In this vein, the paper now attempts to quantify network effects. In improved network model, the impact of the cooperative networks of SMEs on the regional economic development is defined by (1) pay raising and (2) new jobs creating (Pachura, 2010). Actually, the applied network model answers the question how and to what extent the cooperation strategy defines the change of income and employment rate on a certain network territory.

Basically, the gauging is divided into two components such as quantitative and qualitative ones (Thomason, Simendinger & Kiernan, 2013). On one hand the quantitative research focuses on employment and income data of the networks, on the other hand the qualitative dataset depicts how the regional milieu and atmosphere have been shifted in studies phase.

The sharp question is how the gross costs of pay rise ( $PR$ ) and the gross costs of creation new workplace ( $NW$ ) can be financed by saving ( $S$ ) that comes from cooperative activities. On one hand, the cooperative activities of firms can be expressed by saving ( $S$ ), and on the other hand  $PR + NW = GCRD$  where  $GCRD$  is the gross cost of regional development. On condition that  $S \geq GCRD$ , then saving can finance absolutely the gross cost of regional

development. Of course, if  $S < GCRD$ , then  $S$  is not enough to cover  $GCD$ . Moreover,  $GCRD = \frac{S}{NW+PR}$  where  $GCRD [0,1]$  shows what proportion the gross costs of pay rise and creation new workplace can be covered by saving. The global value of  $GCRD$  within a time period:  $\sum_{i=1}^n GCRD$ . The Figure 6. reports the longitudinal changing of  $GCRD$ , obviously, the NNYH is the most successful in savings.

Figure 6. What proportion can the gross costs of pay rise and creation new workplace be financed by savings? (%)



Source: Own Elaboration

The Figure 6. demonstrates that in 2014 the 52.98% of pay rise and new job creation (in applied network model these variables operationalize the regional economic development) could be financed by the savings in the NNYH. Moreover, in same time the 45.83% of the regional economic development were covered by cooperative accomplishment in the NTHBP. Lastly, the 46.47% of regional economic development could be financed by the cooperative business strategy in the NBP. It is clear that cooperation in the practice has provides economic possibilities so that firms could expand market or create new marketplace, raise income and employee rate.

The quantitative data collection provides insight into the employment rate of three cooperative network separately. According to the data, the NTHBP has creates 136 new workplaces in which 26 were established in Budapest; NNYH could form 97, while 54 new jobs were constituted by the NBP. In a nutshell, the cooperative actions of firms significantly contribute to the job creation.

Interestingly, the influence of financial economic crisis of 2008-2009 was not strong on accomplishment of the cooperative networks. The capacities of NTHBP and NBP were picking up sharply while the performance of NNYH was falling slightly under the period of economic crisis. Put another way, the cooperative network effects were stable on the regional economic development irrespective of the global financial crisis.

In parallel, the qualitative results show that the regional milieu and atmosphere were reshaped in Tihany. The local attitude has been changed and urban habit was emerging meaning that local residents have started following modern life style but retaining their traditions and past simultaneously. In a nutshell, qualitative research findings demonstrate that the new local marketplace has been able to modify the conservative image in Tihany by forming a special mixed form of the modern and historical conventions with local folklore. As a whole, the cooperative networks have a qualitative spillover-effect namely these contribute to the strengthening of the local social integration.

‘Since when I started working at new local market, Tihany has received a new face because a lot of celebrities come to visit and buy something. They bring new fashion, new ideas and mood and moral. It is true, the new style has not been supported by everyone in the town but it does not matter. The point is that they have been able to buy things and thus they give money for the town bringing new circumstance and mindset.’ (63<sup>rd</sup> interview)

## 5. CONCLUSION

The Hungarian rivals of networks have already increasingly started understanding and exploiting both collaborative and competitive advantages thus contributing to the regional economic development directly. It means that relatively developed business culture has been appeared and prevailed among the Hungarian small enterprises. In the practice, entrepreneurs of coopetitive network share risks, cost and market information so as to maximize their profit rate that finally covers the cost of nodal regional economic growth. The empirical findings depict on one hand the localization economies of scale emerged on territories of the NBP and NNYH, and on the other hand the urbanization economies of scale revealed on territory of the NTHBP.

Obviously, year by year financial savings could in every coopetitive network be accumulated by coopetitive activities so as to be able to finance both creation of new workplaces and pay rising. In particular, the coopetitive networks of same local entrepreneurs have established peculiar economic ecosystem and pleasant atmosphere through exploiting both local endogenous and exogenous assets as well.

Basically, competitors in coopetitive network collaborate with each other because financial resources could be accumulated intensively. In general, their relational capital has been converted into economic capital contributing to significantly the increasing the level of local welfare. Notwithstanding, these three coopetitive networks emerge as bottom-up network meaning functionalizing without any formal arrangements or official forces apparently. Furthermore, it refers to regional politicians, stakeholders and other official members of regional economic development might not interfere in formally networking process; these coopetitive network operate alone as an ‘island’.

Finally, the accomplishment of bottom-up coopetitive networks might provide a new message to both the Hungarian regional policy and territorial planning as well. The local SME sector can increasingly control and manage to the regional economic growth thus activities of coopetitive network ought to be taken into within a framework of the formal Hungarian regional economic development policy account in the future.

## ACKNOWLEDGEMENT

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# INFORMATION SYSTEMS' PORTFOLIO: CONTRIBUTIONS OF ENTERPRISE AND PROCESS ARCHITECTURE

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*João L. Fragoso<sup>2</sup>*

## ABSTRACT

We are witnessing a need for a quick and intelligent reaction from organizations to the level and speed of change in business processes. New information technologies and systems (IT/IS) are challenging business models and products. One of the great shakes comes from the online and/or mobile apps and platforms. These are having a tremendous impact in launching innovative and competitive services through the combination of digital and physical features. This leads to actively rethink enterprise information systems' portfolio, its management and suitability. One relevant way for enterprises to manage their IT/IS in order to cope with those challenges is enterprise and process architecture. A decision-making culture based on processes helps to understand and define the different elements that shape an organization and how those elements inter-relate inside and outside it. IT/IS portfolio management requires an increasing need of modeling data and process flows for better discerning and acting at its selection and alignment with business goals. The new generation of enterprise architecture (NGEA) helps to design intelligent processes that answer quickly and creatively to new and challenging trends. This has to be open, agile and context-aware to allow well-designed services that match users' expectations. This study includes two real cases/problems to solve quickly in companies and solutions are presented in line with this architectural approach.

Keywords: Information Systems' Portfolio, Process Architecture, Enterprise Architecture, Intelligent Processes.

JEL Classification: O31, O33

## 1. INTRODUCTION

The transition to information society required enterprises to select and organize their data. This has raised new values, more relevant than traditional ones, such as information and knowledge. Technology has made so much difference that its association with human capital made emerge a greater potential of it. Information technologies (IT) are the platform for the company's ability to develop information systems (IS) that meet the new management trends. For example, the increasing ability to control large volumes of data (big data), through the *data warehouses*, using advanced tools for relating those data (*data mining*), can answer to more selective and diverse customers. Some changes call for rethinking the ways to offer products/services and seek for different dissemination channels. Thus, companies should organize their IT/IS to develop new solutions to maintain or enhance their competitive position.

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The roles that information systems and knowledge management play are complementary in current business scenarios. Connectivity, mobility, pervasiveness and real-time reaction are some of the *keywords* in today's vocabulary of enterprises. The sustainability of competitive advantage is found in a company's ability to channel the critical information to generate the business intelligence that enables it to constantly rethink its methods to suit its needs in real time. Given the actual pace of change, companies have to deal well with real-time business events. This requires that organizations and professionals adopt new attitudes and ways of managing the business intelligence to address numerous emerging challenges.

## **2. INFORMATION SYSTEMS IN PORTUGAL**

### **2.1 The Portuguese economy**

In Portugal, the companies (mostly small and medium-sized) invest little in R&D (research and development) due to their limited financial and organizational capacity. Thus, information systems are an important resource for their business performance. In terms of most innovative sectors in the Portuguese economy, which according to Sarkar (2014) tend to be more supported by IT/IS, the Community Innovation Survey (CIS) provides useful information. The EU (European Union) employs this statistical instrument to monitor Europe's progress in the area of innovation, which is conducted by national statistical offices. In Portugal, following the methodological recommendations of Eurostat, the CIS aims to directly collect information on innovation (product, process, marketing, and organizational) in companies. It explores how firms interrelate with their surrounding external environment in order to access information considered important for the development of new projects or the completion of existing ones. Firms may use external agents as information sources or engage in more formal cooperation activities, meaning their active participation with other enterprises or institutions on innovation.

The recent CIS (period 2010-2012) reveals that main innovating sectors in the Portuguese economy are: research-based (computer, civil engineering, R&D) or knowledge-based (insurance, health) or service-based (retail trade). The external sources/agents most commonly used by the first are universities, suppliers by the second and firms' group by the third. Private customers are important sources for all types of sectors, what means that Portuguese firms generally use customers' information and relations for innovation purposes. These results are in line with the fact that Portuguese economy is mainly based on small and medium-sized firms (SME) which increasingly focus on services and knowledge. Customers' data allow to expand the knowledge-base within their applied research and to materialize knowledge into goods and services (Sánchez-González & Herrera, 2014).

The IT/IS that Portuguese companies should bet on, especially those with a culture of customer service, are based on business intelligence tools such as CRM (Customer Relationship Management), ERP (Enterprise Resource Planning), Big-data tools and analytics. These tools, complemented on well planned platforms (even integrating data from social media) contribute to implement new ideas, design new products and services, improve existing processes and create new ones. Given this enormous potential, which may lead to a reconfiguration of the business model, managers should not only be familiar with these systems, but also get involved from the beginning of their adoption and cover everyone in the organization.

## **2.2 IT/IS Potential**

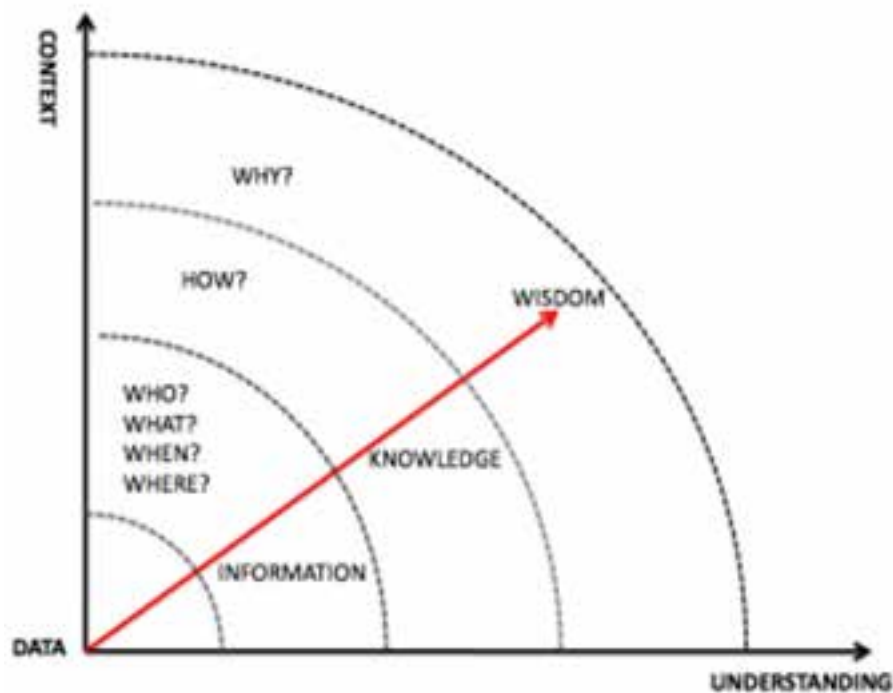
Many Portuguese firms have used financial systems which automatically process invoices and other reports from the balance sheets. However, analyzing the process of decision support, it was found that managers make decisions based on many other documents and data in order to know what products they can offer, in what amount, which is the best way for distribution, the best location for shopping, etc. And in addition, the enormous amount of data that result from having a *website*, which leads to the use of new tools for database management (e.g. MySQL). An ERP can manage these issues, as it allows integration of different business functions and documents informing product traceability, i.e. from the order moment until knowing its stock level. Information flows result more rapid and complete, contributing to a better inventory management and a greater consistency with customer's needs (Vasilev & Georgiev, 2003).

Companies can also put into the ERP new modules tailored to their business reality (health, banking, commerce, etc.) to turn it more flexible. Unlike departmental systems, an ERP is multifunctional covering different levels or functions in the organization. ERPs are integrated systems, making the information flow easy between different areas to be shared by different processes. The information is then accumulated in a single huge repository (*data warehouse*), available to all business units at all functional levels. Managers can have all the information they need more accurately and in real-time (Laudon & Laudon, 2004). This type of system answers to queries such as: inform customers if the ordered product is in stock; maintain customers informed of the whole processing course of their orders; easy communication between production and financial areas to define new production plans, etc. Departmental systems, in contrast, create much fragmentation of data resulting in expensive and complex links that proliferate in companies, as these systems function separately. ERP systems, by consolidating the data, help to eliminate unnecessary or redundant links having a positive impact on business efficiency and performance.

On the other hand, CRM tools consist of analytical functions to manage the relationship with clients, consolidate information from different sources or channels of communication (phone, email, web, *wireless* points) to answer queries such as: what is the value of a certain client for the company; which are the most loyal customers; which are the most profitable ones, etc. Then, companies can use the answers to these questions to acquire new customers; improve their products/services to further customize them according to customers' preferences; etc. CRM techniques are used to select and combine key information from different points of view to help companies to create unique services or successful innovations. CRM processes can also, by means of advanced techniques like *data mining*, capture profiles, attitudes and behaviors which were not previously perceived. These tools become effective in engaging the customer to the point of expecting for the services he has previously outlined (Vasilev & Georgiev, 2003).

These trends, besides being a key for business performance, they can be a way of knowledge-base enhancement (Gudas, 2008; Fernandes, 2013). Figure 1 illustrates this aspect through the main lines of information systems' support and enterprise knowledge expansion, answering questions like how and why for understanding and foresight.

Figure 1. Main lines of information systems' support and knowledge expansion



Source: <http://informationxdummies.blogspot.pt/2014/02/a-short-introduction-for-our-english.html>

Another relevant trend to go on searching is the widespread use of mobile platforms due to their ubiquity (concept of being everywhere at the same time, related with pervasive devices – time and context-aware). These attributes have to do with the critical role that time and place play in today's communications. Facing the increasing geographical scope and time-sensitiveness of services (real-time response), their development is making the difference. One of today's standout loc potentials is the Internet of Things (IoT), i.e., the internetworking of physical devices, buildings, and other items embedded with electronics, software, sensors and network connectivity that enable these objects to collect and exchange data performing innovative services.

### 2.3 Potential of IoT

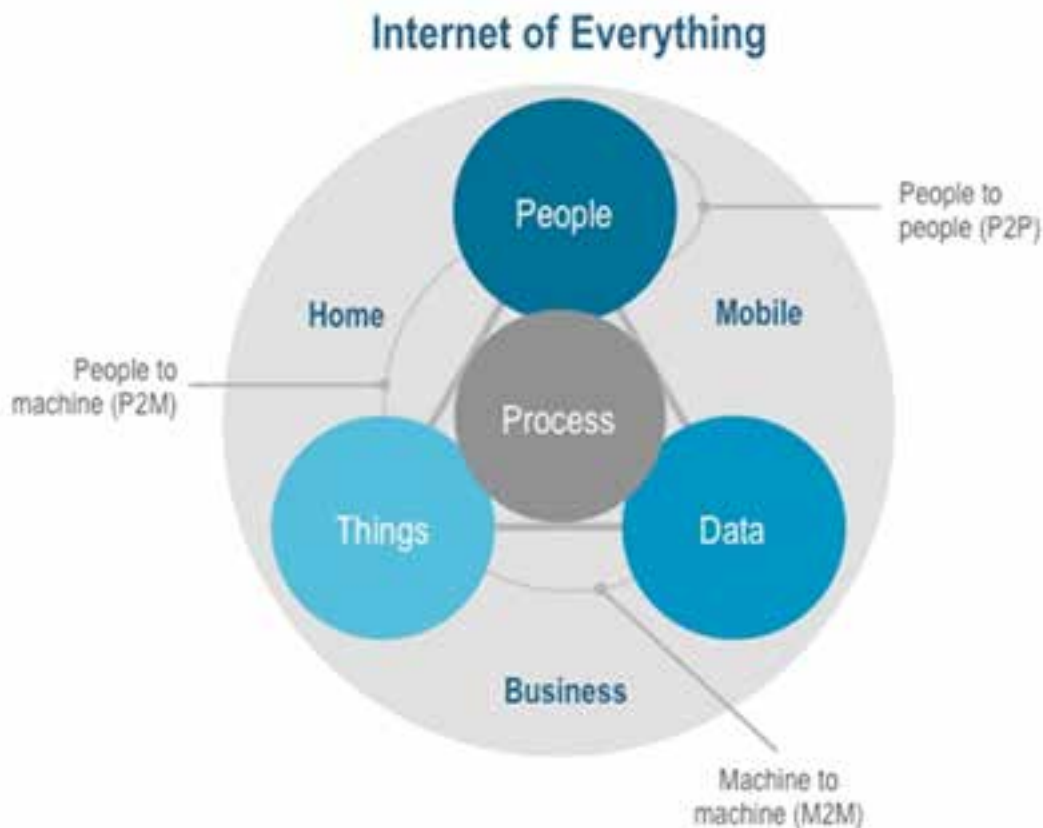
The full potential of the internet requires more flexible information and process architectures in companies. The main goal is to manage knowledge and adherence to new business models supported by mobile, cloud, big-data or IoT systems that tend to innovate several areas such as tourism and health. Recent discussions about smart cities and regions (bridging the physical and digital) have touched those issues. For example, future European structural investment funds are based on developing and matching these research and innovation strengths to business needs (European Commission, 2016).

Then a network of smart devices can be set up which can enhance the working of any business and its services. For example, in tourism, there can be a better assistance to tourists through mobile apps such as manage the experience of touring a place by the smart coordination of the objects at that place. This will enhance the overall experience of the tourist, giving information regarding the shortest route to reach there, traffic congestion in that route and alternate ways to reach the place. Mobile tours can be provided to tourists giving details of all local attractions, restaurants, etc. nearby and assisting them throughout their trip.

Also mobile work empowerment is possible, which is important in real-time or critical activities such as in healthcare. Networked sensors, either worn on the body or embedded in our living environments, make possible the gathering of rich information about our physical and mental health. Captured on a continual basis, then aggregated and effectively mined, such information can bring a positive change in healthcare (Hassanalieragh *et al.*, 2015; Tyagi, Agarwal & Maheshwari, 2016). The combination of wearable technologies with related apps at a smartphone can serve to integrate and monitor patient information and sensing throughout healthcare records and systems (Niewolny, 2013). However, due to certain issues like concerns over privacy of personal data generated by smart devices, measures have to be taken to deal with these concerns (Kaur & Kaur, 2016).

Figure 2 illustrates this wave of unstoppable growth of the Internet through IoT which brings the confluence between people, processes, information and things.

**Figure 2. Key potentials of IoT**



Source: RES, 2013

The five main factors that feed the Internet of Things are:

- use of assets (cost reduction) and employee productivity (greater efficiency in tasks);
- supply chain and logistics (elimination of expenses);
- User experience (increase of customers);
- Innovation ('time to market' reduced).

The technological trends including cloud, mobility, big data and increased processing capacity are driving the economy of IoT. This is creating an unprecedented opportunity to connect what was still disconnected among people, processes, information and things (RES,

2013). A question and its answer is increasingly shaking enterprises and business models: can information systems' portfolio selection and management help?

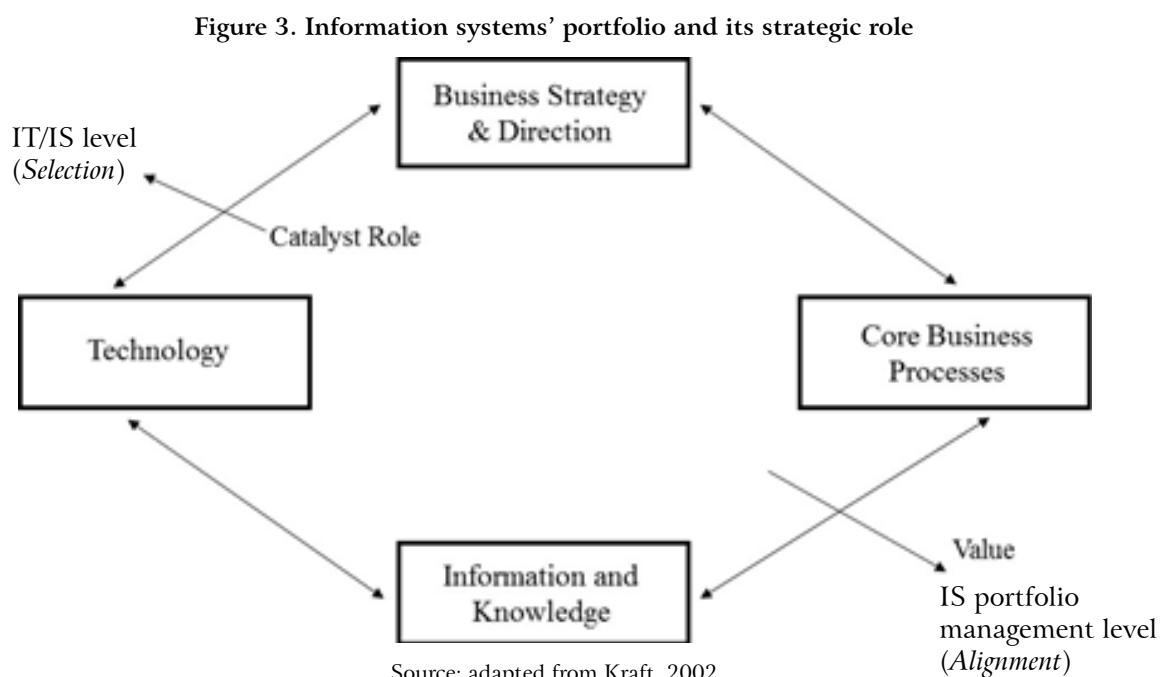
### 3. WHICH INFORMATION SYSTEMS' PORTFOLIO?

The issues raised by figures 1 and 2 remind us of the importance of information systems' portfolio and management. There is a common problem in companies, related to an increasing amount of data ('big data') and of non-integrated information systems, affecting company's performance and its relationships with customers and employees. Two main factors lead to this problem:

- one refers to the fact that there are many new information systems and technologies in organizations (such as ERP/CRM, clouds, sites, social networks, etc.) whose potential is far from being fully exploited, either in themselves or in integration with other existing systems;
- other factor is that people work differently, in terms of: training, willingness to work with technologies, willingness to cooperate with others, among other individual differences.

These factors raise the need for the information systems' portfolio management and a working architecture/culture in which people synchronize their procedures and visions throughout the organization, within the same mind-set targets. This leads to an exercise of collecting the relevant processes and information (Robbins, 2006). For example, creative thinking makes people approach problems and solutions, in order to put existing ideas together in new productive combinations (Amabile, 1998).

The present work aims to develop an approach to these issues, which can be referred as a portfolio approach to information systems management. It should be understood here, as information systems' portfolio, the set of tools and methodologies for business intelligence (ERP/CRM, intranets, clouds, social networks, etc.). This approach aims to bring attention to the appropriate management of this portfolio, i.e., its selection and alignment with business goals (figure 3).





### **3.1 Balance between selection and alignment**

IT is playing an increasing role in almost every company's business development and innovation. In some industries IT has been a strategic differentiator for years. Therefore, development of strategies, processes, products and services must consider technological opportunities and limitations (catalyst role). An IT/IS portfolio that supports knowledge and intelligence for the core processes is crucial for business value added. A *data warehouse* can be an appropriate 'data center' or meta-knowledge support, because it normally contains data from all departments and functions in the organization.

Indeed, it has become fashionable to have data warehouse (DW), data mining (DM) and data analytics (DA), but often expectations are higher than one can realistically take from these tools and techniques. Data analyzes (DA) allow to identify competitive advantages, however some are not feasible to be implemented by the companies given the big changes that entail (Ross, Beath & Quaadgras, 2013). Companies should start by knowing how to use the data and tools they already have to make decisions. This requires having in day-to-day practice, throughout the organization, a decision-making culture based on data evidence. Companies must begin to take advantage of their operational data and make daily decisions based on those data. A company that does the appropriate organizational and cultural change to its work processes:

- is more able to take advantage of its data;
- hardly goes back in its decisions;
- can reach a management level difficult to replicate by its competitors.

This company is then able to give access to data to all its organizational levels in real time. Also defines procedures and reviews them on a regular basis considering the day-to-day events. Thus, it decides based on the evidence of data (Ross *et al.*, 2013). Such a company empowers its employees, an aspect initiated by the most innovative firms.

## **4. ROLE OF ENTERPRISE AND PROCESS ARCHITECTURE**

Communication is desirable and necessary in transferring knowledge in the organization. One of the stages in the knowledge creation model of Nonaka and Takeuchi (1995) is socialization, involving tacit knowledge exchange between individuals. The shared experiences and their articulation consolidate knowledge, creating shared mental models and forms of trust. Those authors defend that knowledge is created by individuals and the organization has a role in expanding the knowledge created by its individuals turning it as part of the organizational knowledge-base.

Systems' analysts are those that deal more with the need to synchronize views in having dialogues with the entities that request them for information systems' development. They use models to represent the reality they need to appreciate, like a structured design or architecture, to quickly explore and find a solution (Ambler, Nalbone & Vizdos, 2005). Ontologies have been increasingly used as they are models that represent a set of concepts within a domain and the relationships between them, in order to make inference on the objects of that domain. Ontologies generally describe individuals, classes, attributes, relationships and are used in artificial intelligence, web semantics, software engineering and information architecture as forms of representing knowledge about an event.

New computing paradigms, given the speed of change they cause in business processes, should be increasingly addressed using the enterprise architecture approach (Spewak & Hill, 1992). Enterprise architecture (EA) consists of defining and understanding the different elements that shape an organization and how those elements are inter-related (Sousa, Caetano,

Vasconcelos, Pereira & Tribolet, 2006). In particular, EA provides a strategic context for the evolution of the IT/IS function in response to the constantly changing needs of business environment (Palli & Behara, 2014). This raises the importance of identifying and analysing enterprise processes. Next section concerns the contribution that process architecture can have to the issue under discussion. Information systems' portfolio management requires an increasing need of modeling data and process flows for better discerning and acting at its selection and alignment with business perspectives.

#### **4.1 Transition to process architecture**

This concept reflects the concern on drawing or modeling the organizational processes for a better adequation of IT/IS in supporting business requirements. From a process perspective, an organisation regards its business as a system of vision-achieving vertical processes rather than specific activities and tasks of individual functions (*holistic* approach). Modern IS designing is more focused on processes – e.g. business process modeling (BPM) – because from it, besides emerging the problems, emerge the cross-functional links (interactions) that perform a product or service entirely (BPMessentials, 2015). This structure can discuss and overcome issues like:

- Do you rework and use workarounds because information is missing or inaccurate?
- Do you have multiple ways of doing work where one process would be more efficient and cost-effective?
- Do you need to streamline your processes and reduce complexity?
- Is the market demanding you cut costs and be more agile?

Process modeling can take six months, and the analysis another six months after that. But it doesn't have to: a structured approach centered on process architecture uses the skills of a cross-functional team of subject matter experts, and the required techniques to analyze current processes and build optimized ones. To be fully effective, BPM must not be approached as an IT toolset but rather as an environment where a business process-oriented view is the means of communicating business requirements throughout the organization (iGrafx, 2016). This should then be considered within the enterprise architecture approach.

Processes, however simple they may seem, can give rise to endless meetings and consequently generate business losses due to the time between the identification of a need and the process implementation. In this reality, the existence of platforms that allow all employees to build and adapt their processes are increasingly a critical success factor. And this allows to ensure the rapid adaptation of processes to customers' needs. In this way, the creation of bases for a true business agility will allow to accelerate the process of digital architecture.

#### **4.2 Enterprise architecture trends**

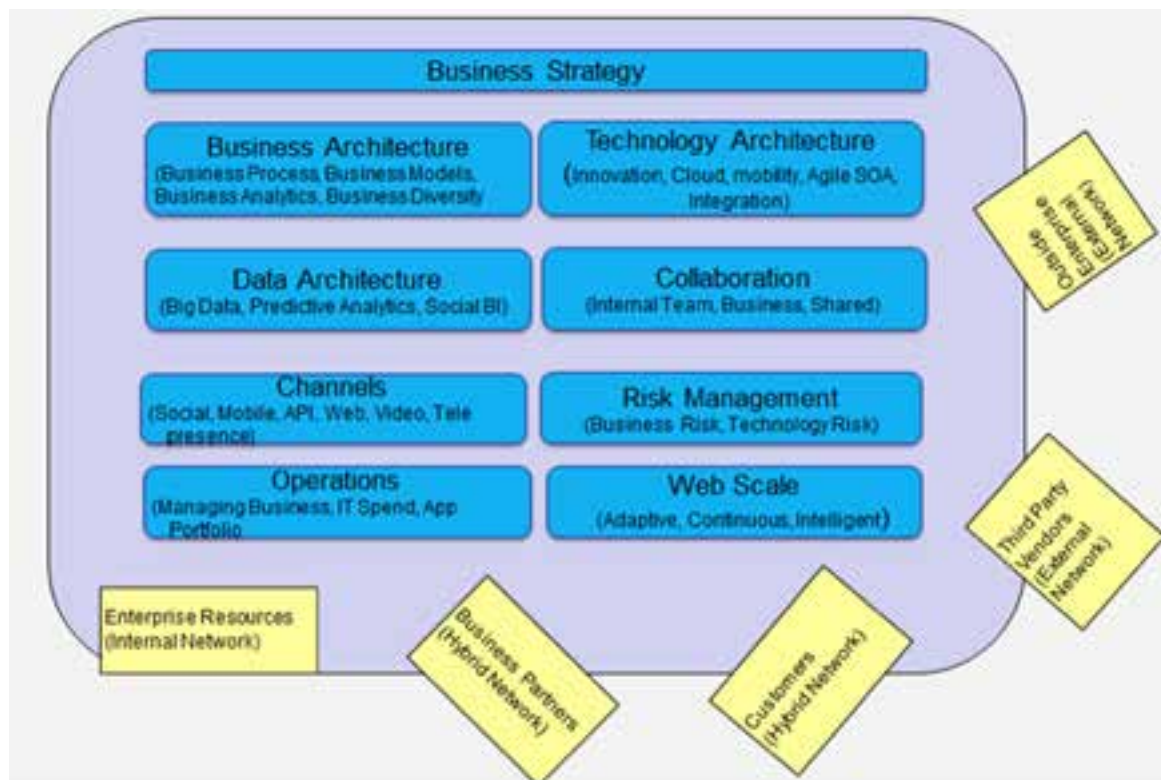
There are many enterprise architecture models, each taking a slightly different approach. But in every model there is an explicit transition from business to IT/IS - from goals and requirements to applications and systems. However this transition or boundary can be less explicit due to abstract business process requirements and methods dictated by available IT tools. Software and enterprise architects should work together to create a set of technical frameworks to support specific work methods. That step must be carried out every time in order to accomplish business goals so that new approaches can be taken. Its success depends on whether best practices in EA modeling were applied. Enterprise architects can be a valuable, even essential, resource in optimizing changes and reducing errors. The boundary between the enterprise architecture model and development is softening to a zone rather

than a line, and greater flexibility within it is essential to get the right outcome (Nolle, 2016).

According to Palli and Behara (2014), without an open EA there will be gaps and architecture conflicts such as: lack of consistency due to the absence of standards; dissipation of critical information and knowledge of the deployed solutions; redundancy and lack of flexibility in the deployed solutions; non-adoption of next generation technologies; lack of integration and interoperability between applications; fragile and costly interfaces between incongruent applications. Traditional EA is more framework-centered and tool-driven. Most of its function is *technology-centric* and defined as a one-time initiative. Application building principles are business-constraint before they are completed. Next generation EA (NGEA) is *business-centric*, global, agile, continuous and social digital network. The organizations adopt latest digital capabilities like social web, service-oriented architecture (SOA), big-data analytics, cloud computing, virtualization, IoT, etc. These technologies can interrelate, either between them or across physical and virtual environments. So they fit together to define NGEA for an organization (Palli & Behara, 2014).

Business model is shifting from traditional EA to digital architecture which addresses networked community capabilities (interacting with users and other agents through social media), globalization (borderless enterprise), product/service innovation (open and virtual innovation), collaboration (employees in decision-making, mobile work), flexibility (to choose the technologies, infrastructure, applications) and context awareness – see figure 4.

Figure 4. Next generation EA model



Source: Palli and Behara, 2014

EA results should integrate with business planning and focus on business model architecture defining business outcome metrics. Also, EA program definition should not span for years, it should deliver business value in months or weeks. For example, after having

modeled and automated the required business processes, Bizagi<sup>3</sup> helps to complete the BPM trajectory with its engine. It then executes those processes and distributes for desktops and mobile devices of all business users. With the right flexibility to fit business needs, this engine allows to start small, agile and tactical to further extend its BPM capabilities to departments, countries and time lags.

One of the main barriers that reduces flexibility and agility in IT/IS is related to inflexible or monolithic application silos, i.e., incompatible or non-integrated systems. Application silos limit IT/IS flexibility and agility which are essential to make quick and reliable business model changes (Adams, 2015). The adoption of a service-oriented architecture (SOA) using EA principles can improve IT/IS flexibility and agility. Transforming IT/IS from application silos to be service-oriented (or process-centered) enables business to adopt market opportunities quickly and reliably with minimum overheads. Well defined services are small, decoupled units of software that perform a specific process and can be reused by other applications. For example, when reusable services are developed for one project, the same services applied could be reused in other projects that require the same functionality. This service orientation increases flexibility and provide transparency across multiple applications and data sources (Hustad & Lange, 2014). Combining services to create business processes is a powerful technique to deploy new products that improve customer's experience which will result in more revenue.

However, adopting SOA means a large transformation in the business culture which requires business cases that define a holistic view of business functions including the IT/IS architecture (Adams, 2015).

#### 4.2.1 *Some real cases*

Here are two real cases/problems in companies whose best implemented solutions came from architectural thinking (or process thinking) rather than technological thinking.

##### Case 1:

X is a retail chain that sells cultural and electronic products. In the recent months, some problems have started due to difficulties some potential customers feel finding what they need in the company's website. These include claims about the lack of a virtual store which allows them to buy online. The head of sales department has been thinking about acquiring the services of a specialized company to solve these issues. And along with it installing a CRM (Customer Relationship Manager). However, the prices charged by this kind of companies have delayed this project. One day, a newbie from the sales department approached the director and offered to draw up a report with the solutions to the problems described. He presented a tool (SAAS – Software as a Service, a type of cloud computing) whose integration with the firm's website and ERP (enterprise resource planning system) would increase its revenue and improve its relationship with customers. Resumming the case, the problems were:

- The firm's website did not appear in the top spots of search engine results;
- Lack of an online store and client area did not provide the desired service or historical record of consumer.

The solutions were envisioned (by that newbie) through integration thinking which is related with an architectural (or process) approach adjusted to align emergent/new IT/IS with new business models/services. For example, to solve the problem related with the search engine results, attention must be paid to SEO (search engine optimization) and meta-tags associated with the firm's activity and services/products.

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<sup>3</sup> Software for business process management (modelization, automation and execution).

Regarding the online store, the system shall include the creation of a virtual basket with a checkout process (payment methods) so that the clients can pursue the order, pay and then obtain the product/service. Implementing the virtual basket opens the opportunity to get a CRM tool to register the sales history, understand buying patterns and, with these and other personal data, innovate and suggest products that meet real customer needs. This tool will also allow to reduce the costs of marketing campaigns as it performs public segmentation and targeting. As the acquisition of a CRM tool can become expensive, it is important to consider a SAAS solution. The choice of a SaaS-CRM will allow purchases with the necessary assistance, properly adjusted to the company's structure and customer needs. Also adjusted to possible future changes that might occur in the business model. Another advantage is that the payment for this cloud system can be monthly made and as long as the company needs it and the software fits its purpose.

#### Case 2:

Y is a management consulting firm for small and medium-sized enterprises, founded in 2001. In the last two years a considerable investment has been made in digital marketing (presence on social networks and website renewal). Despite this investment, the number of clients has not increased as expected. During the website renewal, it was requested to include a chat tool so that the visitor could speak to an operator about any question, making the site more interactive. The operator had the task of turning online the tool dashboard, so that visitors received a message saying that an operator was available to clarify doubts. However, most days either by oblivion or work overload, the dashboard was not active. Resuming this case, the problems were:

- Low conversion of firm's website;
- Chat availability dependent on just one person.

Associated with e-commerce, a conversion rate is an important metric for various digital marketing purposes such as completing a form, subscribing to a newsletter, or downloading an ebook. It is an indicator that will help to measure and optimize the results of a firm's digital marketing investment, meaning to show if its investments in sponsored links, email marketing, social media or any other type of online advertising are producing results. The conversion rate of a website is the ratio between the number of visits to it and the number of actions taken, i.e., the actions performed by the visitor on the website. This means making the visitor perform a certain action on firm's site that has value to its business (become a sales lead, get in touch, buy, among other).

In terms of key solutions, this company envisioned that its low site conversion may be linked to a lack of interaction with visiting customers. Having only a chat tool is not a guarantee that visitors will interact with the operator available. Currently, there are free chat tools that automate the process of interaction with customers (through triggers). The tool opens a dialog box after a while, or if the visitor opens a specific content, containing a message adapted to the context. If the visitor interacts with this dialog box, an operator goes into action through a notification. This tool does not need to be switched on by anyone as it is always online. Several employees from different departments in the firm can assume the operator roll and be called, depending on the answer required. Another advantage of this app is that it can be installed in a smartphone or tablet. And if this is connected to a CRM system, it can increase the likelihood to convert website visits in short to medium term, increasing firm's turnover.

## 5. CONCLUSION

The nature of business processes is changing, often due to the speed of emergence of information technologies. This brings many challenges to organizations, which join those that have not yet been fully resolved. Such events boil down to two main drivers of the present approach: there are so many systems and technologies that organizations are not coming to make the best of them; and people do not continuously tune their visions and processes, at different levels of the organization, in order to obtain real-time relevant information. These two aspects lead to the necessity of a working model (architecture) to plan and facilitate the alignment throughout the entire organization, iteratively selecting critical business information on time.

An informational architecture of the company and its business, easy to understand and communicate, can help to identify the information, consistent with the company's mission, objectives and critical success factors. It is mainly modeled with objects such as: processes (functional and cross-functional, internal and external); resources (functional and cross-functional, internal and external) and outputs (internal and external). This supports information systems' portfolio management as it helps to identify the requirements for those systems in harmony with business perspectives.

However, given the heterogeneity of those objects and data characterizing them, one of the most pressing problems has been the conversion between structured and unstructured data. On this subject, the authors Carvalho and Ferreira (2001) carried out a survey for technological tools assessment, related with knowledge management and conversion between tacit and explicit knowledge, discussing their internalization or outsourcing. Some of these tools are: knowledge portals (corporate *intranets* and *extranets*); knowledge maps (lists of "who knows what": skills/profiles); EDM (Electronic Document Management: cataloging, indexing, etc.); OLAP (Online Analytical Processes for data normalization); *Data mining* (advanced techniques to explore large amounts of data looking for consistent patterns); qualitative analysis tools; among others. This issue can be overcome by business intelligence systems and SOA, which support an intelligent gathering of data sources and an organizational structure by processes. This will allow a management focused on the delivery of products/services that are carried out through processes along the value chain. The purpose of a process-based framework is to evade a management based on separate and disconnected departments or hampered by the distance between hierarchical levels.

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# HOW EXPERIENCE, ATTENTION AND UBIQUITY ECONOMIES AFFECT THE ROLE OF DIGITAL MEDIA ART AND ARTISTS

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## ABSTRACT

This article seeks to demonstrate the impact three economic concepts that gained traction in the last decades of neoliberalism – experience, attention and ubiquity – have caused in the current role of digital arts and artists in society, both on and off-line, as well as how they have changed the arts ecosystem, namely by altering the relationships between artists, audience, curating, public spaces – material and virtual, academia and companies. It addresses the commoditisation of creativity and innovation, which are now organised and consumed like products. It also offers insights on how the concept of art ownership has been replaced by experience, how mass-individualization of the selfie generation artists in a globally aestheticised and exposure-addicted world has contributed to the dismantling of community and association mind-sets and how the architecture of participation, presented as a vector of globalisation, inclusion, and democratisation of access to creation and enjoyment, actually revealed itself as a vector of inequality. It concludes by showing how hacktivism and activism rise as new vanguards in an environment that is written and reads itself, bridging materiality and virtuality, in a multiplicity of blended spaces.

Keywords: New Media Art, Experience Economy, Ubiquity, Attention Economy, Art Ecosystem.

JEL Classification: Z11

## 1. INTRODUCTION

Digital media is interwoven into all areas of developed societies, as is art, and the boundaries between science and art are creating fertile intersections. Decades ago digital media art (DMA) was born in science laboratories and the artists/scientists re-emerged, as modern-day Leonardo's. DMA has now overflowed into a wide range of socio-cultural areas, categorised in genres as diverse as generative art, electronic music, web art, live coding, glitch art or video mapping, among many others.

The artist is at the heart of a complex network, or ecosystem, where art, technology, science, entertainment, society, politics and economy play intricate and interdependent roles. The different relations between the various agents in this network, whether physical or virtual, are analysed fluidly and it is precisely the increasing feedback loop in all relationships between the different agents, between virtuality and materiality, activism and entertainment, experience and ownership that is at the heart of the ecosystem blending concept, hereby presented.

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The DMA ecosystem concept also serves as a backdrop over which the authors analyse how individual needs have become one of the main economic and social mass-fuels of the present day, and how three concept-pairs, once presented as opposites, are leading up to a(n increasingly more) blended-society model, fuelled by location technology and ubiquitous computing: material and virtual, entertainment and activism, and (permanent) ownership and (transient) experience. These concept-pairs are not just becoming intertwined and complementary, rather than opposites: the apparent paradoxes they pose are a consequence of some of neoliberalism recent evolutions, namely the experience, attention and ubiquity economies.

## 2. THE RISE OF THE INDIVIDUAL, THE FALL OF ATTENTION AND THE REINVENTION OF CURATING

The Web 2.0 era was heralded as a haven of creativity, with websites like MySpace, Flickr, LinkedIn and the newcomer Facebook making their strong appearance, all fuelled by user-generated content and social interactions. For Time magazine, the 2006 person of the year was *You*, highlighted on the cover with a mirrored surface replacing a computer screen. In 2014, Marc Andreessen, Netscape's co-founder and investor, sent out a tweetstorm<sup>4</sup> claiming that for the first time in history, humanity could fully and freely express its true nature: "*let's be who we want*". And this liberation would be focused on the *individual*, culture, art, science, creativity, philosophy, experimentation, and adventure.

Just like social networks, newspapers and television networks started asking readers and viewers to submit their own content, and everyone could become a reporter or a TV-star for 5 seconds. Anderson (2009) mentions the two more common motivations for this behaviour: money and reputation; and the latter is the key to massive unpaid spontaneous collaboration in a society where exposure means success (Labrecque, Markos & Milne, 2011). It is through this individual exposure mechanism, that socialites and entrepreneurs rise to stardom, just like artists or actors had done before.

New technologies paved way for new creators: new media artists were suddenly freed from the technical, space and time limitations of their predecessors: they did not even need to be artistically skilled, they could have physical impairments, as they based their activity in an almost exclusively intellectual relation with technology, through programming, automated control and the Internet. And they too sought exposure, like any artist would.

In the globally aestheticised and exposure-addicted western world there is now a massive digital artistic production, reflected on the amount of registered users in specialised websites – Instagram (400 million), Flickr (112 million), Vimeo (35 million), Deviant Art (38 million), SoundCloud (175 million of which at least 10 million are considered as creators)<sup>5</sup>, among many others. This global aestheticisation is dictated by the consumer market (Lipovetsky & Serroy, 2014), and digital artists have become interdisciplinary multi-consumers, acting as entrepreneurs, marketers, communicators, trying to rise above the global noise floor in order to be noticed, hoping to become celebrities (on YouTube, Instagram or Snapchat), paying for services and consumer market tools to gain exposure as a measure of success, buying leverage, likes and followers in reference websites and virtual universes, using communication and marketing techniques more complex than the very art they promote. They are striving on their own, no longer involved in communities and associations, which are suspiciously regarded as politically biased structures, reminiscent of the 20<sup>th</sup> century, but above all, as standing in the way of *individual exposure*.

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<sup>4</sup> <https://twitter.com/pmarca>

<sup>5</sup> Sources: Brandwatch, Techcrunch, Venture Beat and Deviant Art

Creativity too is organised and consumed as a product: through reality shows, specialised websites and training courses, ranging from electronic music to special video effects, and all kinds of festivals throughout the year, and not just in capital cities, and not just in the material world – see “*The Wrong*”<sup>6</sup>. The neoliberal society requires that people become not just creative and innovative – like artists – but also that they have artistic, spectacular, and aesthetic lives – or at least that they are shared as such. But if everything is innovative, spectacular and creative, chances are that everything will soon become monotonous and repetitive. Extreme chaos is as uninteresting as extreme order.

For Deresiewicz, Baker, Cuddehe, Gold, Solnit, Cockburn & Gessen (2015) creativity is only a business concept, paired with other clichés: leadership, service disruption, innovation, and transformation. Creativity is not about becoming an artist. It’s about devising innovative products, services, and techniques — solutions for problems (faster, more beautiful solutions, but nevertheless solutions for already-known problems). The only change that education seeks today is technological and technocratic, within a social and market framework, in order to design better, more specialised products.

Even art-hacking is now organised in hackathons, being promoted by most major universities and industry partners, infusing TED talks (Technology + Entertainment + Design), making audiences reverberate with optimism about the role of hacking, brainstorming and crowdsourcing in the transformation of citizenship (Irani, 2015). Ebert (2009: 11) claims that “*this free zone is a necessity for capitalism: in culture, it gives individuals the freedom that it denies them in the working day*”. Despite the increasing amount of arts courses, master’s degrees and doctorates (in Portugal there are at least four master’s degrees and seven doctorates in the area of digital arts in 2016) – possibly influenced by the newly gained popularity of the *creative industries* – the tendency is to increasingly focus on markets, management, the use of new technologies in education, but less and less on social, political or economic intervention.

The rise of *Generation Me* (Twenge, 2006) is only possible at the loss of the sense of community, collective, and collaboration. If these were once seen as structures that fostered spaces for discussion, creation, and progress, now they are regarded as homogenizers and anti-innovation, anti-individual structures. The idea of the lonesome innovative mind was proposed several decades ago by Becker (1974: 767), who stated:

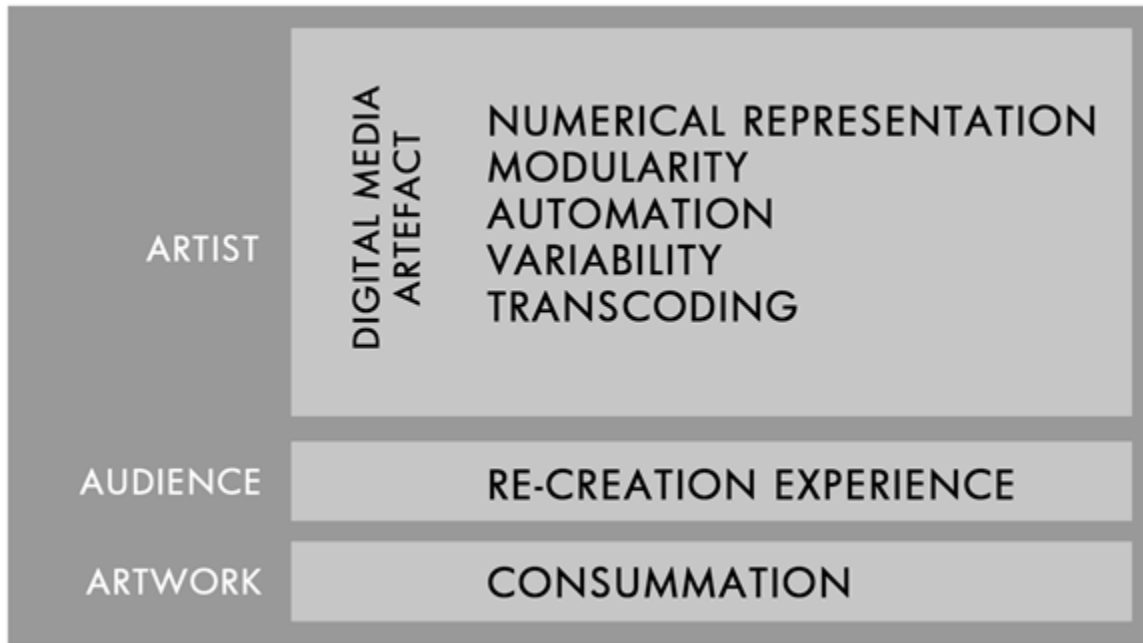
“Cooperation is mediated by the use of artistic conventions, whose existence both makes the production of work easier and innovation more difficult. Artistic innovations occur when artists discover alternate means of assembling the resources necessary.”

For the Critical Art Ensemble (1998: 59), “*market demands discourage collective activity to such a degree that such a strategy is unfeasible*”. In the age of innovation at all costs, communities risk being built solely around crowd-funding mechanisms, technologies or artistic genres, rather than ideals and concepts, and are marked by the re-commodification of art (Rorimer, 2001). The diversity of views is eradicated on social media through algorithms that make people see more of what they like – not what challenges them, the same social media used by artists to (pay to) promote their work – meaning that audiences who enjoy their “type” of work will likely also be flooded with suggestions of “similar types” of work.

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<sup>6</sup> <http://thewrong.org/>

Figure 1. From DMArtefact to DMArtwork



Source: Own Elaboration

But even the self-centred artists need audiences for their artworks. Manovich (2010: 27-45) enumerated the principles of new media artworks, even though the actual aesthetic / artistic / cognitive experience occurs beyond those characteristics, through a relation with another ecosystem agent: the audience. Dewey (2005: 213) distinguishes between artefact and artwork: for him the *experience* is the real work of art, as there is a re-creation every time it is aesthetically enjoyed. This connection between artist, audience and artefact – AAA – is at the DNA core of the DMA ecosystem, shown in Figure 1.

The shift in focus from the artwork to the AAA experience is another one of the core concepts of this article, while at the same time validating the foundations of the DMA ecosystems, which were built within the architecture of participation – presented as a vector of globalisation, inclusion, and democratisation of access to creation and enjoyment (Anderson, 2007).

Yet, considering that the digital artists are a fraction of the total number of artists; that the tech-savvy audience is a fraction of the global art audiences; that the supporting infrastructures, whether virtual or physical, are a fraction of the overall art-dedicated infrastructures, it is easy to conclude that they stand for an inequality with three multiplicative levels of segregation in the fruition of digital media artworks. The paradoxical conclusion is then that the DMA ecosystems thriving in globalisation are in fact systems of individuality and inequality.

The massive increase in artistic production brought along several problems for the audience: by facilitating free online sharing it encouraged unrestricted copying; by equalling (social media) exposure to success it hampered quality assertion – which came dangerously close to counting likes and comments, many of which are expertly bought online. And how can audiences find their way in this intricate setting, how can they tell the original from the copy, the good from the bad, how can they direct their attention towards what is “worth it”?

“*The Attention Economy*” is an approach to information management that deals with human attention as a scarce commodity, and applies economic theory to solve its problems, namely, the fact that attention has become the limiting factor in the consumption of information. Simon (1971: 44-41) claims that:

“(…) in an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.”

Curating was once not just regarded as elitist, but also deeply involved in the very creation of elites (Balzer, 2014). Nowadays the audience, tired of drifting online from link to link, welcomes counselling, quality assertion and selection. Media theorist and curator Dieter Daniels, as quoted by Cook (2008: 32), states that:

“I don’t see yet the real way to bypass what you call the legitimization structure of the art world. Because bypassing any kind of context-creating structure – which is galleries, museums, curators, magazines, education and all this – makes it so difficult for who should find whom. It’s a very good idea that artists might directly address the public but we have the problem of information overflow in general, and so there is no quality filter within. We just get lost and we don’t know how to choose and find what we want if everything is accessible.”

Curating addressed the attention economy *generatives* proposed by Kelly (2008): immediacy, personalization, interpretation, authenticity, accessibility, embodiment, patronage and findability. To do this, it needed to reinvent itself and move on to deal with the complex systems involving artists, engineers, scientists, physical and virtual spaces, both educated and curious audiences and a growing hunger for entertainment and fun, estranged from the conservative and traditional gallery or museum views and spaces. The curator became a business aware co-creator, working in collaboration with artists, but also with other curators, no longer *only* a guarantor of exhibition, collection and preservation, becoming a commissioner of mediation between artists, audiences, institutions, lenders, industry and infrastructures, both physical and virtual, and still as a trust inducer, attesting to the quality and authenticity of artworks and authors, and channelling *attention* to them, by creating *experiences* for the audience.

If this role seems to be directly inherited from the past, it has also been recreated by Blockchain technology in recent years. Blockchain allows for establishing a binding and lasting bond between creator and creation, in order to authenticate a given artwork. The chain starts with the artwork registration, and all subsequent transactions are recorded, thus enabling permanent access to certified authorship and copyright ownership. And Blockchain is not limited to the digital world, as the same type of authentication of physical/material artworks is also possible, through one of their digital representations (photography, film, compound registration, etc.). If e-society’s next iteration is heralded as *knowledge* (Towards knowledge societies, 2005), *value* is surely not far behind.

### **3. A CAREFUL MIX OF ENTERTAINMENT AND ACTIVISM**

Festivals are an echo of the often-transient nature of DMA and contemporary society’s mobility and ubiquity, and are mostly created and managed with multiple goals, stakeholders and meanings attached to them. They embody a materialisation of the DMA ecosystem, and represent a balance between creation and consumption, bringing together artists and audience, culture and entertainment, patrons and buyers, where industry and companies

dazzle audiences with new technology, and where academia is present either institutionally, experimentally or through curating.

Festivals are celebrations, so by definition they have a theme and a variety of meanings, from different perspectives, that make them complex planned phenomena. The festival *experience* manifests itself at personal, social/group and cultural levels, and meanings exist at personal, social, cultural and economic levels. The experience itself is at once personal and social, with each type of festival representing a different experience potential. Event designers – or curators – are particularly interested in knowing how their manipulation of setting, program and various human interactions affects the audience and/or participants, and whether or not the desired experiences and consequences are achieved. This requires true interdisciplinary knowledge of culture, the arts, and environmental psychology. There is also a special appeal in festival studies that is associated with their inspirational potential for creativity, (hopefully) attracting large audiences, and generating emotional responses. In this way festivals are akin to, and part of the entertainment business, and are often featured in place marketing and tourism.

The term “*festivalization*” has been coined to suggest an over-commodification of festivals exploited by tourism and place marketers (Quinn, 2006; Richards, 2007). In this approach, drawing heavily upon consumer behaviour and other marketing concepts, motivations for attending festivals are studied at length, and more recently the links between quality, satisfaction, and behaviour or future intentions have been modelled. The roles of festivals in tourism include attracting tourists, both national and international, to specific places, and to overcome seasonality, contributing to place marketing, animating attractions and places, and acting as catalysts for other forms of development. Dominating this discourse has been the assessment of economic impacts of festivals and festival tourism, planning and marketing festival tourism at the destination level and studies of festival-tourism motivation and various segmentation approaches.

Getz (2010) generally suggests that escapism leads people to events for the generic benefits of entertainment and diversion, socializing, learning and doing something new, i.e., novelty seeking, but for Paul (2005: 66) “*most of those who attend new media festivals are knowledgeable about the field and not especially diverse*”. Challenging as this characterisation of the *typical* DMA festival audience may appear, the fact is that there are at least 12 festivals<sup>7</sup> whose themes focus or embrace DMA that take place in Portugal. If in most of them the ecosystem is Academia-centred, a small number of them boast a professional business-oriented structure, and constant off-festival activity. The curating models vary between full centralisation to modular and distributive approaches. Many of these festivals capitalise on the growing international visibility that Portugal and Lisbon are gaining, although others do not go beyond the geographical environment in which they operate. Almost all of them involve an international selection of artists, and some of them even have already reached international media stature.

If festivals hope to attract larger audiences, they must present content in crowd-pleasing formats – concert, exhibition, workshop, party – as part of a profitability process based on ticket sales to audiences for whom the hedonistic value of entertainment is superlative. A careful balance between entertainment and art should then be reached: the economic viability of each festival depends on its capability to attract a large audience, whereas its artistic reputation and social impact rely on its ability to attract meaningful artists and artworks.

KissMyArs (2016) points out the excess of *hello world* type of creativity at the 2016 edition of the Ars Electronica festival, as mere proofs of concept or simple technology demonstrators

<sup>7</sup> UnPlace, Future Places, Festival Audiovisual Black & White, Festival IN, PLUNC, Madeiradig Festival, Semibreve, The New Art Fest, Jardins Efêmeros, Lumina, Post-Screen Festival, Trojan Horse was a Unicorn (THU)

or interactive entertainment shows, mostly overlooking the interventionist role of DMA in the critique of technology's political, economic and social impacts. Critical voices are also heard in Portugal, about this technology-as-merely-entertainment phenomenon, and for Sier (2015: 14) *"the connection between art, science and technology has permeated History and will always continue to do so. Now it has temporarily become a buzzword to host a lot of rubbish that thrives in the curve of changes that technology has fostered"*. At the CyberArts 2016 exhibition, however, the 2016's Golden Nica for Digital Communities category was awarded to the P2P Foundation whose motto is *"transitioning towards the commons-based, peer-to-peer society"*. The Foundation is:

*"(...) a global network of researchers, activists, and citizens monitoring and promoting actions geared towards a transition to a Commons-based society. We are a decentralised, self-organised, globally distributed community building an information-commons ecosystem for the growing P2P/Commons movement. We examine the digital and the material worlds, their freedoms and restrictions, scarcities and abundances. We are an incubator and catalyst, focusing on the 'missing pieces' and the interconnectedness that can lead to a wider movement."*<sup>8</sup>

Gorz claims (2005) that hackers (or the hacking mind-set) and the free/open software community will be digital capitalism's dissidents *"because they operate in the sphere of production, dissemination, socialisation and organisation of knowledge, and have their activity based on an ethics of voluntary cooperation, they also allow for the experimentation of other ways of life and other social relations"*. Activists and art-hacktivists share some characteristics, namely a desire to make improvements in society, pushed through art, with a focus on social, political, environmental, economic, racial, sexual or technological topics. Art-hacktivism is a type of artistic practice that may show significant variations in the artist's willingness to engage in illegal or legally ambiguous activities. The outlaw orientation will determine practices such as site defacements or sabotage whereas the transgressive orientation only challenges the law, without pushing the challenge to the point of immediate legal jeopardy (Samuel, 2004). Digital activists, on the other hand, will operate within legality, mainly through *culture jamming* and *subvertising*. Ensler<sup>9</sup> defines activism as:

*"a creative energy that comes from giving one's heart and soul and imagination to the struggle. Not aggression but fierceness. Not hurting but confronting. Not violating but disrupting. This passion has all the ingredients of activism, but is charged with the wild creations of art. Activism – where edges are pushed, imagination is freed, and a new language emerges altogether."*

Activism is an organised practice by nature, naturally opposed to the individualization processes. It is then only legitimate to expect and hope that these organisations also produce their own events and festivals, often as self-curating artistic communities, which emerge as a form of resistance and survival, maybe not immune to consumerism, sometimes even collaborative by necessity, along the lines advocated, for example, by Furtherfield (Garret, 2013: 1):

*"For over 17 years Furtherfield has been working in practices that bridge arts, technology, and social change. (...) Our artistic endeavours include net art, media art, hacking, art activism, hacktivism and co-curating. We have always believed it is essential that the individuals at the heart of Furtherfield practice in arts and*

<sup>8</sup> <https://p2pfoundation.net/>

<sup>9</sup> See the 5th segment of [http://www.nytimes.com/interactive/2011/12/02/opinion/magazine-global-agenda-big-question.html?\\_r=0](http://www.nytimes.com/interactive/2011/12/02/opinion/magazine-global-agenda-big-question.html?_r=0)

technology and are engaged in critical enquiry. For us art is not just about running a gallery or critiquing art for art's sake. The meaning of the art is in perpetual flux, and we examine its changing relationship with the human condition. (...) If we as an arts organisation, shy away from what other people are experiencing in their daily lives and do not examine, represent and respect their stories, we quite rightly should be considered as part of an irrelevant elite, and seen as saying nothing to most people."

#### 4. UBIQUITY AS A BLENDING AGENT

"Computing is not about computers anymore. It's about living", claimed Negroponte over two decades ago (1995: 6). And maybe nowadays the Internet is no longer about networks; digital is no longer about binary representation; and virtual is no longer opposed to material.

"What better way, then, to emulate God's knowledge than to create a world constituted by bits of information?" (Heim, 1993: 95). But rather than serving as a promised liberation from materiality's restrictions, cyberspace quickly became a business simulacrum of materiality itself, with actual payments over the virtual occupation of equally virtual housing, virtual furniture and accessories, special virtual powers, virtual clothes, animals, plants and other objects of desire – including virtual sex – in environments like World of Warcraft or Second Life (which generates the equivalent of a small country's GDP - 500 million USD<sup>10</sup>).

And this circuit is now closed in both directions: from material to virtual, virtual to material, with feedback mechanisms, loops and interdependencies. Our perception of reality/materiality can be affected by virtuality, which, in turn, is built over material paradigms. Death is trivialised by TV series, computer games, soap operas, crime dramas, mysteries, documentaries, live television coverage of bombings, shootings, and executions (Despelder & Strickland, 2015). People simulate reality and then share those simulations as evidence of fact. As far back as 1922, Robert Flaherty's film *Nanook of the North* showed an Inuk actor directed into simulating real actions (seal hunting with harpoons, instead of the actual Inuk weapons, or displaying an overly inappropriate use of a gramophone) to illustrate ethnographic concepts in a *documentary* style (Kara & Reestorff, 2015). Or as more recent examples, consider photoshopped selfies and magazine covers, or fake holiday trips in Asia<sup>11</sup>.

In the neoliberal society the daily experience of life is now a blended process, intimately linked to *onlineness*, which causes social space to be distributed, and allows for a seamless, constant flow between materiality and virtuality, resulting in a blending of the two worlds (some would say an *augmented-world* or *mixed-reality world*). There is no need to go somewhere in order to find one person or enjoy one experience – any urban space is a potential gathering and sharing space, the digital artist's place of creation can be anywhere, and correspondingly, it is expected that any urban space will facilitate permanent connectedness.

If virtual reality tried to create a virtual world inside the computer, the paradigm has now shifted to the computer that extends and amplifies the material world. Weiser (1999: 3) introduced the concept of ubiquitous, invisible computing: "*the most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable*". He states the opposition between the notion of virtual reality and ubiquitous, invisible computing as being so strong that another expression – *embodied virtuality* – is used to refer to the process of drawing computers out of their electronic shells. "*The virtuality of computer-readable data – all the different ways in which it can be altered, processed and analysed – is brought*

<sup>10</sup> According to Ebbe Altberg, Linden Lab's CEO, the creators of Second Life <http://motherboard.vice.com/read/why-is-second-life-still-a-thing-gaming-virtual-reality>

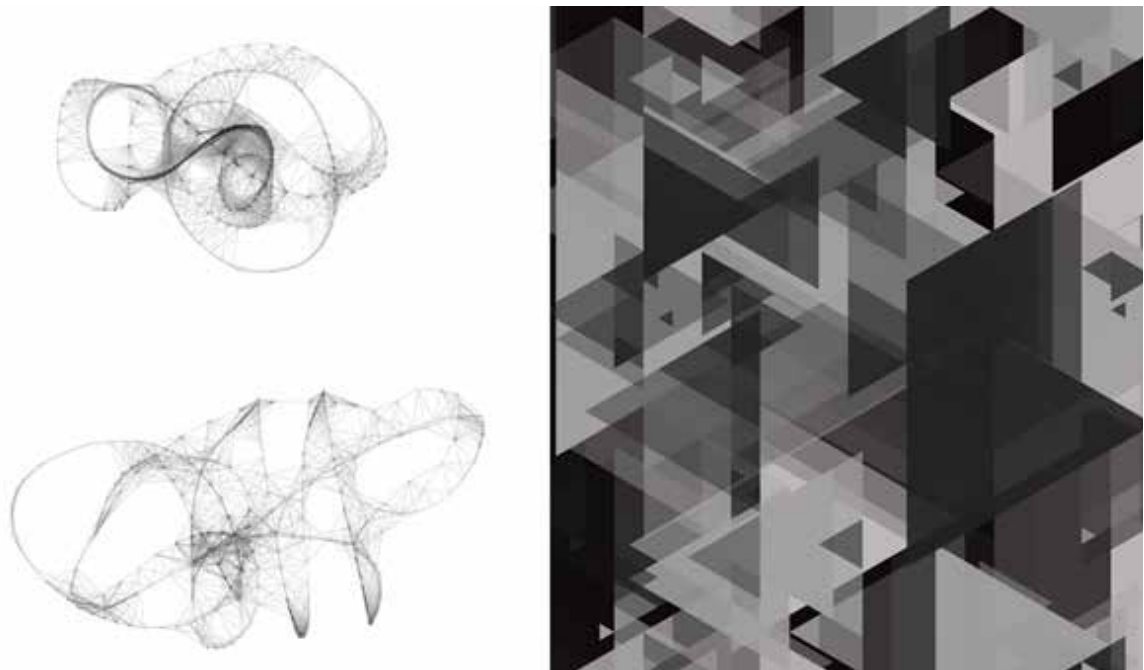
<sup>11</sup> <https://www.washingtonpost.com/news/the-intersect/wp/2014/09/12/what-is-reality-a-qa-with-the-artist-who-used-social-media-and-photoshop-to-fake-an-epic-trip-even-her-parents-fell-for/>



into the physical world” (Weiser, 1999: 4). Embodied virtuality places everyone in the centre of permanently accessible and interconnected networks. This post-virtual world does not imply a return to an analog world; instead it means that networked devices have become so ubiquitous and that the scanning process of culture is so comprehensive, that it is now anachronistic to think about the real/virtual dichotomy: reality has truly become blended. (Gasparetto, Lima, Casimiro, Boelter & Santos, 2015).

This blended world (and market) is densely populated by various easy-to-use mobile apps, many of them free and many of them from companies that quickly disappear, which aim to almost entirely replace the classic tools of (artistic) creation, while essentially producing art without substance or meaning – yet very decorative and entertaining, as in Figure 2.

Figure 2. “Art” created on an iPhone in less than 15 seconds using Paint Magic and Deco Sketch apps



Source: Own Elaboration

In the words of Clark (2003: 6), “*we have been designed, by Mother Nature, to exploit deep neural plasticity in order to become one with our best and most reliable tools. Minds like ours were made for mergers. Tools-R-Us, and always have been*”. And it is the unobtrusive tools like the pencil, the hammer or the smartphone that promote imperceptible human hybridisation. “*We reached a point where for every human need, there seems to be an app and for each social representation, there is a dedicated social network.*” (Weiss, 2015).

For the festival-going *Millennials*, experience implies social, local and physical sharing but also social and virtual/digital sharing. In fact, the distinction is no longer important, the blending process is ever-expanding: information and cultural elements, characteristic of the digital universe, migrate freely to the material plane<sup>12</sup>. Any experience will not be complete without proof – a *selfie* or Snapchat video – as a blended piece of evidence: from material to virtual and back, as many exhibitions are now made using printed material from digital sources<sup>13</sup>.

When making an off-season visit to the grounds of a temporary event, there is a material emptiness, yet densely populated with digital graffiti: geo-referenced images, videos or sounds of past events, hover like trans-verse echoes. If in the material world tagging emerged

<sup>12</sup> <http://jilliancyork.com/2011/10/16/hashtagging-real-life/>

<sup>13</sup> <http://www.cnbc.com/2016/09/02/your-next-instagram-post-could-land-in-an-art-exhibit.html>

as a form of graffiti, selectively used as a personal or crew signature, as proof of presence, ownership or territoriality, in the augmented world everyone can be a (hash)tagger, and will use the most popular hashtags not as a mark of individuality, but rather seeking exposure, so that their digital graffiti – their geo-referenced posts – will get the most visibility, comments and likes. Hashtags will often not only index, but also imbue added meaning to the shared content. The correlation between content (its theme and aesthetics) and location (by means of geo-reference) can then be established by simple textual data analysis, and can provide useful insights on the mobile city and the mobile audience (Kennedy, Naaman, Ahern, Nair, & Rattenbury, 2007). This riches of data provides ample *prima materia* for artists, scholars, philosophers... and surveillance mechanisms and agencies.

The physical experience is increased, instead of being hampered or cancelled by technology (Savicic, 2012). Ubiquitous computing and mobile technologies redefine public spaces and redefine the city, people feel that they are physically within the system, as opposed to being left outside; they use images and move objects; each *individual* feels like being “*at the very centre of things*” (Baker, 1993: 151). Thielmann proposes that (2010: 3):

“The appearance of new media applications has always initially resulted in ‘individual media ontologies’, which have then been extended to ‘general media ontologies’ through the synopsis of several media and the formation of an independent mediality. (...) It is exactly this genealogy that can now also be applied to media geography, which, since the millennium, has formed from the individual media geographies of ‘art geography’, ‘literary geography’, ‘music geography’, ‘psychogeography’, ‘film geography’, ‘television geography’, ‘telegeography’, ‘cybergeography’, ‘Internet geography’, and, finally, ‘Wi-Fi geography’.”

*Locative digital art* or *locative new media art* appears as a type of digital art that can express a level of spatial relationships. The use of locative media for artistic purposes has linked geography and maps to urban life and experience in novel ways, offering various transformations in the traditional relationship between the mapping process and the material space it portrays. Locations inspire the artistic creation of information mappings that may express, criticize, expose, challenge or motivate different aspects of urban life. “*We are confronted not by one social space but by many – indeed, by an unlimited multiplicity or uncountable set of social spaces (...). No space disappears in the course of growth and development: the worldwide does not abolish the local*” (Lefebvre, 2009: 86).

Although location-based arts have long and rich histories, Pope (2005: 1) suggests that “*the novelty of [locative] projects seem to be in the way they extend the human community to include an array of agents, arranged in space which includes antennae, rooftops, trees, buildings, masts and the like*”. And Albert (2004: 1) adds that:

“By experimenting with these tools and technologies, developing open formats such as RDF, and free software tools for manipulating and exploiting location-based devices and media, or developing low-tech hacks that do the job better than the expensive gadgets, locative media practitioners are keeping the technologies close to the ground, available for hacking, re-wiring and re-deployment in non-authoritarian ways. On a less technologised level, artwork that operates with locative media is not just about the public communication of this interesting new technological form. Nor is it necessarily austere and overtly political. Locative media art at its best enhances locative literacy. The ability to read, write, communicate is vital for any person needing to act, take power, to have

agency. An awareness of how flows and layers of information intersect with and augment a person's locality, and the ability to intervene on this level is a further extension of this literacy, and of their agency."

This may be an indicator that in the near future, the socially excluded individual is the one that does not have a permanent mobile connection, and may come to be defined as the digitally immobile subject: digitally anti-social (Beiguelman, 2013).

The exploratory dwellings of locative media lead to a blending of geographical and data spaces, reversing the trend towards digital content being viewed as placeless, immaterial. Ubiquity materializes virtuality.

## 5. FROM OWNERSHIP TO EXPERIENCE

Groys (2009) claims that society has become globally aestheticised, that people are now addicted to the spectacularisation of reality, of everyday situations, and this spectacularisation is centred on seduction and celebration, and its success is determined by the level of exposure and social engagement. The eagerness for showing-off novelty and innovation, and its trivialisation, determined the rise of a paradox: with media and technology's fast obsolescence, the ease of creation is nearly matched by the ease of destruction. "*Denouncing the recent past as outdated and announcing the arrival of a brand new, cutting-edge reality, in other words, is part of capital's interpretive logic of self-legitimization*" (Ebert, 2009: 11).

Permanent ownership is incompatible with the thirst for novelty, therefore a new paradigm was needed: *the experience*. Even art has increasingly become the object of transient experience. How to sell a screensaver, a gif, a piece of code, which can be perceived as something that is easily and readily copied and destroyed without even a second thought? Destroying an art print or silkscreen would raise concern, but deleting a jpeg or gif file is done without a second thought. If McLuhan heralded the medium as the message, in present times the medium became the business, and the message sells the medium. Chayka (2011) asks how is it possible to sell something that is impossible to own? Take net-art as an example. If it is online, it is replicable, and since the desire of ownership (or perceived value) is intimately connected to exclusivity, it wouldn't be perceived as enticing or alluring. Therefore the strategy to take it offline – thus eliminating replicability – would seem like a good idea. However it would disrupt the very nature of the artwork. In short, applying old rules to new realities will likely contribute to the distortion of both<sup>14</sup>, and such is the nature of the ecosystem: evolve and adapt.

Music business is now centred in selling subscriptions to streaming services and players, even if that means users will never own the music files, and they don't really seem to mind that. The current *festivalization* trend is also a sign of this shift: the event/experience overtakes the content; the Festival itself becomes more important than the artists and/or artworks it showcases. "*The Experience Economy*" is an expression coined by Pine and Gilmore (2014: 1) that translates this shift:

"While prior economic offerings – commodities, goods, and services – are external to the buyer, experiences are inherently personal, existing only in the mind of an individual who has been engaged on an emotional, physical, intellectual, or even spiritual level. Thus, no two people can have the same experience, because each experience derives from the interaction between the staged event (like a theatrical play) and the individual's state of mind. Experiences have always

<sup>14</sup> This discussion around the sale of an animated gif file is representative of this topic <http://hyperallergic.com/19769/how-do-you-sell-an-animated-gif/>

been at the heart of the entertainment business – a fact that Walt Disney and the company he founded have creatively exploited. But today the concept of selling an entertainment experience is taking root in businesses far removed from theatres and amusement parks. New technologies, in particular, encourage whole new genres of experience, such as interactive games, Internet chat rooms and multi-player games, motion-based simulators, and virtual reality. The growing processing power required to render ever-more immersive experiences now drives demand for the goods and services of the computer industry.”

But experiences must be selective in order to be meaningful, and therefore capture *attention*. The brave new digital world, filled with promises of a creativity, art, and culture haven, has gone rogue. The same artists that welcomed the fall of creation barriers have now to face harder to overcome barriers, if they expect to make a living out of their art. They conclude that exposure (alone) as a measure of success does not pay bills. Artists whose work is mainly digital or virtual are faced with the need to transition over to the material plane, through direct, indirect or hybrid instantiations (e.g.: printing, 3D printing, video-mapping, among others) to create experiences in the material world and monetise their creations. The very physical and elegant EO2<sup>15</sup> technological frame materialises virtual art on the walls of any home, like an mp3 player does with a music subscription: attention has shifted to the technological mediators, as symbols of status, rather than their content.

Kelly (2008) suggests that publishers, studios and labels – to which the authors add galleries and museums – will never disappear, even if they are no longer needed to distribute artworks; in fact their new role is distributing the audience’s *attention* back to the artworks, enabling the *experience*.

Yet, some artists hack the ecosystem relations and traditional principles, and the hacking itself gives rise to creative processes, such as Swedish artist Jonas Lund<sup>16</sup> who, in one of his most recent works called “*Your Logo Here*”, as a take on the bartering economy, grants promotional space to brands or companies in exchange for services, favours, materials or exposure – but does not accept money.

## 6. CONCLUSION

In a world where hybridisation, creativity, innovation, and brainstorming risk becoming market clichés, where the individual is being driven into creative isolation by the competitive *start-up-like* mentality, borders must be crossed, amended or abolished, promoting a real blending of human knowledge and restoring true social, aesthetic and cognitive interaction.

“The totalizing belief that social and aesthetic value are encoded in the being of gifted individuals (rather than emerging from a process of becoming shared by group members) is cultivated early in cultural education. If one wants to become an ‘artist’, there is a bounty of educational opportunities – everything from matchbook correspondence schools to elite art academies. Yet in spite of this broad spectrum of possibilities, there is no place where one can prepare for a collective practice.” (Critical Art Collective, 1998: 60).”

At the core of the DMA ecosystem is the AAA triple connection between artist-artwork-audience, but their relations are extended to/by several actions: creation, enjoyment, curating, entertainment, education, training, research, socialisation, economic return, social

<sup>15</sup> <https://www.electricobjects.com/>

<sup>16</sup> <http://jonaslund.biz/>

impact, among others. These actions flow, almost incessantly, between the physical and virtual planes, and interweave urban multi-layered spaces, with social media layers, where interactive experiences are created that question the sense of belonging: to society, place, time, materiality or virtuality. The ecosystem space is constantly written and constantly reads itself, and establishes successive bridges between materiality and virtuality (Spagnoli & Gamberini, 2005). The digital media artist is transdisciplinary by nature. According to McGregor (2004: 2-3):

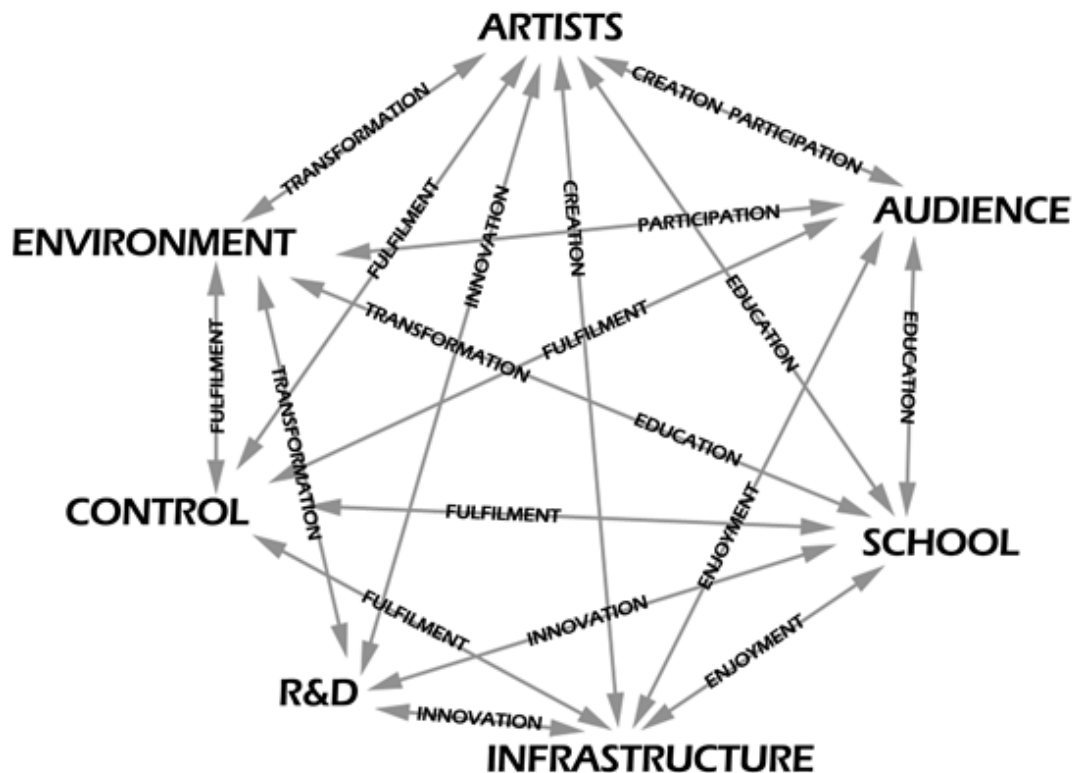
“There are four very compelling pillars that underpin this new knowledge: learning to know, to do, to be with, and to be. (...) Very briefly, learning to know refers to training in permanent questioning of assumptions and in building bridges leading to continually connected beings. Learning to do certainly refers to acquiring a profession, but doing so within a profession that authentically weaves together several competencies at the same time as creating a flexible, inner, personal core. The latter refer to always being an apprentice of creativity and of creating our potential. Learning to be with others means that not only do we learn to respect others but we learn a new attitude that permits us to defend our own convictions. This new attitude makes a space for both open unity and complex plurality—they do not have to be in opposition to each other. Finally, learning to be does not mean the same thing as existing. It means discovering how we have been conditioned, determining if there is any tension between our inner self and our social life, and testing the foundations of our convictions and to question—always question.”

This questioning extends to DMA curating, since it implies a displacement of the curatorial approach in equal parts to the production, distribution and exhibition of the artefact (Cook, 2008), thus emphasising the relevance of other ecosystem agents: technology suppliers and artisans (industry, companies, experimental laboratories, etc.), distributors (editors, curators, networks, managers, specialised websites, virtual worlds, mass media, etc.), and exhibitors (museums, galleries, public spaces, festivals, virtual and material infrastructures, etc.).

The ecosystem relates artists and artistic communities, audiences, infrastructures (venues, public spaces, galleries, etc.), education (including universities, conferences, seminars, training courses), research and development institutions and practices, control mechanisms and agents (curating, financing, marketing, etc.) and the socio-economic environment (including political aspects), as shown on Figure 3.

Technology is the relational backbone in the DMA ecosystem, much like the natural environment of biological ecosystems, and is increasingly devoted to processing the surrounding physicality, to channel the *attention* of people on the move – including artists and their digital artefacts.

Figure 3. The DMA ecosystem



Source: Own Elaboration

The digital media artists will evolve between two limits: on one extreme those who aspire to create (only?) technologically innovative, increasingly blended locative artefacts, and who are compliantly and fully engaged in the *experience*, *attention* and *ubiquity economies*, and on the other extreme the digital media activists and art-hackers who use their vision to collectively and socially engage in critical interventions through art and technology, accepting that they must act inside an economic scenario, while also deconstructing it. Challenging neoliberalism does not mean refusing it, but transforming it into a *playground*, both to appropriate it and expose its incongruities. Like the blending of materiality and virtuality, DMA will mostly be a blend of those two extremes. It is however more likely that true innovation will be linked to the hacking mind-set rather than the compliant mind-set. In Wark's words (2004: 1):

“Hackers create the possibility of new things entering the world. Not always great things, or even good things, but new things. In art, in science, in philosophy and culture, in any process of knowledge where data can be gathered, where information can be extracted from it, and where in that information new possibilities for the world produced, there are hackers hacking the new out of the old.”

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# THE ALCALAR STUDY: A QUALITY OF LIFE COMPARATIVE STUDY ON INSTITUTIONALISED ELDERLY

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## ABSTRACT

**Summary:** Comparative evaluation on *Quality of Life* (QoL) perception on different communitarian residential institutional environments for senior citizens.

**Method:** Cross-sectional comparative study, using a deductive and a descriptive statistical method on a sample of 50 senior citizens inhabitants in the Retirement-village St. Joseph of Alcalar (Alcalar group), 56 senior residents in traditional retirement homes (RSS group) and on 52 senior attendees of day care institutions (DCI group). This research comprised on two self-applicable questioners for elderly citizens on WHOQOL-BREF e WHOQOL-Old PT. We evaluated 158 senior citizens selected from 22 Institutions.

**Results:** QoL levels perceived by Alcalar Retirement-village inhabitants were predominantly higher than QoL levels perceived by residents in RSS and DCI attendees. The trend in QoL results obtained by the Alcalar Retirement-village inhabitants just wasn't absolute because they were overcome by DCI attendees results in some (few) areas assessed in both WHOQOL scales.

**Conclusion:** The Alcalar Retirement-village group globally showed higher levels of Quality of Life perception by comparison with the other two group subjects' residents and attendees, respectively, from RSS and DCI.

Keywords: Alcalar, Elderly, Quality of Life, Retirement-village.

JEL Classification: D61, H54, I31, I38

## 1. THE GENESIS OF THE CONCEPT OF QUALITY OF LIFE AND ITS APPLICATION

Over the last decades of the twentieth century, until the dawn of this millennium, the *quality of life* expression has been increasingly used by common sense language and become customary in the current vocabulary. Historically, the phrase "quality of life" have been originally declared publicly in 1964 by President Lyndon Johnson on a speech in which he spoke "(...) progress on social goals cannot be measured by the size of our bank balance. They can only be measured by the quality of lives our people lead (...)" (Ribeiro, 2005: 95). Similarly to the common language, the quality of life expression has often been used by the scientific community, which has made efforts to formulate a commonly accepted operational definition for the concept.

However, the accurate conceptualization notion of *Quality of Life* has not been an easy task because of its complexity: it is a concept that varies in one individual over time, from

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person to person, from culture to culture and even epoch to epoch, since what was once pleasant for many may be currently unappealing to some and unacceptable to all in the future or vice versa.

Contemporary attention increasingly paid to qualitative concepts such as standard of living and quality of life (hereinafter called the initials “QoL”) is being shared by social scientists, philosophers and politicians, and both cover care practices as well as general official policies. According to Spilker (1990), the renewed interest in QoL was especially promoted by scientific areas as psychology and sociology, and also had great importance in the context of comprehensive health care and political management of economic resources. According to the same author, the increase of studies on QoL was due largely to technological and civilizational progress that led to the increased life expectancy of people, mostly due to changes in the disease treatment or in relation to the extension of the chronological age. In this context, as society became more aware that the extension of life expectancy did not always correspond to their continued well-being, it was also a growing social and scientific concern about the concept of QoL, especially when this started to be considered as a basis for decision-making in relation to the duration or term of medical treatments (Spilker, 1990).

From the last third of the last century it is possible to find a causal relation as the basis of the development of the notion of QoL: the remarkable recent civilizational development, particularly in the technological dimension of biomedical sciences over the last 50 years, raised at the same time, a growing social unrest in concerning the progressive dehumanization of senior care provided to people. This unrest increased a public focus on QoL as well in social and humanities sciences, both of them inspired by the social-humanist movement which, in turn, played (and still plays) a substantial influence on policy determinations and, as might be expected, also influences on the biomedical sciences.

The humanizing purpose focused on the enhancement of wider qualitative parameters than simply controlling symptoms, reducing the mortality or increasing life expectancy (Fleck, Chachamovich & Trentini, 1999) it has been, according to us, ethically crucial and morally just as it was (and unfortunately still is) relatively common in biomedicine to intend to prolong life, relegating to a secondary plane the need to add *life* to lifetime.

Nevertheless, we are aware that, due to the idiosyncratic subjectivity, the concept of QoL has limitations: people perception tends to be unstable because what today can be considered as good QoL might not continue to be so in the future; as people and societies change also modifies the way they evaluate their QoL.

In general, despite some identified conceptual limitations, the authors seem unanimous on two key aspects: besides being multidimensional, the characterization of QoL notion seems to have a high correlation with the perception that people have about themselves as well as about others and is strongly influenced by the environmental context within the scope of the socio-cultural dimension in which individuals are placed. Even though its conceptual diversity, it is encouraging to note that proliferation of definitions of QoL underlines the importance that the scientific community has devoted to this theme (Meneses, 2005). This complex conceptual situation seems to be related to the critical link between ageing and QoL particularly given the importance that such a relationship has assumed in Western societies, in which the QoL concept is one of the main indicators to be taken into account when assessing the living conditions of the elderly (Castellón, 2003).

Therefore, one can verify that the concept of QoL has become progressively more complex over time. It covers an increasingly wide range of aspects of people’s lives, among which it comprises the environmental, health (physical and mental) and societal dimensions (which include social organisation, political and spiritual, including economic and cultural aspects).

We recall that in the present and future socio-demographic context wherein the biotechnological developments allow an increasing longevity (which is also reflected by

increased prevalence of chronic pathologies), the central objective of the QoL concept is crucial to the determination of the medical practices and to back up health policies that would focus not only on the treatment focused on the healing but also in maintaining or promoting a good life existence. However, if we must bear in mind that the concept of health as it is proposed in the *Glossaire de la promotion de la santé* (WHO, 1999) implies a positive multidimensional perspective that goes beyond pathology and functional deficits; therefore, such a definition should limit any QoL approaches that are exclusive of biomedical nature, even if inspired by the biopsychosocial paradigm.

From a psychological point of view, the QoL results of the evaluation of various components such as happiness or subjective well-being, self-esteem, coping and resilience, emotional and psychological stability and particularly in the case of ageing, it is also dependent on an adaptable attitude of selection optimization and compensation (Baltes & Baltes, 1990).

QoL seems also correlative to the *joie de vivre*, their emotional skills and the establishment and maintenance of their community participation, as well as expectations about their future and other personal aspects. In addition, we also point out that the psychological dimension is closely linked to all of the other dimensions, in particular with spirituality, the physical dimension, functional and economic independence, social relationships, and also, in this particular case with the environment and the way they live the environmental space, whether it's natural or human.

In other words, from a psychological perspective, the perceived QoL depends on the characteristics each person in interaction with others in view of their socio-environmental and cultural context. In this perspective, from the inclusion of the psychological dimension and also the specific features of the living space in the assessment of the QoL, came the proposal to include the assessment of the environmental quality, that is a more measurable concept facilitating the research, this is why the environmental dimension serves as a specific indicator for QoL.

To this understanding, has contributed studies of psycho-behavioural aspects connecting the surrounding environment, which includes the correlative analysis of the perception of their surroundings (whether it's natural or by human intervention) and the quest for understanding the levels of well-being in connection with the surrounding environment, these concepts were developed since the mid-twentieth century opening a new field of psychology - Environmental Psychology - which has as its main objective to study the inter-relational dynamics of human behaviour with the environment in which it operates, in other words, the reciprocal relationship between the person and the environment.

Also known as Spatial Psychology, environmental psychology analyses human behaviour in the environmental and social contexts while investigating the interrelationship between people and the environment, giving great importance to the behaviour, perceptions and environmental representations.

Currently, environmental psychology investigates the effects of environmental and structural conditions on human behaviours as well as studies how people perceive the environment conditions (natural and physical) and hence they act individually among themselves in and with the environment in which both coexist.

Claiming that environmental psychology should study the environment and analyse the behaviour and perceptions (individual and of the community) of their physical and social or communitarian contexts, Moser (2005) classifies the relationship between the person (or people) and the surroundings in four levels: i) individual level: the private space or the micro-environment (the workplace, housing, housing, private property, etc.); ii) neighbourhood-community level: the environments shared among people or semi-public spaces (the neighbourhood, apartment blocks, condominiums, nursing home, leisure parks, etc.); iii) individual-community level: public environments, the landscape, the intermediate

spaces (the settlement, the village, the town, the countryside, the beach, etc.); iv) social level: the global environment as a whole, encompassing both the built environment and the natural environment (resources of a region or country, etc.).

Also according to Moser (2005), in conjunction with this detailed classification, there are four more dimensions in the interrelationship person-environment, giving it a higher complexity and dynamism: the cultural, physical, social, and temporal dimensions. The author argued that the well-being depends on the involvement with the environmental surroundings and, concomitantly, the identity processes, arguing that the way people, in self-awareness, interact with the environment and with each other in the environmental context contributes to its well-being, a view with which we do agree.

This means that from the perspective of environmental psychology, natural and built components and individual and social factors interact with each other, they are interrelated. We are also lean to agree with (Ferreira, 1997) when he states that environmental awareness, environmental cognition, environmental stress and pro-environmental attitudes are also examples of the broad field of study that has been dedicated to contemporary environmental psychology, topics that greatly interest us in our residential institutional study for the elderly that we set out to do.

It is not negligible all of the multiple components of everyday materials and the sensations and emotions that drive from them but it is also relevant other factors such as age, socio-economic pattern, ethnic and cultural origin, demographics and health and other aspects that make each person a unique being and capable of perceiving the reality in a unique and idiosyncratic way. It is also not negligible all of the environmental influences on individual perceptions, particularly on QoL. In association, there is also the reciprocity of psychological and behaviour feedback that influences, in particular, the environment itself.

Mainly from the middle of the last century, as happened with the worldwide population contingent, also the average life expectancy increased to levels never seen before due to factors related to the tremendous scientific evolution occurred in technological and biomedical levels and also by factors attributable to socio-economic and cultural progress.

Science and clinical experience have shown us that there are not uncommon situations in which longevity can be problematic in that it has consequences on different dimensions of life (physical, psychological, socio-economic and cultural). This is also the perspective of Figueira *et al.* (2008) that conclude that as successive losses of autonomy, activity and social participation associated with increased age, simultaneously reduces the QoL of the elderly.

It becomes increasingly evident in contemporary society that living longer may have implications on the QoL of the long-lived, with increasing depression and anxiety and consequences of social exclusion, so often marked by family abandonment. In a way, longevity also brought consequences that influence the QoL of other age groups of the population, in particular in close family members and caregivers of dependent elderly.

The arrays of elements associated with the QoL were also highlighted by Paúl (2005) where the authoress argued that the QoL of the elderly is modified to the extent that change the determining factors in a successful ageing: good health characteristics, the personal behaviour and the physical, social and economic environment.

From the foregoing, we also agree with Fernandez-Ballesteros (2000), when the authoress argued that the higher or lower QoL of the elderly results strongly on the circumstances and the environmental context in which they live, depending also on their gender, social status and lifestyle, especially when the combination of all those factors are considered at a long term.

Yet with respect to representations of older people themselves about the meaning of QoL, Silva (2003) indicated that they focus on the relative dimensions of autonomy, physical health, functional independence, psychological balance, social and family relations,

the economic aspects, citizenship, religion, transcendence and the environment. For the elderly subjects of a research carried out by Fernandes (1996), the author said that among various aspects, functional autonomy, learning about how to live well in old age, self-esteem, psychological and spiritual well-being, social relations good neighbourliness, mutual help and the ability to continue to live in their own homes as many years as possible were particularly valued by them as leading to good QoL.

In accordance with what has been previously exposed, we think that QoL perception in the elderly appears to result from a balanced combination of multiple biopsychological factors as well as socio-cultural, all associated with the environmental surroundings. To this end, there seem to be several causes that transmute the relational dynamic person-environment: emotional disorders, trauma, frustration in social life, among other factors, seem to justify the emergence of different (and new) diseases associated with contemporary environmental quality mostly related to the artificialness of the natural environment often radically modified by human intervention. In this regard, in our research, this issue plays an important aspect in that it is supposed that the environment influences the perception of QoL of the elderly in certain residential institutional contexts.

In the course of our field research, as a result of close communicative interaction with our elderly subjects, we have innumerable comments on their own perceptions about multiple aspects contained in our measured instruments especially suited for the evaluation of their QoL. In the dialogues that we have established with the elderly after running the tests, many of them enriched the sagacity, there was a cross and clearly valued aspect for all of them: the importance of good health as well as a good level of functional independence. In this context, it is known that at biological but also psychological level, the elderly are prone to potential changes in the state of health that may influence their QoL (Fernandes, 1996). Similar opinions express Garcia Banegas, Perez-Regadera, Cabrera and Rodriguez-Artalejo (2005) concluding that the health dimension when related to old age, is generally associated with lower levels of QoL. According to Bowling (2001), the elderly compared to younger subjects, give more importance to issues related to good health throughout the senescent process, being considered precious to allow longevity with low morbidity and also by allowing many opportunities for several experiences with multiple moments of well-being, being a vital dimension (but not exclusive), to a good QoL along the ageing process.

In our study, we had to avoid the proliferation of QoL concepts strongly influenced by the Anglo-Saxon culture. Our final choice fell on the World Health Organization (WHO) which defined QoL as “(...)individuals perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.”(WHOQOL Group, 1994: 28).

Our preference for the Who QoL definition is due to its wide international and cross-cultural consensus with a multidimensional gnosiological perspective, which implicitly contains the influence of the personal characteristics in their interdependent relationship with the environment depending on the idiosyncratic subjective evaluation. However, it should be noted that the concept of QoL proposed by WHO is not exempt from criticism or is even immune to changes that promote greater accuracy and completeness. As a matter of fact, we think that such a definition could contemplate an *adaptive dimension* specifically applied to human development, particularly in view of the inevitable human ageing. In this sense, to the QoL definition proposed by WHO we would like to see added to the expression “(...) depending on the capacity to adapt throughout life.”

## 2. THE ARCHITECTURAL INFLUENCE ON THE QOL OF THE ELDERLY

The improvement of living conditions, not only in developed countries but all over the globalised world has been greatly supported by the extraordinary development of science not only in the technological area but especially in the biomedical sciences. Such an improvement was also supported by multiple civilisation factors for example security conditions, access to basic necessities, sanitation, increased labour rights, access to education, adequate housing, among other improvements.

However, despite the enormous civilizational and scientific development, it wasn't possible to eliminate all biological dysfunctions resulting from human senescence so we must continue to consider the consequent limitations arising from it. With increasing life expectancy, that extends an active life, the time living in their residence increases and that can prolong the needs associated within the housing space.

Planning of architectural projects may despise the relational dynamics of institutionalized people and disregard the identity of the resident who inexorably ages, resulting in the gradual difficulty in making full use of the residential space, whether on an inter-relational plane or even by enjoying their private space, often dramatically reduced the bed (bedridden) and the table bedside. In this context, the architectural barriers can be subtle, unusual and vary the functional capabilities or the idiosyncrasies of the elderly residents. It also happens that in the institutional context, several obstacles are excessively eliminated that may worsen the mental framework and the functional dependence of the institutionalized elderly, either by excessive protectionism or by the loss of the individuality of residents - which may include actions that are close to the elderly abuse - both cases common at residential environment with a "*hospital*" inspiration.

According to the Architect Sandra Carli (2004) the elderly in general, feel satisfied in respect of their living places, and the functional limitations in the use of the spaces as they perceive derive naturally from the gradual ageing.

Similarly, Luisa Pimentel (1995) found that the majority of elderly living in their homes revealed a desire to maintain the independence from their families and to continue to reside in their own homes as long as possible. Also, Christenson (1990), Marsden (2005) and Paul, Fonseca, Martín & Amado (2005) point out that older people express a desire to continue to reside in their own homes, even if that experience is hindered by functional limitations. In this context, the possibility of suffering a domestic accident and the fears associated with this risk have been dominating and nauseam most regulations instilling in them markedly with *hospital* characteristics, which constitute the normative of the institutional spaces for residential care for the elderly.

For us, it is common ground that as the ageing progresses and the functional abilities decrease, it should be created structural and operative conditions that solve the frequently inadequate residential habitat (which however remained almost unchanged). It should create conditions adapted to older people so that they can modify adequately, as advocated by Baltes and Smith (2003), their patterns of behaviour in order to solve the functional and domestic difficulties caused by the progressive senescence.

Therefore, it seems desirable to us that the problem of senescence and the experience of residential spaces should be multidisciplinary debated in order to promote adaptive changes, not only on the behaviour of individuals but also through structural reforms in the housing area – being privately owned or institutional - since there are technical solutions and different types of support, even backed up by the law, that could enable them without excesses of preventive regulation.

There may be difficulties in the elderly, in the resolution of functional problems and the relationship with their residential space - as derived from a natural senescent process - the

housing project and the environment, whether private or public, should be pro-actively planned in advance in order to enable the habitat to integrate any physical and psychological needs of all its inhabitants, from children to much older, in order to ensure the full use of whatever age and functional capacity. In this context, according to Peters (1999), that started his studies in 60's on architectural barriers and improvement of spaces that include an improved accessibility through *universal design*. Just as the *universal design* seeks to adapt different spaces to people with various anthropometric needs through specific solutions in order to mitigate unnecessary efforts particularly of people with physical limitations, we also differentiate aging from deficiency, because both singularities are often mixed up (it was quite often implied in the available literature that the difficulties and needs of the elderly and the disabled are the same or similar, which is a mistake).

Under the principle of *universal design*, it is considered an appropriately adapted space if a built area and its environmental surroundings are adequate and indiscriminately accessible to all. Therefore it is the creation of an architectural design with particular concern to all their direct and indirect components - materials, aesthetic, functional, environmental, human, etc. - as a complex and interrelated system (Sandhu, 2001).

The balance on the progressive changes of the human body throughout life should influence the avoidance of obstacles in the creation of any urban project, or the elimination of those obstacles in restoration projects or urban renewal. Such assumptions facilitate and promote the full enjoyment of everyday living environment, proactively optimised so it can be perceived not only as a residence but essentially as a living place. In this regard, the conception of *home* can find part of its significance as inseparable of a person's identity in relation to their closest members because, if we perceive the house as a third skin, the personal concept of *home* can be a collective skin integrating, protecting and uniting all of its members around a central focus, a spiritual symbol of family unification. In this sense, in their figurative significance, the *home* heats and bonds all member of a family in the same moment, that result of a complex condition that integrates memories and dramas, contains the past and present, projecting expectations about the future, includes a combination of personal rituals and collective routines, being a direct reflection of its inhabitants.

Thus the symbolic *home notion* is constituted as a strongly emotional concept and results of the continuous family life within the area, the emotional heat or insensitivity, of the calm or emotional storm, the balance or the relational disharmony, the noise or silence, all echo in the residential space. Consequently, the intrinsic emotional attribution to the term *home* (now trivially understood in the common vocabulary as a mere synonym for house), is the proper place where the individual interacts in intimate relational dynamics, personal space where you can enjoy privacy and which also runs the most significant part of life in the family sphere. Therefore, we consider that a house, more than an architected and built structure, contains huge qualitative potential and intrinsic personal value which, through the hasty contemporary life has hardly been tapped or is often misconceived. Nevertheless, we think we should assume it as an architected structure that was built essentially for multi-family, institutional or sole use, and we hope that the experience of each resident or the relationship between its inhabitants can make any house a home.

### 3. THE TYPIFICATION OF PORTUGUESE SOCIAL CARE DIRECTED TO THE ELDERLY: RSS, DCI ... AND THE ALCALAR RETIREMENT-VILLAGE PROTOTYPE

Especially in the last four decades, developed countries have witnessed a growing ageing population as well as a higher prevalence of chronic and disabling diseases. These factors



entail a huge collective effort, particularly with regard to the establishment and maintenance of the Social State. The increase in longevity levels in an ageing population corresponds, generally, to an increasing need for a long-term supportive care that could include skilled or specialised care. Portuguese Social care intervention policies are centralised in the Ministry of Solidarity and Social Affairs; this Ministry is responsible for releasing regulations and signing agreements in the area as well as providing inspections that are carried out in Private Institutions of Social Solidarity or other private-oriented institutions that might provide care to the elderly.

In Portugal, social care policies or long-term care for elderly dependent people have increasingly been focused - almost exclusively and traditionally - in care provision through the State, which reveals a certain distance from other support models with family-oriented and socio-communitarian integration. However, more recently, the Portuguese state has tried to share part of this responsibility with families and non-profit private sector (IPSS/NGO's) as well as other business initiatives that are profit oriented.

The different aid models of Portuguese social care for the elderly could be divided among three predominant models, two of them with obvious social residential community features - the Residential Structures for Seniors (RSS) and Day Care Institutions (DCI) - and a third aid model with a gregarious nature aiming to maintain pre-existing conditions - Home Care Services (HCS). Taking into account these three main models, between 2000 and 2012, HCS recorded the highest national growth (over 62%), followed by the RSS (44%) and DCI (over 31%) (IGFSS, 2013). According to the latest data available (2014) from the Social Security, over 65 years of age, there were 78,104 people housed in RSS, 62,928 attendees of DCI (42,693 attendees in Day Centres and 20,235 attendees in Social Centres), and 76,188 seniors with HCS. Therefore, in Portugal, these three models provide direct support to more than 217,000 elderly (IGFSS, 2014; ISS, 2014b).

### **3.1 Residential Structures for Seniors (RSS)**

In Portugal homes for the elderly, nursing homes, hospice care, etc., have been designated as Residential Structures for Seniors (RSS). This care paradigm results from the recent organisational evolution<sup>4</sup> of the services and standards that were determined by official standardisation of their quality requirements<sup>5</sup>.

RSS are collective institutions intended for the permanent residential care of the elderly, which can take different formats in regard to the provided accommodation. Each format obviously differs from each other. Theoretically, they are grouped into two main types: the *Nursing home* and the *Residence for the Elderly*.

In the first group of RSS, we find structures that shelter elderly and currently it's the most common model in Portugal. Commonly of a collective nature, these housing structures function mainly to provide basic long-term care services for the institutionalized seniors. In its turn, *Residences for the Elderly* are inspired by the *homelike* concept. It is usually made up of private rooms, suites, houses or even assisted housing that tend to be planned and organized as residential structures with a welfare purpose identical to their counterparts *Nursing Homes*. These have a purpose of providing permanent care to residents. The differences between both focus, on the wider variety and better quality of accommodation and the individualized services that the Residence could provide, as well as the degree of operational independence and freedom of choice provided to elderly residents. Given those premises, those residences, are usually (but not exclusively) operated by private for-profit entities, and

<sup>4</sup> On origin of modern Portuguese Nursing Homes are the oldest religious and mutual structures intended for the refuge of elderly, lunatics and mendicants previously referred to as asylum, whose origin, in Portugal, whose origin dates back to the fifteenth century.

<sup>5</sup> The Portuguese legislation and the National System of Quality Management in RSS, have used as reference the NP EN ISO 9000 (International Standards used as a model for the design and implementation of quality management systems in different countries), as well as the Model Quality Evaluation of the ISS - SAD 2005 (Adapted from Social Response for Elderly, SCML, 2008).

generally targeted structures for social classes with above average incomes, that constitute residual markets. The housing units of *Residences for the Elderly* are of a personalized nature, imitating a *homelike*<sup>6</sup> Environment. On a collective residential model, the rooms are individual or for couples and usually of a private nature.

In total RSS functioning on the Portuguese mainland in 2012, the accommodation room is the predominant model (97%). Regarding the population living in RSS, according to the latest data, users with more than 80 years of age (in 2012), totalled about 70% of the total, of which 46% had 85 or more, which highlights the significant weight this long-lived age subgroup in which women are the majority. The statistical distribution of users according to the length of time spent in a RSS shows a high share of long-stays: 50% of users' remains in RSS for 3 or more years, 30% of which remain for a period exceeding five years. Longer stays have a higher prevalence on not to profit entities (33% stay over 5 years), while into profit entities, stays of short and medium term record a higher weight of 66% up to 3 years (IGFSS, 2013).

According to recent data from the Portuguese Social Security (2014), there were 78,104 people over 65 years housed in RSS (IGFSS, 2014; ISS, 2014b).

### 3.2 Day Care Institutions for the elderly: Day Care Centres and Social Centres

Day Care Institutions (DCI) include Day Care Centres (DCC) and Social Centres. Both establishments are social responses aimed at providing adequate care services of the different daily needs of the elderly and/or activities that might contribute to their socialisation or even possibly delay some harmful consequences of the ageing process. Attendees attending DCI receive daily support without residential boarding, *i.e.* the elderly returns daily to their homes. One of the main aims of the Portuguese DCI is to prevent isolation or social exclusion and to promote interpersonal and intergenerational relationships. DCI supports the elderly during the day and favours their permanence in their habitual residence (ISS, 2014b).

As a principle, most DCI share some common objectives, however, between them, there are differences in the variety and scope of services. Comparing Day Care Centres with Social Centres we establish the DCC as a complete valence in which the support capacity is more comprehensive. In this sense, the Day Care Centres provide services such as adequate diet according to age and problematic health, proper hygiene and comfort, cleaning and organisation of their clothes and even facilitate access to information of different services of the community that might satisfy other needs. In DCC it is also possible to provide psychosocial support and the development of socio-cultural animation activities, recreational and occupational as well as religious assistance.

In its turn, Social Centres generally are institutions of less complexity which organise recreational and cultural activities involving the elderly of a local community. According to the latest data from Social Security, during the year 2012, about 20,235 attendees have used the Portuguese Social Centres (IGFSS, 2014; ISS, 2014b).

With regard to DCI attendees, in 2012, about 50% were younger than 80 years old and were mostly composed of females, a trend that is found in all responses directed to the elderly population, which seems to confirm the preponderance of females in the frequency of RSS and also the DCI. This factor is probably related to the supremacy in numbers of the female population groups among the oldest age groups.

It should be noted that, according to recent data from the Social Security, in Portugal (2014), there were about 62,928 clients who benefited from the services provided by DCI

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<sup>6</sup> These institutions may provide a wide range of services (permanent ward, medical and emergency services, physical therapy, library, workshops, home automation, etc.). It is noteworthy that the most recent Portuguese homes for the elderly already provide wellness and leisure services with high quality such as dining a la carte service, spa, gym, personal trainer, hairdresser, beauty salon, concierge, and other hospitality services. However, it is a residential market increasingly geared towards the elderly socioeconomic elite.

being, respectively, 42,693 attendees supported by the DCC and 20,235 attendees attending Social Centres (IGFSS, 2014; ISS, 2014b).

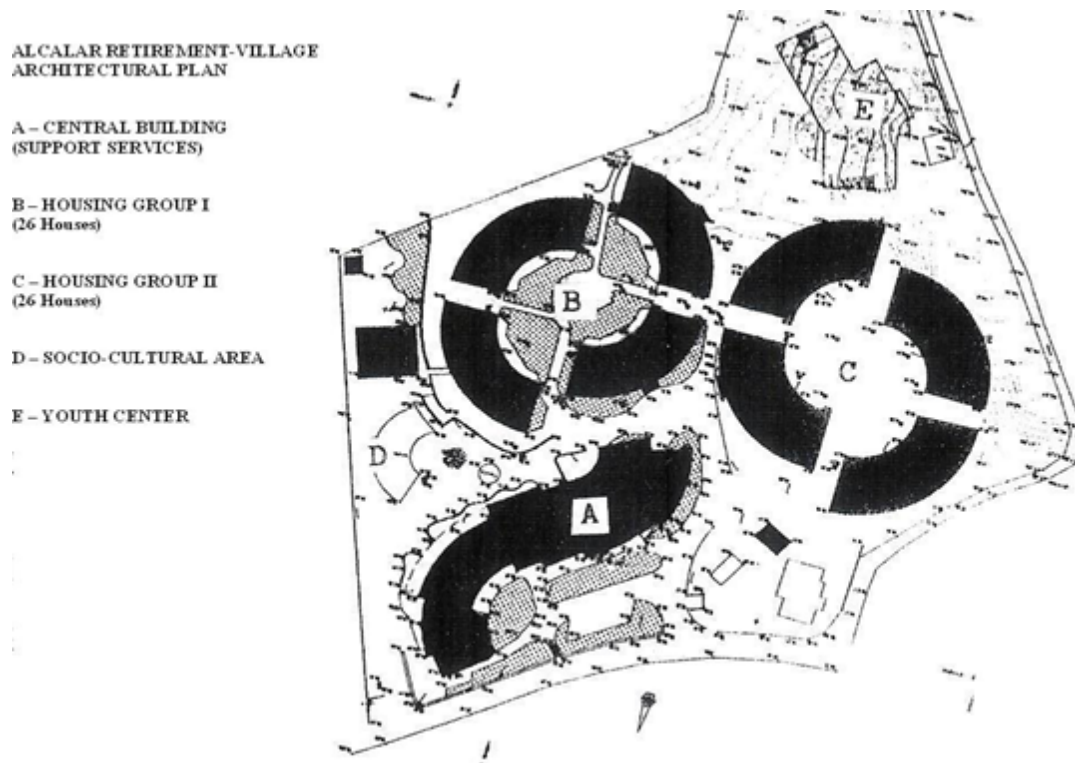
### 3.3 The Retirement-village St. Joseph of Alcalar: Community residential prototype for the elderly

In 1988, there were met the basic conditions for boosting the creation of a new model of a nursing home that could environmentally mimic a village. The Jesuit Father Domingos Costa began the architectural conceptualization closely with the Architect Martim Afonso Pacheco Gracias. They agreed that all the buildings should have one central core, two Housing Nuclei consisting of the houses for the elderly families, one Social Centre and a Support Centre for visitors since contacts with foreign parishes favoured the arrival of students and also started seeding the idea of inter-generational socialisation, today made possible by their Nursery.

As shown in Figure 1, the big “S” (for Solidarity), the circular development for two housing units, creating free and conveniently landscaped spaces, allow the coexistence of great quality of life (Costa, 2000). According to Architect Martin Gracias description (cited by Costa, 2000): “Once defined the architectural structure (...) it had been a choice of interpenetrating and engaging forms; hence the use of circular shapes (in conceptualising the design of the proposed architecture).

The Retirement-Village of St. Joseph of Alcalar design had in mind a fluid and easy access between the common areas, in a design that promotes neighbourhood between houses arranged around a square.

Figure 1. Alcalar Village Scheme, designed by architect Martin Gracias



Source: Costa, 2000, adapt.

The largest building in St. Joseph of Alcalar Village is the Central Services Block, which is the Central core. This building is in front of the car park and the two main entrances flank a small wall that separates the village from the municipal road. The great big house, whose

two floors follow the gentle slope of the entrance of the property, was the first building to be built in the 3 phases of construction of the village. In it, are installed various support services (the kitchen, storerooms and community dining hall, the doctor, nursing and physiotherapy offices, hairdressing salon, laundry and ironing, cleaning services and household support, the general store, administrative services, meeting room, multi-purpose workshop, chapel, library and a huge ballroom).

Surrounding the central core of the main building (A) is the Socio-Cultural Area. This recreation area welcomes us with a huge carob tree alongside a stone amphitheatre in a clear and moving evocation of the Mediterranean. Adjacent is a small building which houses the bar run by village residents. The building once housed a small grocery store bar intended for use by residents which, however, ended by excess regulatory requirements by the Ministry of Finances. In this area, we could find outdoor exercise equipment and a communal barbeque area.

Each of the two housing units consists of 26 houses of T1 (29.00 m<sup>2</sup>), 18 T2 (48.60 m<sup>2</sup>) and 8 housing T3 (60.40 m<sup>2</sup>) which amounts to 52 houses in the village. Divided by two circular cores, the buildings form two garden squares limited by long circular porches, under which is the private access to each residence. The Alcalar Retirement Village has a maximum capacity of 130 habitants. The sequential circular arrangement of houses extended outwards by the protecting traditional porch which facilitates the use of living space. The communal porch promotes the coexistence with neighbours, with connecting personalised spaces, and functioning as a conduit passage between premises.

Each long porch could function at the same time as a private or a public use. As it's circular and covered around the square, it provides protection for the pedestrians, sheltering from the sun and the rain. It is also a recreational area as the circular layout of the buildings serve as a proximity link by allowing a visual connection to all the neighbours of the 26 houses of each residential core. The extensive porches see its function multiplied by the customization of the inhabitants that use it as an area for meals, relaxation or playing cards.

Both garden squares resulted from the layout of the buildings in a circle. The two housing units are torn by four symmetrical and diametrically arranged passages, which serve as access streets between cores or to other built areas and the adjacent natural environment. Thus, with the arrangement of passages (properly cobbled), the flow between the core and the housing is not a problem even considering people with disabilities. Community gardens were an initiative by the most active residents. Grown in the rear of the housing core (B and C) but could appear a bit everywhere, as the inhabitants seed in pots and make beds of vegetables and herbs. Sometimes they even attach areas for the garden each time that the grass is scarce. In addition to the gardens and flower beds cultivated by the elderly, there are some domestic animals such as chickens, some adopted cats and a donkey called *Buda*.

The entrance of each residence connects to an open space that integrates a living room, a dining room and a kitchenette with basic equipment. All residences are equipped with a full bathroom, hot and cold water, electricity, landline telephone, central heating, TV installation, stove, oven and a fridge. Residents are free to bring or purchase appliances, furniture, or other facilities they deem necessary for their comfort. The house decoration is done according to the taste of each resident which allows their space to be transformed in a *homelike* environment. If residents so prefer, the Board of the Retirement-village of St. Joseph of Alcalar could provide equipment and miscellaneous furniture, that are usually donated by companies or individuals.

Note also that the nearly 2 hectares of property also incorporate a Youth Centre attended throughout the week by about 140 children distributed by the valences of nursery, kindergarten, and an after school activity.

Located on the outskirts of Portimão city in the Algarve- Portugal, the Retirement-village of St. Joseph of Alcalar is not a traditional RSS and it's not a resort for rich elderly. The doors of the village houses are always open to neighbours, friends and family. Visits are always welcome, at day or night. Users move in and out at will, help each other in a spirit of good neighbourhood.

Alcalar Retirement-village Houses were designed for elderly who cannot or do not want to live alone, they don't want to merely survive. In this Retirement-village, people live in a community type of environment, embedded in nature, which could enjoy their privacy or live more socially as they please. In their living quarters that were decorated according to the ability and the taste of each one, the elderly residents are formally institutionalised but feel completely autonomous allowing them to live effectively the space to the extent that they could consider it their *home*.

#### 4. METHODOLOGY

The main objective of this study focuses on the comparative study of the elderlies<sup>4</sup> perception that attends a communitarian residential institution. In this context, the main challenge of this study went through the investigation of any relevant perceptual differences in their view of the quality of life, in terms of the different residential institutional contexts considered. We analysed the results through a comparative differential intergroup perspective.

Data was obtained from sample groups of institutionalised elderly in three different Community Residential environmental contexts, *i.e.*, old people in the Retirement-village of Alcalar, the residents in RSS and attendants of DCI.

After choosing the target institutions, preliminary exploratory contacts made us reveal our intentions and the subsequent commitment to the study. We started by sample selection that had some restraints by the representation of equiproportionality.

The sample selection variables chosen for each case tried to match the field reality in order to increase the quality of data and its degree of reliability, avoiding biased conclusions by standardising illegitimate. In this sense, subjects diagnosed with severe Psychiatric Pathologies and Neurodegenerative Diseases were excluded from the records. Consequently, we established a successful sample of 158 subjects, divided into three sub-samples, regarding each residential institution. For comparative purposes, the intergroup sample was divided into three similar groups. In each sub-sample, randomly selected subjects were chosen from among the available and mentally fit individuals, according to the technical and clinical information collected beforehand in each institution, all according to the protocol procedures described below.

Thus, was created three sub-samples, whose intergroup comparison was intended to study. The samples were constituted respectively: i) Alcalar subsample formed by residents in the Retirement-village of St. Joseph of Alcalar (n=50); ii) RSS subsample, consisting of elderly residents in RSS (n=56); iii) DCI subsample, consisting of elderly attendees of DCI (n=52). By gender, the sample consisted of 117 elderly women (77%) and 41 elderly men (23%).

We opted by a customised methodology with questionnaires self-applied or mediated by the investigator. Where this was applicable, we handed out questionnaires to subjects that were able to respond autonomously so we could allow the elaboration to proceed without oversight. We made a prior instruction so they would understand the type of questionnaire applied and at the end (when collected) we reviewed fully each item. On the cases where it was not possible to self-apply the test (for most varied reasons, from lack of vision to illiteracy) the questionnaires were administered by the field investigator through reading

aloud, strictly impartial and directive, with prior deontological information and safeguard privacy. The consecutive duration of the implementation of the set of tests did not exceed 45 minutes, during which we management of the length of time. Intervals between passages varied according to the availability of subjects, a rule imposed by us that such breaks were not shorter than 15 minutes between periods of continuous application. The application of the evaluation instruments began in September 2012 with completion in December of that year.

We performed a descriptive and inferential study as it was intended to describe and summarise the data analysed using descriptive statistics and generalising the results to the population studied; for this purpose, appropriate inferential statistical tests. Data were collected through questionnaires applied in a given time without any interference by the investigator on the behaviour of individuals and may, therefore, be classified in the study as a transversal and observational. In inferential statistical testing, it was intended to compare the individuals of the three group samples considered (Alcalar, RSS and DCI) for the studied instruments, i.e., how the perception of QoL depends on the group. Therefore, the variable defining the group is the independent variable and the remaining variables included in the inferential tests are the dependent variables.

## 5. RESULTS

We point out that the average age of the subjects of the DCI group (80.1 years) is lower than the average age of the subjects of Alcalar group (84.02 years) and RSS group (83.52 years). Regarding the schooling level of the three groups analysed, the Alcalar group had more than half of its inhabitants (54%) unable to read or write, compared with 28.6% of residents in RSS and 23.1% the attendees of DCI.

Compared to Alcalar, the RSS and DCI groups have a wider distribution with regard to schooling education. In this context, the Alcalar group consists, in the large majority by illiterate or poorly educated individuals. With regard to the professional area before retirement, most people in the Retirement-village of Alcalar (72%) were working in the primary sector, compared with 28.6% of residents in RSS and 17% of attendees of DCI. In these last two groups, there is a predominance of labour activity in the tertiary sector.

Regarding marital status, about 36% of elderly in the Alcalar group are married or in a long-term committed relationship, compared with 12.5% of subjects from RSS group and 15% of subjects of DCI group. In the three groups, there is a predominance of widowers; however, Alcalar widowhood concerns only 52% of the population, compared with 76.8% of residents in RSS and with 69.2% of the attendees of DCI. Also in these last two groups, the percentage of older people in a situation of separation/divorce more than doubles comparing to the elderly of Alcalar group.

As for cohabitation and direct social support or proximity support, Alcalar and DCI groups scored very high values and comparable close nuclear family cohabitation (respectively 46% and 50%), while the RSS group scored a low value (3.6%) in this type of cohabitation. Attendees of DCI reveal a partition between the nuclear family cohabitation and living alone, respectively 50% and 42.3%, while the inhabitants in Alcalar Retirement-village express an approximate compartment between the nuclear family cohabitation and living with mates or friends. Notice that, given the constraints related to the dynamics and establishment of affective relationships (including romantic) among people, it would be expected that there was no complete match between the percentages relating the civil status and the assessment regarding the form of cohabitation.

The economic situation in terms of monthly income, 44% of inhabitants in the Retirement-village of Alcalar, at the time of the data collection (end of 2012), enjoyed an income with ranging values between 485 Euros (€) and 970€ which, in percentage terms, outperforms the other two groups in the study. About 24% of inhabitants in Alcalar Retirement-village mentioned incomes ranging between 254€ and 485€ while 30% of those people reported incomes between 152.4€ and 254€; in the range of extremes, only one elderly of the Alcalar group (2% of the sub-sample) had an income exceeding 970€ and another elderly (also equivalent to 2% of the sub-sample) reported receiving an income below 152.4€.

In turn, the income distribution of the elderly population in RSS differs from the distribution of income of the inhabitants in the Retirement-village, specifically at the extreme levels: 7.1% of RSS residents have incomes above 970€ and, at the other extreme, 10.7% with incomes below 152.5€.

As for attendees of DCI and compared to other groups, they show the highest percentage of individuals with incomes above 970€ (23.1%) with some notable differences in the distribution of income, particularly at the higher end, the intermediate level of disability and old age pensions add up to two minimum wages (17.3%, which compared to 24% and 26.8%, respectively, of Alcalar and RSS groups).

Being health an essential dimension in the perception of QoL, there are differences between sample groups regarding the perception of disease, as there are differences between the groups regarding the consistency of the perception of disease and the identification of the existence of chronic diseases. In this context, among the three sample groups, the subjects of Alcalar group feel healthier, with 60% of older people denying that they are ill. This group also reveals consistency with regard to the recognition of chronic disease, with 40% confirming chronic diseases in their health. Regarding the statistical consistency of the aspects of the disease, half of RSS group feels sick but more than half (51.8%) claims to have chronic diseases. The same goes for attendees of DCI, among which only 48% say they feel sick when 51.8% claims to have a chronic disease.

A curious fact of this study: it was expected that the groups with higher mean age and longer-lived samples, (as with the Alcalar group and, to some extent, with residents of RSS), were more affected by health conditions. However, if this comparative assumption is confirmed between RSS and DCI groups, the results obtained in this dimension are relatively favourable to Alcalar group: despite Alcalar being the group with the higher mean age and the most long-lived sample compared to group DCI, the inhabitants of the Retirement-village got results comparatively favourable in aspects related to disease. This comparative intergroup trend will be confirmed on other dimensions evaluated, as will be proven ahead.

### **5.1 Perception of QoL through the WHOQOL-BREF**

Following the application of the WHOQOL-BREF scale to the sample ( $N = 158$ ), the analysis of the consistency revealed that the subscales Physical Domain ( $\alpha = .836$ ) and Psychological Domain ( $\alpha = .802$ ) showed good internal consistency. The subscale "Environmental Domain" presented a weak internal consistency ( $\alpha = .677$ ) and the subscale domain Relationships showed an unacceptable Cronbach's alpha value ( $\alpha = .402$ ), even taking into account that it is a scale with only 3 items.

Regarding the evaluation of the *quality of life perception*, the results shown in Table 1 the level of overall perception of QoL in the sample of Alcalar group is higher than the corresponding perception assessed by the samples in RSS and also DCI. The differences are statistically significant between the Alcalar group and the other two ( $p < .001$  for both comparisons). Specifically, among the RSS and DCI groups, it reveals also a significant difference in that dimension ( $p = .006$ ). Just as compared to the Alcalar group, as we compare the DCI with the RSS it showed a significantly lower level of perception of the quality of life to the latter

one. Consequently, with this particular dimension, the Alcalar group got measurably and significantly a higher level of perception of the quality of life while the RSS group was found to have significantly lower.

As regards the perception of Health domain there were not statistically significant differences identified between the 3 sample groups ( $X^2 [2] = 2.495$ ;  $p = .287$ ).

Under the Physical Domain, the RSS group had a lower average when compared to Alcalar and DCI groups, with statistically significant differences between the RSS and DCI groups ( $p = .014$ ) and at the limit of statistical significance between the group RSS and the Alcalar group ( $p = .054$ ). We have not identified statistically significant differences between the Alcalar and DCI groups ( $p = .614$ ).

**Table 1. WHOQOL-BREF - value comparison between groups**

GROUPS→ DOMAINS ↓	Alcalar (n1 = 50)	RSS (n2 = 56)	DCI (n3 = 52)	KRUSKAL WALLIS (1)	MULTIPLE COMPARISONS (2)
Quality of Life Perception	M = 3.96 SD = 0.49	M = 3.05 SD = 0.72	M = 3.42 SD = 0.75	$X^2 (2) = 44.254$ $p < .001$	A vs. RSS -> $p < .001$ A vs. DCI -> $p < .001$ RSS vs. DCI -> $p = .006$
Health Perception	M = 3.26 SD = 1.01	M = 2.96 SD = 1.08	M = 3.19 SD = 0.91	$X^2 (2) = 2.495$ $p = .287$	No significant differences
Physical Domain	M = 60.14 SD = 20.99	M = 54.21 SD = 17.44	M = 62.77 SD = 19.01	$X^2 (2) = 6.805$ $p = .033$	A vs. RSS -> $p = .054$ A vs. DCI -> $p = .614$ RSS vs. DCI -> $p = .014$
Psychological Domain	M = 63.92 SD = 15.94	M = 55.43 SD = 15.53	M = 62.90 SD = 15.31	$X^2 (2) = 10.043$ $p = .007$	A vs. RSS -> $p = .004$ A vs. DCI -> $p = .719$ RSS vs. DCI -> $p = .011$
Relationships Domain <sup>7</sup>	M = 64.67 SD = 11.97	M = 60.42 SD = 11.81	M = 66.99 SD = 13.40	$X^2 (2) = 9.595$ $p = .008$	A vs. RSS -> $p = .058$ A vs. DCI -> $p = .269$ RSS vs. DCI -> $p = .002$
Environmental Domain <sup>8</sup>	M = 69.50 SD = 8.83	M = 59.38 SD = 7.95	M = 66.47 SD = 10.65	$X^2 (2) = 34.059$ $p < .001$	A vs. RSS -> $p < .001$ A vs. DCI -> $p = .110$ RSS vs. DCI -> $p < .001$

1) Kruskal-Wallis Test statistics and significance value; (2) Significance value of multiple comparisons testing by Dunn procedure.

Source: Malveiro, 2015

In the Psychological Domain, the RSS group had a lower average when compared to Alcalar and DCI groups, with significant differences in both groups ( $p = .004$  and  $p = .011$ , respectively). In this area, there are no statistically significant differences between the Alcalar and DCI groups ( $p = .719$ ).

<sup>7</sup> Social Relationships Domain presented an unacceptable internal consistency ( $\alpha = .402$ ).

<sup>8</sup> Environmental Domain presented a weak internal consistency ( $\alpha = .677$ ).



Regarding the Relationships Domain, the RSS group had a lower result compared to Alcalar and DCI groups. In this area, the difference is statistically significant only among residents in RSS and attendees of DCI ( $p = .002$ ).

Still concerning the Relationships Domain, despite the statistical difference between the Alcalar group and the RSS group it is close to the limit of significance ( $p = .058$ ), it cannot be considered statistically significant; however, we must stress that this is an indicator of a tendency to take into account. In addition, no statistically significant differences between the Alcalar and DCI groups ( $p = .269$ ).

As for the Environment Domain, the RSS group showed lower values for the Alcalar and the DCI groups, with statistically significant differences in both groups ( $p < .001$  in both cases); in this, there were no statistically significant differences between the Alcalar and DCI groups ( $p = .110$ ).

## **5.2 Perception of QoL through the WHOQOL-OLD Portugal**

To evaluate the psychometric properties of the WHOQOL-OLD Portugal in this sample, we used a Portuguese version adapted by Canavarro and colleagues (2006). This version consists of 26 items of the original scale, with the same method of listing on a five-point Likert scale. The WHOQOL-OLD instrument globally showed a good internal consistency with Cronbach's alpha value of 0.884.

With respect to each of the six subscales, there was a poor consistency in the Domain Past, Present and Future Activities ( $\alpha = .662$ ). In turn, the Independence Domains and Spiritual relationship with Death and Dying possibility showed reasonable consistency ( $\alpha = .749$  respectively and  $\alpha = .758$ ). Sensorial Functioning and Social Participation Domains showed good consistency with Cronbach alpha values above 0.85. In turn, the Domain Intimacy presented a very good internal consistency ( $\alpha = .926$ ).

In this WHOQOL-OLD PT instrument, as can be seen in Table 2, from a global point of view, the RSS group revealed a mean value of QoL perception lower than the values of Alcalar and DCI groups, with statistically significant differences in both groups ( $p < .001$ , respectively). Although globally there are no statistically significant differences between the Alcalar and the DCI groups ( $p = .676$ ), but the average Alcalar result is higher among the 3 groups.

In the Sensorial Functioning Domain, the RSS group had a mean value lower than the values obtained by Alcalar and DCI groups, however, confirming statistically significant comparison between RSS and DCI groups ( $p = .014$ ). The results shown in Table 2 indicate no statistically significant differences between Alcalar and DCI groups ( $p = .193$ ) and the same occurs between Alcalar and RSS groups ( $p = .271$ ).

Regarding the Independence Domain, as shown in Table 2 the RSS group had an average lower compared to the others, with statistically significant differences in both groups ( $p = .002$   $p < .001$ , respectively). There are no statistically significant differences between the Alcalar and DCI groups ( $p = .561$ ).

In the Past, Present and Future Activities Domain, the results revealed no statistically significant differences between the groups ( $X^2 [2] = 4.688$ ;  $p = .096$ ).

As for the Social Participation Domain, the RSS group showed a lower result compared to the others, with statistically significant differences in both groups ( $p < .001$  and  $p < .001$ , respectively). There are no statistically significant differences between the Alcalar and the DCI groups ( $p = .969$ ).

Table 2. WHOQOL-OLD PT - value comparison between groups

GROUPS → DOMAINS ↓	Alcalar (n1 = 50)	RSS (n2 = 56)	DCI (n3 = 52)	KRUSKAL WALLIS <sup>(1)</sup>	MULTIPLE COMPARISONS (2)
WHOQOL-OLD GLOBAL	M = 85.96 SD = 11.93	M = 74.43 SD = 12.58	M = 85.13 SD = 10.68	$X^2 (2) = 25.656$ $p < .001$	A vs. RSS $p < .001$ A vs. DCI $p = .676$ RSS vs. DCI $p < .001$
Sensorial Functioning Domain	M = 14.96 SD = 4.01	M = 14.55 SD = 3.29	M = 15.13 SD = 2.89	$X^2 (2) = 6.011$ $p = .050$	A vs. RSS $p = .271$ A vs. DCI $p = .193$ RSS vs. DCI $p = .014$
Independence	M = 14.14 SD = 2.37	M = 12.52 SD = 2.83	M = 14.48 SD = 2.47	$X^2 (2) = 15.597$ $p < .001$	A vs. RSS $p = .002$ A vs. DCI $p = .561$ RSS vs. DCI $p < .001$
Past, Present and Future Activities	M = 13.82 SD = 2.08	M = 12.20 SD = 2.59	M = 13.17 SD = 3.04	$X^2 (2) = 4.688$ $p = .096$	No significant differences
Social Participation	M = 14.10 SD = 3.06	M = 11.05 SD = 3.11	M = 14.25 SD = 2.40	$X^2 (2) = 33.961$ $p < .001$	A vs. RSS $p < .001$ A vs. DCI $p = .969$ RSS vs. DCI $p < .001$
Spiritual relationship with Death and Dying possibility	M = 13.74 SD = 3.83	M = 13.50 SD = 3.63	M = 14.12 SD = 3.46	$X^2 (2) = 0.350$ $p = .840$	No significant differences
Intimacy	M = 15.20 SD = 1.91	M = 10.61 SD = 3.77	M = 13.98 SD = 4.39	$X^2 (2) = 36.202$ $p < .001$	A vs. RSS $p < .001$ A vs. DCI $p = .169$ RSS vs. DCI $p < .001$

1) Kruskal-Wallis Test statistics and significance value; (2) Significance value of multiple comparisons testing by Dunn procedure.

Source: Malveiro, 2015

As regards the Spiritual relationship with Death and Dying possibility Domain, the results obtained show no statistically significant differences between the 3 groups, ( $X^2 [2] = 0.350$ ,  $p = .840$ ).

On the Intimacy Domain, the RSS group showed a lower value, compared to the Alcalá and DCI groups, with significant differences in both groups ( $p < .001$  and  $p < .001$ , respectively). In this dimension, we have not identified statistically significant differences between the Alcalá and DCI groups ( $p = .169$ ).

Therefore, the WHOQOL-OLD PT questionnaire showed significant comparative differences between Alcalá, RSS and DCI groups in all Domains except in two (Past, Present and Future Activities and Spiritual relationships). The RSS group obtained results (overall and by Domains) lower comparatively with the other groups. In turn, the Alcalá group obtained results (overall and by Domains prevalently and comparatively) higher than the corresponding results of the Attendees of DCI and the residents in RSS.

## 6. DISCUSSION

Bearing in mind the understanding of the influence of Space and Organization on perceptual living experience of QoL of institutionalized elderly, in terms of the results concerning the WHOQOL-BREF, the Quality of Life Perception Domain and in general, the level of QoL assessed by Alcalar group was higher than the QoL perceived by the RSS group and also higher than the DCI group, with statistically significant differences when comparing the Alcalar group with the others (respectively  $p < .001$  in both cases). It was also significant the difference between DCI Attendees and RSS residents ( $p = .006$ ). Moreover, as happened in the WHOQOL-OLD PT, also in this WHOQOL-BREF instrument the RSS group comparatively revealed the lowest results, in average, overall or in specific Domains.

As for the Health Perception Domain, although we have not identified significant differences in the intergroup comparison, there seems to be a comparative trend among the group's means. In this sense, when compared to RSS and DCI groups, the Alcalar group showed the best average level of Health Perception, while the RSS group had the lowest average among the three groups. It seems appropriate to recall that Paúl, Fonseca, Martin and Amado (2004) said that there are seniors who were assessed as having better health and those generally show higher levels of overall QoL, which seems to be confirmed by the average results obtained by our three sample groups in those areas, particularly in the Domains of Quality of Life Perception and Health Perception.

With regard to the Physical domain, as shown in Table 1, the RSS group showed an average level below the other groups, with statistically significant differences between residents in RSS and attendees of DCI and close to the limit of significance between Alcalar and RSS samples.

As regards the Psychological Domain we are in agreement with Paul *et al.* (2004) when the authors argued that this dimension varies with marital status (ie, the level of psychological QoL in elderly is better in married or in a long-term relationship compared to single or widowers).

This seems to be confirmed in our study as the Alcalar Retirement-village inhabitants are the group with the highest results in marital or long-term relationship, so this specificity may have positively influenced on the perception of psychological QoL in relation to their counterparts. Also in the Psychological Domain, it is known the importance of the psychic life the multiple environmental, psychosocial and biological factors, which can be inclusive and correlative to the development and cognitive and emotional balance as well as good mental health of people. The influence of such conditions seems to have been confirmed when we have proved by the questionnaires the predominance of good comparative results of the Alcalar group with the low scores of the RSS group.

Still in the analysis of the WHOQOL-BREF and about the influence of the schooling level as a predictor of physical and psychological QoL as defended by Paul *et al.* (2004), we concluded that such a statement does not fully confirm in our study because the subjects of Alcalar group, despite being the most illiterate among the three groups are still the group of individuals who had comparatively the best result globally in the Psychological Domain besides revealing a medium result through intergroup comparison on the Physical Domain. The correlation concerned, the Alcalar group outperformed the RSS group in both domains and surpassed both groups in the relevant fields. However, in the context of the relationship between the level of education and their perception of physical QoL and psychological QoL, an analytical perspective restricted to ERSS and DCI groups, seems to be confirmed the opinions of the authors mentioned above, the only exception being applicable to Alcalar group.

As regards to the relationship between age and QoL, Paul *et al.* (2004) argued that the overall QoL decreases as age increases. Generally, we agree with those authors when such a statement refers solely and exclusively to the progression of longitudinal correlation between age and QoL, both individually and in any group of individuals whose age distribution is approximately homogeneous. However, on this and due to the results obtained, the Alcalar group diverged from the above opinions: inversely progressive causal relationship between age and QoL when considering the comparative cross-sectional investigation, does not seem to apply to the Alcalar inhabitants; despite the Alcalar group consisting of older subjects (in average and in individual age groups), compared to the other two groups, the Alcalar group did not fail to obtain predominantly the best results in the perception of overall QoL comparatively.

We realised that Paul *et al.* (2004) defended that the elderly with a better perception of their health condition generally have higher levels of overall QoL. Therefore, given our results, it seems reasonable to claim that the cumulative combination of degenerative factors throughout life, by the senescent process, can lead to physical and/or psychical degradation as they age, which in turn may influence their perception of QoL.

The outcome of our study assumes that there are biopsychosocial and environmental factors (we are referring to the residential environments Alcalar, RSS or DCI) that may influence that inversely progressive correlation between age and perception of QoL. It seems a wise assumption if we recall the influence irrespective of the age factor, the effects of environmental variables, and the self-control in relation to various parameters correlated with QoL of individuals, as evidenced by studies of Langer (2009) on the rejuvenation and reversal of functional dependence.

Given our results, we think that the perception of health, psychological and physical domains in association with environmental conditions strongly marked by the residential context and lifestyle, in association to the influence of the variables of self-control and self-effectiveness may have a protective interference in the perception of QoL, globally and or by domains. In this regard, we remember that the Alcalar group having environmentally differentiated conditions, generally have more favourable results in those aspects compared to other groups, despite some unfavourable predictors such as age, income and education. Such environmental benefits may have influenced the intergroup comparative results, especially when we looked at the statistical behaviour of Alcalar and RSS groups. In this regard it should be stressed that the analysis of the WHOQOL-BREF results obtained by the Alcalar group often surprised positively: in our opinion, based on the literature review, this will be due to the interdependence of factors particularly which are inherent to the environmental and psychosocial conditions described throughout our study, which is embodied in the residential paradigm in which they live, *i.e.*, the Alcalar model.

It should also be noted that in this WHOQOL-BREF instrument, residents in RSS show comparatively the worst results in the evaluated areas, while residents in Alcalar model got mostly good scores. Indeed, the trend in the results of the Alcalar inhabitants is not an absolute feature because attendees of DCI surpass them in some dimensions as happened particularly in the scores of Physical and Relationship Domains and, however, without the statistical significance in the comparative intergroup relation for both cases.

We should also mention that during our study and the analysis of the QoL, there was one aspect that raised us some reservation: the gender of the subjects in the sample distribution. As for this possible limitation, some have argued that low levels of QoL may be related to concurrent factors among which one could be belonging to the female gender (Sprangers, De Regt, Andries, Van Agt, Bijl & De Boer, 2000; Kirchengast & Haslinger, 2008). However we are in agreement with Fernández-Ballesteros (2000) when the authoress argued that the higher or lower QoL perceived by the elderly result strongly from the circumstances and

the context in which they live, as well as other multiple variables such as social status and lifestyle, especially in the long term, and not only depending on gender.

For these reasons, we also agree with Fleck, Chachamovich and Trentini (2003) when these authors concluded that among the elderly there is the perception of multiple elements associated with QoL including stress, good health, physical dynamism, contact inter-relational, mutual social support and the feeling of belonging to a community and its integration, hence can be concluded the multidimensional significance of QoL correlated with biopsychic domains in conjunction with the socio-environmental space.

As for the results obtained from the WHOQOL-OLD PT, from a global point of view in the perception of QoL, residents in RSS obtained an average value below the average values, of the other groups, and we could confirm the statistically significant differences in both comparisons ( $p < .001$ , respectively). Among the Alcalar and DCI groups, there were no statistically significant differences.

In the Domain Sensorial Functioning, the RSS group had an average value below the average results of the rest; however the differences were not statistically significant between RSS and DCI groups ( $p = .014$ ), which is not surprising since it is commonly accepted that it is an evaluative component essentially geriatric of nature therefore highly correlated with the physiological degeneration, whose intensity usually is more common in older ages (in this context, the RSS and the Alcalar groups consist of subjects on average, older than the results for the DCI group). The results that were distinguished by the positive were obtained by the Alcalar group. Although older, it obtained a higher average in the Sensorial Functioning Domain compared to the RSS group. Among the DCI group (slightly younger) and Alcalar group (older on average and age distribution), the difference between the means was not statistically significant.

With regard to the Domains Independence, Social Participation and Intimacy, the group of residents in RSS had lower average values in relation to the average results of Alcalar and DCI groups, with statistically significant differences.

On those three Domains of WHOQOL-OLD PT, the comparison of results between Alcalar and DCI groups was not statistically significant, but the Alcalar group surpassed in Intimacy and the averages were similar in Independence and Social Participation.

In the Domains Past, Present and Future Activities and Spiritual relationship with Death and Dying possibility, there was no statistical significance identified between the 3 groups; however, continuing again the prevailing trend the RSS predominantly obtained the lowest average compared to people in Alcalar and attendees of DCI. The Alcalar group obtained the best average results on the Domain of Past, Present and Future Activities but scored intermediate on the other Domains.

This makes us suppose that, even though the Alcalar people are the oldest, they are in the most balanced position and they seem more serene to life and human finitude. Also in this context, and taking into account the protective effects of the biopsychic condition in interrelation with the social and environmental surroundings, the results of Alcalar group seem to confirm our previous expectations.

For these reasons, we think that we can conclude that the overall results in both QoL scales (BREF and OLD) seem to indicate that in areas with statistical significance, the average level of QoL perceived by people in Alcalar was predominantly higher than perceived by residents in RSS. Similarly, it was found that the average level of Quality of Life perceived by residents in RSS is predominantly lower than the average levels of QoL assessed in Alcalar and DCI.

## 7. CONCLUSION

As it is widely known that much of the developed Western Countries, particularly the Portuguese Population Pyramid, are experiencing an unprecedented socio-demographic situation<sup>9</sup>. Thus, we are facing countless challenges regarding old people care, now and in the future. One of the many consequences of the Portuguese demographic and socioeconomic dynamic changes that occurred in recent decades was the impact of those transformations on the traditional family patterns in supporting the elderly: traditional aid increasingly shifted from the family to informal or formal caregivers. In this context, institutional organisations (whether ONG`s or from a to-profit nature) have been at the forefront of the assistance of the multiple needs of the seniors.

As a consequence of Portuguese policies resulting from the implementation of the current model of the welfare state, a substantial part of the allocation of resources, in particular related to investment in institutional social support to the elderly, have benefited mainly two type of institutional residential dominant paradigms<sup>10</sup>: the Residential Structures for Seniors (RSS) and the Day Care Institutions (DCI).

However, there is a relatively unknown reality subsequent to this redistributive social policy supported by the Portuguese welfare state model toward the elderly: no one knows for sure what is the qualitative return consequential to the financial effort (whether it's private or public) allocated to this important area of social support, *i.e.*, it is unknown what is the qualitative value perceived by those beneficiaries supported by institutional residential services, whatever the philosophical or organizational paradigms that inspire them.

In the present or in a future context, it seems imperative to evaluate the suitability and efficiency results of current care models for the elderly, not only through formal assessment of basic care or regarding the sustainability of current paradigms, but as well in relation to qualitative social gaining, namely those that are experienced by subjects of such support - the elderly.

Consequently, when we started this research<sup>11</sup>, we thought it as a priority to assess the subject's perception of quality of life (QoL) instead of focusing our attention on accounting structural institutions or describing organisational conditions on this or that institution or even measuring official data differences between institutional models. If it was this case, our main concern, instead of the evaluation of the seniors perception on QoL, we would be corroborating the assumption that the qualitative aspects associated with the perception of QoL (or other associated biopsychosocial dimensions), derives exclusively from the physical and organizational conditions dispersed across multiple institutions, a reductive enunciation that we refused *ab initio*.

Therefore in this research was implied, since its conception, an underlying intention: to evaluate comparatively the individual's perception of quality of life provided by different residential institutional paradigms prevailing in Portugal, *i.e.*, the RSS and the DCI. In addition to the inclusion of individuals from those prevailing paradigms, we also consider the subjects QoL perception provided by an extraordinary prototype RSS (institutional but innovative): the Retirement-village St. Joseph of Alcalar - in which a senior might have a house to which one might call "*home-sweet-home*" as well as being an active member of a community village, seemed to have a tangible qualitative meaning for the elderly residents. Summing up, on our study, we considered the QoL perceptive evaluation of three elderly groups who had, correspondingly, the support provided by three types of residential institutions: the RSS, the DCI paradigms and the Alcalar Retirement-village model. Subsequently, our objective

<sup>9</sup> Increasing age distribution of the population imbalance to which we can refer to as a demographic tsunami.

<sup>10</sup> Both paradigms share common characteristics such as the community residential institutional environment and both had a structural growth higher than 30% in the last decade; in 2014, those Portuguese paradigms helped (on a full-time or daily basis) more than 140,000 elderly (IGFSS, 2014; ISS, 2014).

<sup>11</sup> We can characterize our study as transversal, comparative, descriptive and inferential.

allows us to identify and infer about the comparative differences between the subject's perception on QoL on those three residential paradigms considered. With the publication of this study, we hope to contribute to the reflection and debate on the reform of the social and environmental conditions in the institutional residential care of the elderly.

Concerning the global QoL results for this study, including domains whose comparison were statistically significant, QoL levels perceived by Alcalar Retirement-village inhabitants were predominantly higher than QoL levels perceived by residents in RSS. The trend in QoL results obtained by the Alcalar Retirement-village inhabitants just wasn't absolute because they were overcome by DCI attendees results in some (few) areas assessed in both WHOQOL scales.

Contrary to the results obtained by Alcalar Retirement-village inhabitants, levels of QoL assessed in residents of RSS were comparative and predominantly lower than QoL levels perceived by inhabitants of the Alcalar group and the attendees of DCI.

Also concerning the results of this investigation, we found comparative significance levels on global QoL perception between groups. Comparative differences were strong between Alcalar group and, respectively, both DCI and RSS, correspondingly in the order of  $p < .001$ . We also found the significant comparative difference ( $p = .006$ ) between attendees of DCI and RSS residents, with this last latter group obtaining the lowest levels of QoL perception, considering both general and specific domains.

It should be noted that residents of RSS scored the worst comparative results in all QoL domains. By contrast, residents in Alcalar Retirement-village achieved predominantly better scores when compared to the other two groups.

Within the overall evaluation of QoL and taking into account the results, we believe that biopsychological conditions (such as health perception and psychological and physical dimensions) associated with the socio-environmental surroundings (including marital, residential context - be structural, environmental or architectural - and individuals lifestyle in which autonomy, individual freedom and self-efficacy) seem to have an effect not to be negligible and may have had a significant influence on differences between groups regarding the perception of QoL. Considering the last assumption, we recall that the inhabitants of Alcalar Retirement-village model, despite being under the influence of unfavorable predictors such as income, literacy<sup>12</sup> and age<sup>13</sup>, seem to be favored as the socio-environmental surroundings and biopsychological conditions above mentioned, so it seems logical an assumption of a correlative influence of a multiplicity of factors previously described in the best overall results in the perception of QoL.

As Lazarus (1998), Fernandez-Ballesteros (2000), Godfrey (2001), Fleck, Chachamovich & Trentini (2003), Baltes and Smith (2004) and Langer (2009), we also think that it seems justified to deduct that among our subjects it appeared to be decisive the influence of multiple elements usually associated with QoL, such as good health, physical dynamism, support and social interaction, the feeling of belonging and community participation, as well as an active and healthy lifestyle, self-efficacy and self-control, among multiple intra and extra-individual variables associated with environmental circumstances. So, as the above authors and due to our own analysis on this investigation, we can reiterate the multidimensional significance that fundamentally underlies the perception of people's QoL.

Threatened with the psychophysiological degeneration of autonomic functions, which are essential for living in their own *home*, for the Portuguese elderly, at some point in one's lives, being institutionalised in a RSS is one of the three first-line customary options. Towards such a dilemma – whose solution is vital for them and for their families – several complex

<sup>12</sup> Regarding the influence of education level as a predictor of physical QOL and psychological QOL such correlation in our study was not confirmed because the subjects of Alcalar group, despite being the oldest and the most illiterate of the three groups, showed, when compared with the other groups, better global QoL results in physical and psychological domains.

<sup>13</sup> The Alcalar Retirement-village inhabitants, considering the average age and the distribution by age group, are older when compared respectively with the other two sample groups.

issues are raised: i) Psychic and physiological degeneration, both organic and functional, are common throughout senescence and, in most cases, such processes are irreversible, which greatly reduces the autonomous of individuals; ii) There are significant changes in the socio-economic status resulting from employment inactivity or retirement; iii) Family unwillingness to help older relatives on a daily basis is a quite common and increasingly frequent phenomenon; iv) Significant loss of loved ones throughout life are increasingly frequent, and the same applies regarding the reduction of emotional ties; v) Generally there is a strong emotional bond which unites a person to his original *home*, therefore residence and surrounding space adaptability and *homelike* environments are essential to the successful permanence of the elderly in their own homes.

In summary, given the complexity of personal variables associated with the progressive psychological and physiological degeneration throughout the ageing process as well due to social constraints which decisively influence the seniors permanence in their residences or when the elderly are faced with the imperative requirement of institutional confinement in an RSS, something that for many older people is felt as an imposed and radical change in their lives, we may put the following questions: due to housing conditions, which may be an obstacle to individual needs along the senescent process, how can one keep older people at *home* in a healthy environment, functionally and without anxiety? When faced with the prospect of an admission to a RSS, how can we help the elderly to ease his suffering associated with the withdrawal from their habitual residence and how could we prevent distress and anxiety often associated with the relocation to an institutional building that is not exactly a house with the same *home-sweet-home* spirit?

In response to the first question set, we could say: It seems to us justified any support strategies that allow the residential continuity of any elderly in their original homes, preferably in good living conditions that include functionality, comfort, security, autonomy and social inclusion.

Concerning the other questions above mentioned, we ought to have more doubts about these issues, which seems to require further discussion about this complex matter: if old age is just another stage of human life, will it be absolutely irreproachable the interventional reasons generally accepted by families and state policies that often justify the option that keeps the elderly of their residential habitat? It will be absolutely indispensable to deprive the elderly of their personal objects, condition them in their routines, limiting them on their pleasures, freedom and autonomy, etc., supposedly for their benefit and so often against their real wishes?

In this context, many of the current and future institutional housing and care typologies for the elderly, as well as the majority of currently supported models, follow an asylum mentality that must be rethought and reformulated. For these reasons and taking into account the results of our investigation, we think that this debate in ageing societies has barely started.

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# PRAGMATISM, NEED FOR COMFORT AND NEED FOR ACCEPTANCE – PSYCHOLOGICAL TRAITS FOR SUCCESSFUL ENTREPRENEURSHIP IN PORTUGAL

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## ABSTRACT

The purpose of this study was to revisit the inventory developed by Galvão and Pinheiro (2016), measuring seven psychological traits common to business owners, and to propose an inventory that could improve the measuring of psychological traits of Portuguese business owners.

The 26 items inventory was used on two samples. Sample 1, included 229 individuals (33.2% business owners) and Sample 2, used to cross-validate findings, included 257 individuals (44.0% business owners).

Correlational statistical tests and a Principal Component Analysis were carried out, resulting in items loading to 3 components. The loading items were presented to 17 business owners to validate the trait they most associated to each question, resulting in a fit to 16 items also identified by the authors as having theoretical foundations. Structural Equation Modelling was performed showing good fits for both sample 2 (RMSEA=0.052; TLI=0.942; CFI=0.951) as sample 1 (RMSEA=0.036; TLI=0.966; CFI=0.971).

With this study we were able to create the Portuguese Entrepreneurial Psychological Traits Inventory (PEPTI), an inventory that measures psychological traits that are significantly higher in business owners and that is adapted to Portuguese culture and that overcame the issues pointed out by Galvão and Pinheiro (2016) in their study.

Keywords: Entrepreneurial Drive, Business Owners, Psychological Traits, Inventory.

JEL Classification: C93, L26, M13

## 1. INTRODUCTION

The word entrepreneurship has become a common place in Portugal as in many European countries. This is partly due to low economic growth, high levels of unemployment and low expectations of short-term improvements.

Several authors have pointed out that this situation stimulates entrepreneurship as a means to economic growth and job creation, even if many times self-employment (Acs, 1992; Carree & Thurik, 2003, 2006; Beck, Demirguc-Kunt, Laeven & Levine, 2008). This economic environment has led several economic policy makers across Europe, including the European Commission, to actively promote entrepreneurship (OECD, 1998; European Commission, 2013).

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However, the success of entrepreneurship and support to entrepreneurs has proven different results across different countries, and Portugal has proven not to show the best track record possible.

According to The Global Entrepreneurship Index (Acs, Szerb, Autio & Lloyd, 2016), Portugal ranks 29<sup>th</sup> worldwide in with a mere 47.2 points out of 100 while the number one (USA) scores 83.4 points. In terms of the Entrepreneurial Attitudes sub-index, Portugal almost ranks last with 50.3 points (in Europe only proceeded by Slovenia with 50.0 points) scoring the lowest in Opportunity Perception, Networking and Cultural Support.

According to the OECD, Portugal has created in the first quarter of 2016, 21.87% more companies when compared to the same period in 2007 but at the same time, 57.95% more companies closed when compared with that same period, showing a clear negative net result.

Several reasons for this low level of success have been pointed out like: lack of management know-how, scarceness of equity, country risk, market size, psychological traits and several others. However, whereas most of these issues may be overcome by schooling, state aid and/or internationalization processes, psychological traits are harder to measure and to change.

Galvão, Fernandes and Pinheiro (2016), in a study performed between June 2015 and May 2016, where they followed the founders of 10 Portuguese start-ups, identified their capacity to handle frustration, mainly originated by rejection of their projects by investors, as an indicator of project survival. In this study, the entrepreneurs stated that more than technical skills, their psychological strength was challenged daily.

In a posterior research, Galvão and Pinheiro (2016) developed a scale to measure seven psychological traits related to entrepreneurship – need for achievement; need for affiliation; need for power; tolerance to ambiguity; risk taking propensity; locus of control; resilience – which, notwithstanding resulting in a good model fit, showed too high covariance between several of the traits and raised questions to the authors about its adaptability to Portuguese culture.

The aforementioned led to the need to revise the scale of Galvão and Pinheiro (2016) and to propose a different scale where the aforementioned issues would be eliminated.

### **1.1 Entrepreneurship and Psychological Traits**

The study of psychological traits associated to entrepreneurs or entrepreneurship, has been carried out for several decades. Schumpeter and later McClelland, normally named as the fathers of the field of entrepreneurship research, took a psychological perspective, with individuals being the major objects of entrepreneurship research. However, during the period 1980-2005 this changed in mainstream entrepreneurship research. During this time period the objective was to explain entrepreneurship by using economic and strategy theories (Kirchhoff, 1991). However, more recently, the importance of a psychological perspective, as “entrepreneurship is fundamentally personal” has gained importance in research again (Baum, Frese, Baron & Katz, 2007). Although there are arguments to defend that using traits to characterize entrepreneurs is not appropriate (Gartner, 1988), there exists a fair consistency in the literature investigating entrepreneurial traits as the definition of characteristics that distinguish entrepreneurs from non-entrepreneurs. Hisrich (1988; 1990) in his research on entrepreneurial behavior notes that the entrepreneur is characterized, as someone who shows initiative and creative thinking, is able to organize social and economic mechanisms to turn resources and situations to his or her practical account, and accepts risk and failure as part of being an entrepreneur.

However, the lack of a solid theoretical foundation has been responsible for the fragmentation of research on entrepreneurship, often resulting in studies that examine the same or similar issues very much limited to a certain disciplinary perspective ignoring other

perspectives. It is only in the last two decades that scholars have begun to address the need for integrative typologies and paradigms that can provide a coherent platform for diverse research efforts (Wortman, 1987; Hisrich, 1990; Lumpkin & Dess, 1996). Theoretical work in entrepreneurship shows the awareness that there is a need for frameworks that will facilitate the synthesis of existing research and the generation of new studies that address the gaps (Van de Ven, 1992; Lumpkin & Dess, 1996; West, 1997).

Several researchers have tried to identify psychological traits that somehow can predict entrepreneurial drive. However, many of these studies have been inconclusive, or when conclusive, show inadequate on a broader level, for instance, when the study is carried out in several countries.

The focus of our study is on the Portuguese reality where the aforementioned has also been the case in several studies. Rego and Leite (2003) concluded that a scale measuring psychological traits on a group of students, lost part of their validity simply by the fact of applying the scale validated for Portugal (Rego, 2000) to a similar sample in Brazil. Possible reasons for these major differences could be a result of several factors such as cultural differences, language differences (although both populations speak Portuguese, some phrasing and/or technical terms may be different) or from the fact that the samples were solely composed out of students (Rego & Leite, 2003).

Also Galvão and Pinheiro (2016), after developing and validating a 26 items scale to measure seven psychological traits, concluded that their scale might not be the most adequate for the Portuguese population and culture.

Another problem arising from studying entrepreneurial drive or vocation, also in Portugal, is the fact that most of the existing studies focus on the entrepreneurial drive or motivation of higher education students or starting entrepreneurs. The few studies that focus also on other population groups, normally have small samples and include professionals in general and not necessarily business owners and are generally focused on business managers.

The first study, with a larger sample of respondents (495 respondents) with diverse professional experience, was carried out by Galvão and Pinheiro in 2016 and resulted in a scale to measure seven psychological traits, normally found in the literature related to entrepreneurial drive or motivation. This study (Galvão & Pinheiro, 2016) allowed to identify seven psychological traits that could predict a higher or lower entrepreneurial drive, but showed some fragilities in what concerned adaptability to Portuguese culture and in the adequate model fit on a more detailed level.

## **2. METHOD**

### **2.1 Participants**

We used two samples to perform our analysis on. Prerequisites to be able to answer were: to be over 18 years of age and to be either a business owner, employed or a higher education student. Both samples were subdivided according to four possible professional statuses: business owner; employee; higher education student developing an entrepreneurial project; higher education student not developing an entrepreneurial project. Employees developing or planning to develop an entrepreneurial project were excluded in order to have only non-entrepreneurial employees. This procedure was adapted as the objective of the study was to have clear distinctions in entrepreneurial motivation or drive.

Sample 1 was a convenience sample and included 229 respondents of several origins. Of this sample, 53.7% were female, and in terms of the division by professional or educational status 33.2% were business owners, 21.0% higher education students working on an

entrepreneurial project, 23.6% were higher education students without an entrepreneurial project and 22.3% were employed workers.

Sample 2, used for cross-validating the findings from sample 1, was also a convenience sample and included 257 respondents. Of these, 51.0% were male, and in terms of the division by professional or educational status 44% were business owners, 19.8% higher education students without an entrepreneurial project, 19.5% higher education students working on an entrepreneurial project and 16.7% were employed workers.

## **2.2 Procedure**

While previous studies focus on the validity of existing inventories and scales to measure entrepreneurial drive through a set of pre-established psychological and personality traits, our study decided to start without any previously defined set of traits. We did use as a starting point of our study an existing set of questions from Galvão and Pinheiro's (2016) 26 items scale as all items were already properly rephrased to adjust to Portuguese interpretation and culture. Our primary objective was to reanalyse this scale, both in terms of adequacy to the Portuguese entrepreneurial reality as well as on statistical level, in order to develop a scale that would simultaneously meet the following requirements: (i) grouping of items to psychological or personality traits should be according to their interpretation in Portuguese language and culture, (ii) only components with statistical significant differences between business owners and the remaining subgroups would be included, and (iii) the model should show a good statistical fit.

We applied, through an online questionnaire, the 26 items scale developed by Galvão and Pinheiro (2016), on samples 1 and 2 between November 2016 and January 2017. Sample 1 was used for our Principal Component Analysis and sample 2 was used to perform the Confirmatory Factor Analysis. Statistical consistency and reliability were always validated between the two samples after each step.

The items were answered on a 6 points Likert scale where 1 means "don't agree at all" and 6 means "totally agree". Just as in the original 26 items scale (Galvão & Pinheiro, 2016), we also opted for a 6 point scale instead of the more conventional 5 point scale, in order to avoid excessive midpoint answers, common in Portuguese culture where deviations from the "norm" are avoided and as is also common in several other cultures (Lee, Jones, Mineyama & Zhang, 2002).

The questionnaire included a first part with questions about gender, age, and professional status. Business owners were also asked about the age of their company, if they were a founder, how many companies they have owned in total and turnover of their present company. The higher education students developing an entrepreneurial project were also asked for how long they have been working on the project and in what stage the project was.

Statistical analysis was performed in IBM SPSS v23 for OSX and Structural Equation Modelling in IBM AMOS v22 for Windows.

## **3. RESULTS**

### **Step 1**

The first step of our study was to verify if in our sample the mean score on each item was higher for the subgroup "business owners, as was the case with the original 26 items questionnaire developed by Galvão and Pinheiro (2016).

Table 1 presents the mean scores and standard deviation for the 4 subgroups gathered from Sample 1, our base sample.

**Table 1. Mean scores and standard deviations for the 4 subgroups – Sample 1**

	Student with project		Student w/o project		Business owner		Employee		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Q1	3.6458	1.19377	2.8889	1.09315	5.1053	.94628	3.5686	1.59066	3.9345	1.47793
Q2	3.8333	1.27719	2.9259	1.11341	5.1447	.98933	3.3137	1.55551	3.9389	1.51476
Q3	4.1458	1.25460	3.0741	1.24160	5.0000	1.03280	3.3137	1.54260	3.9913	1.48381
Q4	4.0208	1.17581	3.1667	1.12853	5.0789	.99013	3.3333	1.39523	4.0175	1.40789
Q5	3.5625	1.31935	3.1111	1.17629	5.0132	1.08926	3.3333	1.50555	3.8865	1.49127
Q6	3.7500	1.42172	3.1481	1.29451	5.0000	1.10755	3.0392	1.38507	3.8646	1.52868
Q7	3.6458	1.46577	3.0741	.92862	4.9605	1.12476	3.3333	1.65731	3.8777	1.51104
Q8	3.1458	1.25460	3.0556	1.13962	4.8158	1.11607	3.2745	1.20131	3.7074	1.40394
Q9	3.5208	1.35253	2.9815	.99983	4.7105	1.34478	3.5098	1.46113	3.7860	1.46377
Q10	3.4792	1.42902	3.2963	.98344	4.8553	1.24047	3.3529	1.62263	3.8646	1.49091
Q11	3.5417	1.38316	2.9630	1.13209	4.8947	1.13817	3.3137	1.67917	3.8035	1.53919
Q12	3.2292	1.35646	3.2778	1.08882	4.9605	1.28001	3.3922	1.58844	3.8515	1.53747
Q13	3.2708	1.28394	3.1667	1.05955	4.8816	1.14271	3.1176	1.45117	3.7467	1.46196
Q14	3.5208	1.42902	3.2963	1.26833	4.9079	1.13346	3.4118	1.52547	3.9039	1.49544
Q15	3.0625	1.35907	3.2222	1.11027	4.9474	1.01843	3.3137	1.44900	3.7817	1.46761
Q16	3.2292	1.35646	3.2593	1.16854	4.8289	1.03779	3.5294	1.43322	3.8341	1.41684
Q17	3.3125	1.38620	3.1111	1.19222	5.2105	.80525	3.3922	1.53725	3.9127	1.51925
Q18	3.4583	1.39845	3.2593	1.20040	5.1184	1.00621	3.6667	1.63299	4.0087	1.51308
Q19	3.1875	1.36298	3.1296	.97218	4.9079	1.14517	3.4706	1.54082	3.8079	1.47426
Q20	3.1875	1.39385	2.9815	1.05492	4.9211	1.02973	3.3725	1.69659	3.7555	1.52796
Q21	3.8333	1.46350	2.9630	1.14863	5.1974	.86440	3.4706	1.47449	4.0000	1.50729
Q22	3.4375	1.20117	3.1481	1.05343	4.7632	1.15318	3.3725	1.58696	3.7948	1.42249
Q23	3.4167	1.45622	3.2037	1.07070	4.8947	.96026	3.4118	1.21945	3.8559	1.37050
Q24	3.3542	1.39130	3.1667	1.16149	5.0789	1.05531	3.7059	1.36080	3.9607	1.46396
Q25	3.5833	1.41170	3.0741	1.07899	5.0526	.96464	2.9216	1.54717	3.8035	1.53062
Q26	3.5417	1.27092	3.2037	1.27944	4.9211	1.05531	3.8824	1.35125	3.9956	1.40018

Source: Own Elaboration

From the presented data we confirmed that business owners also in this sample have a higher average score on all original 26 items, which is in line with the previous study performed with this inventory (Galvão & Pinheiro, 2016). Also, students developing an entrepreneurial project show higher mean scores when compared with their peers that are not developing an entrepreneurial project. However, notwithstanding that in the case of the study that defined the 26 items questionnaire, all items showed statistical significant differences for the grouping item “professional status”, at this stage, and taking our sample, we were only able to affirm that on average business owners scored higher.

## Step 2

As the second step of our study we performed a Principal Component Analysis (PCA), for components with an Eigenvalue of 1 and higher, to uncover the underlying structure of the data. We decided for this route, as our starting point was to question all findings of previous studies, which were all based on existing theoretical constructs. Therefore, the number of components and the component to which each item belonged had to be questioned too. In other words, our objective was to reduce our correlated observed variables to a smaller set of important independent composite variables without any restrictions created by previous studies.

We first checked whether the sample size was adequate for a PCA using the Kaiser–Meyer–Olkin (KMO) measure. The KMO of our sample was 0.933, which, according to Kaiser (1974), is “marvellous”.

In our first simulation we did not restrict the number of components, leading us to a five components structure. However, after analysing these first results, we concluded that the way items were grouped together didn’t adhere to any possible theoretical, or even logical construct. The same type of results was obtained with a forced four components model. However, restricting the model to three components brought us to a structure as shown in Table 2.

**Table 2. Principal Component Analysis – Varimax Rotation Component Matrix – Sample 1**

	Component		
	1	2	3
Q18	.704		
Q12	.645		
Q25	.615		
Q1	.555		.439
Q26	.539		
Q16	.505		
Q2	.457		
Q22	.449		
Q7	.436		
Q15	.430	.410	
Q17		.706	
Q19		.658	
Q24		.585	
Q20		.572	
Q11		.556	
Q13		.555	
Q14		.510	
Q5			.678
Q9			.674
Q6			.639



Q21			.592
Q8			.558
Q4	.412		.489
Eigenvalue	9.504	1.126	1.113
% of variance	36.555	4.329	4.279
Cronbach $\alpha$	0.849	0.818	0.800
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			

Source: Own Elaboration

Notwithstanding the fact that items Q1, Q4 and Q15 loaded to more than one factor, it was decided to maintain these questions as the authors didn't want to eliminate any item before a validation with business owners, keeping the option to later on in the study eliminate items if theory, logic or other tests would prove their statistical invalidity.

From the data presented in Table 2, we can observe that 45.163% of the total variance is explained by these factors and that the Cronbach Alphas of the three components show a good internal consistency meeting Nunnally and Bernstein's (1994) criterion for acceptable internal consistency (Cronbach's  $\alpha \geq 0.70$ ).

### Step 3

Our third step consisted in presenting the items that loaded to the three factor structure to a group of 18 business owners, requesting them to associate three words to each item that would best describe the trait they associated to each item when answering the question. Their answers were discussed in individual interviews with each of them. Of the 26 items, only 16 were consistently considered to belong to a similar trait by these business owners. In what concerns the other items, the business owners were not able to identify them with the other items of the group or, in the few cases where they were able to see any link, they mentioned that it was farfetched. The final result was that, considering only the 16 items where a clear grouping was possible, the first component presented in Table 2 was best described by the word "Pragmatism", the second component by the word "Comfort" and the third component by the word "Acceptance". As the words and traits were given and described in Portuguese, taking into account their meaning in Portuguese as well as the emotional charge they have in Portuguese, the best way to describe these traits in English are: "Pragmatism", which in both languages has very similar meaning and emotional charge, "Need to be in a Comfort Zone" and "Need to be Accepted by Others". This complied with our first requisite: (i) grouping of items to psychological or personality traits should be according to their interpretation in Portuguese language and culture.

Thus, after this step, the scale had 16 items measuring 3 distinct psychological traits. The 16 items are grouped as follows, ordered by their respective loading factor: Pragmatism with items 18, 12, 25, 1, 26, 16, 2, 22, 7 and 15; Comfort with items 11, 13 and 14; and Acceptance with items 5, 9 and 6.

### Step 4

Having at this stage a 16 item scale that met both the requirement of presenting higher mean scores for business owners as well as having its items grouped in components that made sense not only to the authors but more importantly to business owners, we now had to validate if

all findings complied with our second requisite: only components with statistical significant differences between business owners and the remaining subgroups would be included.

We started by performing tests of normality, concluding from the results of both the Kolgomorov-Smirnov as well as the Shapiro-Wilk tests on both samples, that our data did not have a normal distribution, which was also validated through visual observations of the Stem-and-Leaf, Normal Q-Q and Box plots. Notwithstanding the sample sizes, which could allow us to perform either parametric as non-parametric tests, our choice was to perform non-parametric tests to verify if the differences between groups that we observed had statistical significance. The results from the Kruskal-Wallis test are presented in Tables 3 and 4.

**Table 3. Kruskal-Wallis test - Mean Ranks - Sample 1**

	Sit_Prof_Div	N	Mean Rank
Pragmatism	Student with project	48	97.25
	Student w/o project	54	61.49
	Business owner	76	184.59
	Employee	51	84.66
	Total	229	
Comfort	Student with project	48	96.53
	Student w/o project	54	75.16
	Business owner	76	175.76
	Employee	51	84.03
	Total	229	
Acceptance	Student with project	48	102.97
	Student w/o project	54	70.19
	Business owner	76	174.97
	Employee	51	84.40
	Total	229	

Source: Own Elaboration

**Table 4. Kruskal-Wallis test - Test Statistics - Sample 1**

	Pragmatism	Comfort	Acceptance
Chi-Square	133.493	99.202	100.249
df	3	3	3
Asymp. Sig.	.000	.000	.000
Grouping Variable: Professional status			

Source: Own Elaboration

From the results presented in Tables 3 and 4 we could reject the null hypothesis, therefore concluding that the differences in average score between the professional status groups were statistical significant.

In order to define for which pairs of groups the differences were statistically significant, pairwise tests were performed of which the results are presented in Table 5.

**Table 5. Pairwise Kruskal-Wallis tests - Sample 1**

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.
<b>Pragmatism</b>					
Student w/o project-Employee	-23.166	12.923	-1.793	.073	.438
Student w/o project-Student w/ project	35.759	13.129	2.724	.006	.039
Student w/o project-Business owner	-123.101	11.780	-10.450	.000	.000
Employee-Student w/ project	12.593	13.310	.946	.344	1.000
Employee-Business owner	99.935	11.980	8.342	.000	.000
Student w/ project-Business owner	-87.342	12.202	-7.158	.000	.000
<b>Comfort</b>					
Student w/o project-Employee	-8.872	12.879	-.689	.491	1.000
Student w/o project-Student w/ project	21.374	13.084	1.634	.102	.614
Student w/o project-Business owner	-100.599	11.739	-8.570	.000	.000
Employee-Student w/ project	12.502	13.264	.943	.346	1.000
Employee-Business owner	91.727	11.939	7.683	.000	.000
Student w/ project-Business owner	-79.225	12.160	-6.515	.000	.000
<b>Acceptance</b>					
Student w/o project-Employee	-14.208	12.883	-1.103	.270	1.000
Student w/o project-Student w/ project	32.774	13.088	2.504	.012	.074
Student w/o project-Business owner	-104.773	11.743	-8.922	.000	.000
Employee-Student w/ project	18.567	13.268	1.399	.162	.970
Employee-Business owner	90.565	11.943	7.583	.000	.000
Student w/ project-Business owner	-71.998	12.164	-5.919	.000	.000
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05.					

Source: Own Elaboration

What can be observed in Table 5 is that for all combinations where Business Owners are one of the pairs, the differences in scores are statistically significant ( $p < 0.0001$ ), therefore complying with our defined second requisite.

## Step 5

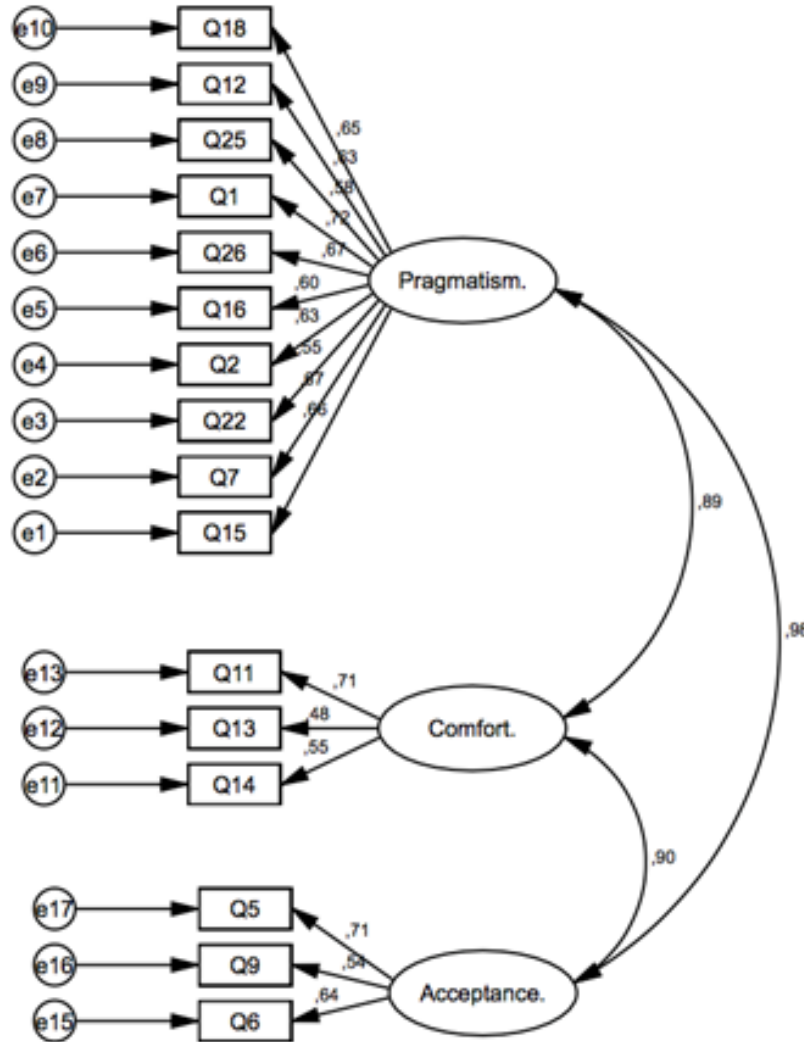
At this stage a 16 items scale with items phrased correctly according to Portuguese language, interpretation and culture, a set of three traits that gathered consensus both from the authors as well as from a group of business owners and where the higher mean scores of business owners when compared to the other subgroups of respondents were statistically significant, was created. This meant that we were in the position to verify if the scale would comply with our third requisite: (iii) the model should show a good statistical fit.

In order to achieve this goal, we performed model tests based on structural equation modelling (SEM) methods using maximum-likelihood estimation as implemented in IBM AMOS v22, analysing the three components' model that was suggested by the previous

steps and which grouped items to the traits: Pragmatism; Comfort; and Acceptance. For this step, we used Sample 2, our cross-validating sample, as data source.

The path diagram we obtained is depicted in Figure 1.

Figure 1. Structural Equation Modeling Path Diagram - Sample 2



Source: Own Elaboration

The model fit indices from applying the analysis on both samples showed the results as presented in Table 6, where we also present the indices of Galvão and Pinheiro's (2016) study.

Table 6. SEM model fit indices - Sample 2

Sample	$\chi^2$	df	$\chi^2/df$	CFI	TLI	RMSEA
1 (N=229)	131.199	101	1.299	0.971	0.966	0.036
2 (N=257)	170.620	101	1.689	0.951	0.942	0.052
O (N=495)	304.562	186	1.637	0.953	0.945	0.040

$\chi^2$  = chi-squared, df=degrees of freedom, CFI=comparative fit index, TLI=Tucker-Lewis index, RMSEA=root mean square error of approximation.

Source: Own elaboration for Samples 1 and 2, Galvão and Pinheiro (2016) for the original 26 items inventory (O)

Considering existing literature, the recommended criteria for acceptance for the above indices are:  $X^2/df < 2$  (Ullman, 2001) or  $< 5$  (Schumacker & Lomax, 2004),  $CFI \geq 0.95$ ,  $TLI \geq 0.95$  and  $RMSEA < 0.6$  (Hu & Bentler, 1999).

Given these criteria, our model shows a good fit with both samples, leading us to conclude that the 16 items model, measuring three psychological traits – Pragmatism, Comfort and Acceptance – met our third requisite: (iii) the model should show a good statistical fit.

Notwithstanding that the original 26 items scale from Galvão and Pinheiro (2016), showed better indices than our sample 2, in the present study the excessive covariance between some of the latent factors was eliminated, thus solving the issues that these authors themselves stated in their article.

We can therefore conclude that we reached the point of having a reliable inventory, that measures psychological traits that are significantly higher in business owners, that is adapted to Portuguese culture, language and interpretation and that is applicable to the public in general, calling it the Portuguese Entrepreneurial Psychological Traits Inventory (PEPTI).

#### **4. DISCUSSION**

Our results show that there is a set of three traits where business owners consistently score higher than other active adults. These differences, besides being statistically significant are also clearly visible when comparing mean scores per item, where in all items the differences are close to 1 or even more than one point, on a 6 point scale. These differences can't be ignored, and given the statistical evidence combined with the considerable sample sizes, can also not be faced as pure coincidence.

Also when we compare the scores between higher education students, the ones developing an entrepreneurial project show, on average, higher scores than their peers that are not developing one. Even being these differences not statistically significant, comparing the entrepreneurial students with business owners, makes us believe that the measured traits may become stronger over time.

Having a strong personality, especially the capacity to handle frustration, was already pointed out by Galvão, Fernandes and Pinheiro (2016), in their study carried out between mid-2015 and mid-2016, where they accompanied the entrepreneurs of 10 business projects during the first year after incorporation of their companies.

Also when comparing our results with the ones of the original 26 items scale (Galvão & Pinheiro, 2016), our model shows a better fit for Sample 1 and similar values for Sample 2. Besides this similar quality of fit, the now developed 16 items scale overcame the issues that those authors pointed out in the conclusion of their article and which was the primary reason for us to re-evaluate the scale, namely too high covariance between two of the latent variables which made the model borderline in terms of acceptance.

As far as we were able to assess from the revised literature, this was the first research carried out in Portugal, questioning and altering where necessary the theoretical frameworks of international, mostly USA, inventories measuring entrepreneurial psychological traits. The studies that were consulted, all without any exception, tested if those theoretical constructs were also valid for the Portuguese population, after proper translation of the original English inventories. The authors eventually eliminated certain items, but the measured traits were never questioned. Also, in all samples used in Portuguese research, the group of business owners was extremely small or even non-existing, resulting mostly in testing entrepreneurial motivation or drive among higher education students and employed workers (even if in some of the latter they were managers in companies).

The implications of the research carried out now, enabled us to define a set of questions through which certain traits can be measured that proved to be consistently more evident in business owners and already evident in higher education students who are developing entrepreneurial projects, being these traits and questions totally adapted to the Portuguese reality.

## 5. CONCLUSION

Identifying and measuring psychological or personality traits of entrepreneurs or entrepreneurial drive has been studied by various authors over the last decades, although results have many times been disappointing, ambiguous or inconclusive. One of the reasons pointed out for this to happen has been the fact that transposing measuring instruments from one country or culture to another implies, in many cases, different interpretations and reactions.

Culture plays an important role in all social fields and as such also in business and entrepreneurship. It is to be expected that Portuguese business owners, due to their cultural heritage and traits, will value professional life-related factors differently than, for instance, an United States business owner. As such, we firmly believe that a study needed to be conducted to create a measuring instrument for entrepreneurial drive or motivation that would take into account these cultural differences.

The research carried out for this study enabled us to develop and validate a 16 items inventory that measures three psychological traits that score consistently higher among business owners when compared to other groups of active adults. Also in what concerns the higher education students, the ones developing entrepreneurial projects score, on average, higher than their colleagues who are not developing an entrepreneurial project.

Combining these two findings, make us strongly belief that the traits that characterise business owners are already present in people that are developing or seriously thinking about developing an entrepreneurial project and that these traits become more defined when passing from project to a real business venture.

In a country where the need for entrepreneurship and business development is paramount, even if it is to create self-employment, being able to help entrepreneurs to identify areas where change can be for the benefit of their projects, is important. Besides technical skills, psychological and behavioural skills and traits are important when developing a business.

As such, the inventory we developed may be a useful instrument in helping (young) entrepreneurs to identify the traits where they show comparatively lower than average scores. By becoming aware of these traits, specific coaching programmes can help (young) entrepreneurs to develop those traits and better prepare them for a future as business owner.

Besides technical skills entrepreneurs, be it starting entrepreneurs or established ones, should be made aware of their psychological and personality traits as developing them may give a competitive advantage as managers and also as entrepreneurs.

Finally, this study was carried out combining psychology and management, thus combining two different approaches to one and the same issue. It was, in our modest opinion, the combination of these skills and schools of thought that enabled us to achieve these very positive results, or said in other words, our strong belief in interdisciplinary approaches to societal challenges made this inventory possible. Combining in the same research group economists, business owners and psychologists in a joint effort to study entrepreneurship is not something new. However, we do believe that in the Portuguese context, these interdisciplinary teams are not common enough whilst they could imply a strong support to entrepreneurs.

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# ANALYSIS OF THE ATTACHMENT-AVERSION MODEL OF CONSUMER-BRAND RELATIONSHIPS IN A DIFFERENT CULTURAL BACKGROUND

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## ABSTRACT

Originally the Attachment-Aversion model of consumer-brand relationships, elaborated by Park, Eisingerich & Park in 2013, was analyzed with the help of the sample of English speaking respondents, living in Great Britain and the USA, and focused on two brands: Manchester United Football Club and Apple iPhone. The present study tries to validate the model regarding other type of brand and in conditions of another cultural background. The focal brand for the study was chosen from a high-end beauty category (Chanel).

For the purposes of this research, a questionnaire was designed and spread online within the target population: the current students and alumni of Belarusian universities that are Russian/speaking, fluent in English and had a class in branding. A total of 273 responses was analysed using structural equation modelling. The outcomes of the research have shown that the Attachment-Aversion model of consumer-brand relationships has not proven to be totally versatile, while applied in the conditions of the other cultural background as some of the relationships of the model have shown to be insignificant. The enticing determinant has no effect on brand attachment relationship and the enabling determinant has no effect on the brand prominence. The implications of the findings are discussed.

**Keywords:** Consumer-Brand Relationship, Brand Attachment, Brand Prominence, Structural Equation Modelling.

**JEL Classification:** M31

## 1. INTRODUCTION

The consumer-brand relationship, its possible kinds and ways of forming it, is a topic, gaining more and more interest during the recent years. The first study dedicated to the topic was conducted by S. Fournier in 1998. The research was dedicated to differentiation of forms of relationships between the brand and its consumers and also to evolving of those relationships in time. This study gave a solid basis for the development of the brand relationship theory.

One of the most common constructs for analysis of consumer-brand relationship is the brand attachment construct. A great number of scientific works were dedicated to analyzing attachment of a consumer to a brand (Thomson, MacInnis & Park, 2005; Fedorikhin, Park & Thomson, 2008; Park *et al.*, 2010; Vlachos, Theotokis, Pramataris & Vrechopoulos, 2010). There is a number of approaches, explaining the essence of brand attachment relationship, but the approach used within the present study is that brand attachment can be explained

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through brand-self connection and the prominence of thoughts and feeling related to brand (Park, Priester, MacInnis & Wan, 2009). The model, explaining the construct, chosen for the analysis from a quite big number of variants is the Attachment-aversion model of consumer-brand relationship (Park *et al.*, 2013). The chosen model has a big advantage in comparison with the models, mentioned above, as it analyses not just the relationship itself, but also studies the antecedents and possible outcomes of the brand attachment. Moreover, the brand attachment construct in the Attachment-Aversion model captures both sides of the relationship: emotional and cognitive (Park *et al.*, 2013), while in earlier studies brand attachment was analyzed only from emotional side (Thomson *et al.*, 2005).

The Attachment-Aversion model of consumer brand relationship explains the brand attachment through brand-self distance and brand prominence constructs. The model first analyses the determinants, necessary for the attachment to appear. According to the model, the brand should be enticing, enabling and enriching the self of the consumer in order for the consumer later become attached to the brand. Then through the underlying process, represented by motivational strength (approach, maintenance, enhancement of the relationship), brand attachment relationship causes the outcomes, also analyzed within the model through behaviors and behavioral intentions.

The AA-model proposed by Park *et al.* (2013) was analyzed with the help of the sample of English speaking respondents, living in Great Britain and the USA. The model needs a focal brand to be chosen. The analyzed brands were Manchester United Football Club and Apple iPhone.

One of the gaps, remaining after the previous research is analysis of the brand attachment-aversion model within the other cultural background. The previous studies (Park *et al.*, 2009; Park *et al.*, 2013) always were based on samples of native English speakers, so there is a need to check whether the model can be applied to consumers in countries historically and culturally different.

Other interesting direction of the development of the model is testing whether it is reasonable to use it for other, new brand categories. For example, it is interesting to check whether in a case of a luxury brand, the consumer would form brand attachment in the same way and therefore the model can be applied without changes. The choice of a luxury brand was made due to the rising interest in literature to this category of brands. There has been a number of studies, analyzing the differences of the brand strategies and consumer behavior in case of luxury brands (Park *et al.*, 2010; Godey *et al.*, 2012; Ko & Megehee, 2012; Moon & Sprott, 2016; Gentina, Shrum & Lowrey, 2016). The present study will make a contribution by testing the brand attachment model.

The aim of the present study is to confirm the Attachment-Aversion model of consumer-brand relationships model using a brand of another category (Chanel perfume, as luxury beauty product) and analyzing the sample with a different language and cultural background (Russian speaking respondents from Belarus).

Chanel was chosen to be a focal brand because, first of all, Chanel is a luxury brand. Also the brand in question is quite well known as all over the world, as within the respondents from the sample of the present study.

This choice of brand and sample allows to test whether the model of the Park *et al.* (2013) is universal solution, giving good results for any brand and any consumer and if the managers can freely apply the approach in their process of brand planning, or it is first required to carry out a study, adapting a model for the cultural background or brand peculiarities.

## 2. THEORETICAL BACKGROUND

### 2.1 The concept of brand attachment

The basis of the brand attachment theories was given by similar constructs first developed within developmental psychology. The first work on attachment was carried out by Bowlby (1969). Attachment was studied as dimension of infant-parents relationships and was considered to be a specific bond between people. Also the construct of attachment was extended from only child-parent attachment to also adult stage of life with romantic relationships (Hazan & Zeifman, 1994). The attachment to person or object makes people ready to spend more resources as emotional as cognitive (Holmes, 2000).

But the concept of the attachment in similar way spreads not only on interpersonal interactions but also on specific objects, like, for example, brands. And the theory passing from psychology to marketing has been gaining considerable attention (Ball & Tasaki, 1992; Thomson *et al.*, 2005; Carroll & Ahuvia, 2006; Park *et al.*, 2007).

In marketing, research has been paid a lot of attention to studying attachment, its importance and its consequences. For example, researchers claimed that attachment is closely connected to such important marketing constructs as satisfaction, involvement, brand loyalty (Thomson *et al.*, 2005) or evaluations of possible brand extensions (Fedorikhin *et al.*, 2008).

There are various approaches to understanding the essence of the brand attachment. The research of Whang, Allen, Sahoury & Zhang (2004) was one of the first in this sphere. The study was dedicated to verification of the assumption that passionate love with time turns into brand attachment. Brand attachment and love were claimed to have four indicators. Firstly, consumer feels “physical chemistry” towards the brand. Secondly, brand seems to be destined for the consumer. Thirdly, brand matches with the ideal image of the self of the consumer. And finally, consumer feels bad when the brand he needs is not accessible.

The next meaningful study of the question in topic was conducted by Thomson *et al.* (2005). In the beginning, brand attachment was spread only on emotional aspects. Thomson *et al.* (2005) suggested the concept of emotional attachment, which was defined as experiencing feelings of passion, connection and affection towards the brand. In the study was revealed that consumers can be emotionally attached to some brands and this bonding can predict future loyalty of a consumer. Also authors revealed certain emotional items that are considered to be indicators of brand attachment. The first order factors are claimed to be affection, passion and connection, each of these items include second order constructs. Thus affection includes such items as loved, affectionate, friendly and peaceful. Passion consists of passionate, delighted and captivated; and connection – passionate, captivated and delighted (Thomson *et al.*, 2005).

These findings were later tested and confirmed by other authors. For example, Fedorikhin *et al.* (2008) verified the reliability and validity of the model. Besides, the view on the brand attachment was expanded also on cognitive aspects, for example related to brand-self connections. Brand-self connections show to which extent a brand expresses the self-concept of the consumer (Escalas & Bettman, 2003). Also the topic of influence of brand attachment on brand extensions was observed in the study. The results claim that the higher level of attachment a consumer has, the easier he accepts the new extension of the brand, he is more ready to forgive mistakes to a brand and even recommend to other consumers (Fedorikhin *et al.*, 2008).

In order to understand more fully the concept of brand attachment in recent works brand-self connection is no longer the only construct, explaining brand attachment. The attachment of the consumer to the brand started to be evaluated based on two elements: brand-self connection and brand prominence. Brand prominence construct measured how

easy and frequently thoughts about the brand appear in consumers' minds (Park *et al.*, 2010).

Park *et al.* (2009: 328) gave another definition of the concept of brand attachment: "the strength of the bond connecting the brand with the self". This bond is illustrated by consumer's memory network, connected to the brand and relationship with it. Also the bond can be reflected by mental representation of a consumer (Shaver & Mikulincer, 2005). And the strength of the bond between the brand and consumer can be explained through two fundamental indicators - brand-self connectedness and the prominence of brand-relevant thoughts and feelings about the brand (Park *et al.*, 2009).

The concept of brand-self connection that was already mentioned above is a combination of emotional and cognitive ties between the self of the consumer and the brand. Cognitive connection appears as a consumer feels unity with the brand and thinks of it as part himself (Park *et al.*, 2010). From the other side, brand-self connectedness is an emotional concept (Shaver & Mikulincer, 2005; Thomson *et al.*, 2005). Brand evokes in consumer numerous feeling, which can be rather complex, for example such as feelings of the consumer towards brand proximity or brand separation or feeling consumer experience while displaying brand-self connection (Park *et al.*, 2010).

Connection between the brand and the self can occur on two bases – identity bases and instrumentality basis. Identity basis expresses who the consumer is. Instrumentality basis reveals the reason of importance for a customer to use the brand. This basis is closely connected to aims, concerns and projects for the life of the consumer (Mittal, 2006).

The concept of brand-self connections is not concentrated on the quantity of brands important to consumer with which he has personal connectedness. This concept overviews the strength of the connection. The higher is the degree of integration of a brand into the sense of self of the consumer, the stronger is the connectedness between the consumer and the brand and, as a result, the higher is a level of brand attachment (Park *et al.*, 2009). Park *et al.* (2009) revealed two signals of brand-self connectedness: "Being part of oneself and reflecting who one is" (identity basis of brand-self connectedness) and "Being personally connected" (instrumentality basis of brand-self connectedness reflected in personal meaningfulness).

The second major indicator of brand attachment according to Park *et al.* (2009) is the prominence of brand-relevant thoughts and feelings or brand prominence. This indicator evaluates how easy brand-related thoughts and feelings come to the consumer and also how frequently this happens. Brand prominence reveals the saliences of ties, both affective and cognitive, between brand and the self. (Park, 2010).

The research, conducted earlier by other authors, working on attachment theory, confirmed the significance of prominence in explaining attachment. There is a relationship found between the attachment phenomenon and the process of memory activation connected to object, to which a person feels attached (Collins & Read, 1994).

All in all, two brands with the same level of brand-self connection may have different levels of attachment, if one of them is more prominent for the consumer than the other. That is why not only the strength of connectedness between the brand and the self explains the concept of brand attachment, but also the degree of prominence of brand-relevant thoughts and feelings (Park *et al.*, 2009).

With later research of brand attachment and components that explain it, the concept of brand-self connection was changed to the concept of brand-self distance (Park *et al.*, 2013). Brand-self distance assesses the subjective perception of the distance between the self of the consumer and a brand. Close relationship with the brand is considered to be positive, distant relationship – negative. Brand-self distance like brand prominence is also closely connected to brand memory. To have a close brand-self relationship, a consumer needs to have highly meaningful to him affective and cognitive memories, connected to brand. The

absence of such memories causes indifference of a consumer to a brand. In case a consumer possesses such memories and they are very relevant to the self of the consumer, his feelings will be closer or father from the level of indifference.

The overview of the studies, mentioned above, and their central constructs is demonstrated on the table 1.

**Table 1. Overview of central constructs of the studies, dedicated to brand attachment**

Central construct	Study
Emotional brand attachment, explained through love	Whang <i>et al.</i> , 2004
Emotional brand attachment, explained through passion, connection, affection	Thomson <i>et al.</i> , 2005
Brand attachment influence on brand extensions	Fedorikhin <i>et al.</i> , 2008
Brand-self connection	Escalas & Bettman, 2003; Shaver & Mikulincer, 2005; Mittal, 2006
Brand attachment, explained through brand-self connections and brand prominence	Park <i>et al.</i> , 2009, 2010
Brand attachment, explained through brand-self distance and brand prominence	Park <i>et al.</i> , 2013

Source: Own Elaboration

## **2.2 Brand attachment models**

In marketing literature a lot of attention has been paid to the construct of brand attachment and developing models, enabling to measure it and analyzing its antecedents and outcomes.

The elements of brand attachment have been investigated by Tsai (2011). In terms of this study the construct of brand attachment is composed of five main components: attractiveness for a consumer of the design of the product and of the ambience of the service; quality of the consumer-brand relationship; delight, brought by the contact with the brand; integrity of the brand and, finally, congruity of the image of the brand, perceived by the customer (Tsai, 2011).

Grisaffe and Nguyen (2011) have singled out the antecedents needed to form a brand attachment in the consumer: superior marketing characteristics, traditional customer outcome, unique user-derived benefits, socialization forces, sentimentality or emotional memory or experience.

The study of Japutra, Ekinici & Simkin (2014) was not only dedicated to the antecedents of the brand attachment, but also to the possible outcomes of it. There have been singled out six drivers, important to the process of the development of brand attachment: self-congruity, experience that is determined by brand familiarity, responsiveness, perceived quality and trust. The outcomes of the brand attachment, revealed by the study, are the following: willingness to recommend the brand, which can be also considered as positive word of mouth, intention to rebuy the brand, disregarding the negative information about the brand and performing the acts of defending the brand (Japutra *et al.*, 2014).

Jimenez and Voss (2014) proposed another scale, enabling to assess emotional attachment. Emotional attachment is revealed by the fact that the consumer feels an emotional bond, feels emotionally connected, linked by feelings and experiences feeling of attachment.

One of the most significant studies on the topic of the models of evaluation of brand attachment was conducted by Thomson *et al.* (2005). The study was dedicated to the measurement of the strength of emotional attachments of consumers to brands. The final

version of the scale has ten items combined into three interrelated factors that are affection, connection and passion.

One of the most detailed studies about brand attachment is the Attachment-Aversion model of consumer-brand relationship (Park *et al.*, 2013). The brand attachment is explained through the combination of two constructs: brand-self distance and brand prominence. The model also analyses the antecedents of the brand attachment, its outcomes and motivation of the consumers.

The Attachment-Aversion model has been chosen for the present analysis over the models mentioned above for a number of reasons.

First reason relates to the understanding of the brand attachment construct within the model. The brand attachment based on brand-self distance and brand prominence differs from many other models, for example from the construct of emotional attachment, developed by Thomson *et al.* (2005), which includes ten items. The main difference between the constructs is that the attachment of Thomson *et al.* (2005) is dedicated purely to the affective side, while the brand attachment, suggested by Park *et al.* (2010), captures both sides: affective or emotional and cognitive. Secondly, the construct, created by Park *et al.* (2010), in the opposite to emotional attachment, developed by Thomson *et al.* (2005), does not include in its measurement any specific emotions and feelings, as they can be various in type and range from consumer to consumer, as emotions can also be connected with some really personal experience of the consumer.

The study, conducted by Park *et al.* (2009) have proved that their construct is distinct from the construct, suggested by Thomson *et al.* (2005) and that measure of brand attachment, based on two items, better predicts commitment to the brand than the construct of emotional attachment, based on ten items (Park *et al.*, 2009).

Second reason for the choice of model is that the addition of the construct of brand aversion enabled the AA-model to analyze all the possible range of salience and valence of the relationship between the brand and the consumer. If compare the AA-model to the previous models of the same researchers, the main difference would be that brand attachment as a single construct, suggested by Park *et al.* (2009a), does not capture brand-self distance. It just measures the connection and only ranging from neutral to high, while the AA-model is able to measure the full range.

Thirdly, the AA-model pays attention not only to elaborating the best measure for consumer-brand relationships, but also the model has determined and tested the antecedents of the AA relationship and the outcomes of it (intentional and actual behaviors).

### 2.3 The attachment-aversion model

The present study is based on another model of measuring the brand attachment and its antecedents and outcomes, where brand attachment is understood as an integration of the brand-self connections with the brand and the prominent thoughts about it (Park *et al.*, 2009).

This model have been developing in time. The first model, elaborated by the authors was CAAM – the connection-automaticity attachment model (Park *et al.*, 2007). Then few years later, on the basis of CAAM, appeared the second model - CPAM – the connection prominence attachment model (Park *et al.*, 2009). In 2013, Park *et al.* come out with the final expanded version of the model – **Attachment-aversion model** (AA-model). This model is much more expanded in comparison to the previous ones, as it concerns not only the components of brand attachment, but also its determinants and at the same time analyses consumer's behaviors and motivational strength of it.

In the AA-model the relationships between the brand and the consumer are measured with the help of two factors, which differ in their degree for each case: brand-self distance and brand prominence. The brand-self distance is a new construct as previously the authors were using the construct of brand-self connections. In AA-model Park *et al.* (2013: 231) defines the construct of brand-self distance as “the perceived distance between a brand and the self”. In other words, this construct shows how the brand mirrors the self-concept of the consumer. The construct of brand prominence was used in the CPAM model also. In AA-model brand prominence is the memory accessibility of the brand, perceived by the consumer. This construct is closely related to the brand-self distance construct, as when memories about the brand are easily accessible, the brand-self distance, perceived by the consumer is more salient. But at the same time these two constructs are proved to be conceptually distinct and can develop independently.

The AA-model also pays attention to the determinants of the consumer-brand relationship of attachment or aversion. The study claims, that brands possess some assets, which are important to the consumer, as they help in achieving the consumer’s goals and by this reduce the distance between the brand and the self of the consumer. These determinants are enticing or annoying the self, enabling or disabling the self and enriching or impoverishing the self.

As for the first determinant of the brand attachment, it is achieved with the help of pleasures (hedonic and aesthetic) that the brand gives to the consumer through experience with it. When the consumer is pleased, because the brand gives him some pleasant sensory experience or he likes the aesthetic features of the brand, the distance between the brand and the self of the consumer gets shorter and brand attachment is developed.

Our study is based on the AA-model. So, the first research hypotheses to be confirmed are:

*H1a. Enticing determinant of consumer-brand relationships significantly influences the brand-self distance.*

*H1b. Enticing determinant of consumer-brand relationships significantly influences the brand prominence.*

The second determinant is enabling or disabling the self. This determinant evaluates if the brand gives to the consumer the feeling of efficacy and enabled self, provides the opportunity to control of the self and the environment, be autonomous and this way achieve the goals that the consumer has. Brands can influence this determinant through its performance as a useful product or service. The hypotheses to confirm are:

*H2a. Enabling determinant of consumer-brand relationships significantly influences the brand-self distance.*

*H2b. Enabling determinant of consumer-brand relationships significantly influences the brand prominence.*

The last determinants is enriching or impoverishing the self, which can be reached by the brand through encouraging self-expression and self-identity. The brand can represent the self internally just for the consumer and externally. The brand that expresses the consumer’s present, desired or past self and represents the values of the consumer, provide the symbolic pleasure and in this way enriches the self of the consumer, that leads to increasing the brand attachment. In the opposite case, if a brand reflects the identity to which the consumer feels opposed to, the brand is impoverishing the consumer that leads to brand aversion. (Park *et al.*, 2013).

*H3a. Enriching determinant of consumer-brand relationships significantly influences the brand-self distance.*

*H3b. Enriching determinant of consumer-brand relationships significantly influences the brand prominence.*

The AA-model also pays attention on the motivational strength that is claimed to be a mediator between the relationships of attachment or aversion and behaviors of the consumers intentional or actual. The motivational strength can take three forms: approach or avoidance, maintenance or termination and enhancement or destroying. The present study will check if brand attachment elements influence consumer's motivation:

*H4a. Brand-self distance significantly influences Motivation.*

*H4b. Brand prominence significantly influences Motivation.*

The AA-model also analyses the ability of prediction of behavioral intentions of the consumers by brand attachment-aversion relationships. The intentions to perform favorable behavior to the brand or anti-brand behavior are different in difficulty to execute. Within the AA-model was developed a scale for purposes of practical measurement of the behavioral intentions and it was tested and proved efficient. The most difficult intentions are: defending the brand in the situation that other consumers speak poor about it, investing time or money in brand's promotion and always purchasing the new model.

*H5. Motivation significantly influences very difficult behaviors to enact.*

Moderately difficult intentions are: recommending the brand to other consumers and forgiving to the brand in case of malfunctioning. Intentions, easier to execute, are: waiting to buy the brand, purchasing the brand and visiting the website of the brand. Therefore the research hypotheses are the following:

*H6. Motivation significantly influences moderately difficult behaviors to enact.*

*H7. Motivation significantly influences easier to enact behaviors.*

The AA-model proposes a scale (table 2) to measure every component of it, which will be also confirmed by the present study. The AA-model and research hypothesis are demonstrated in the Figure 1.

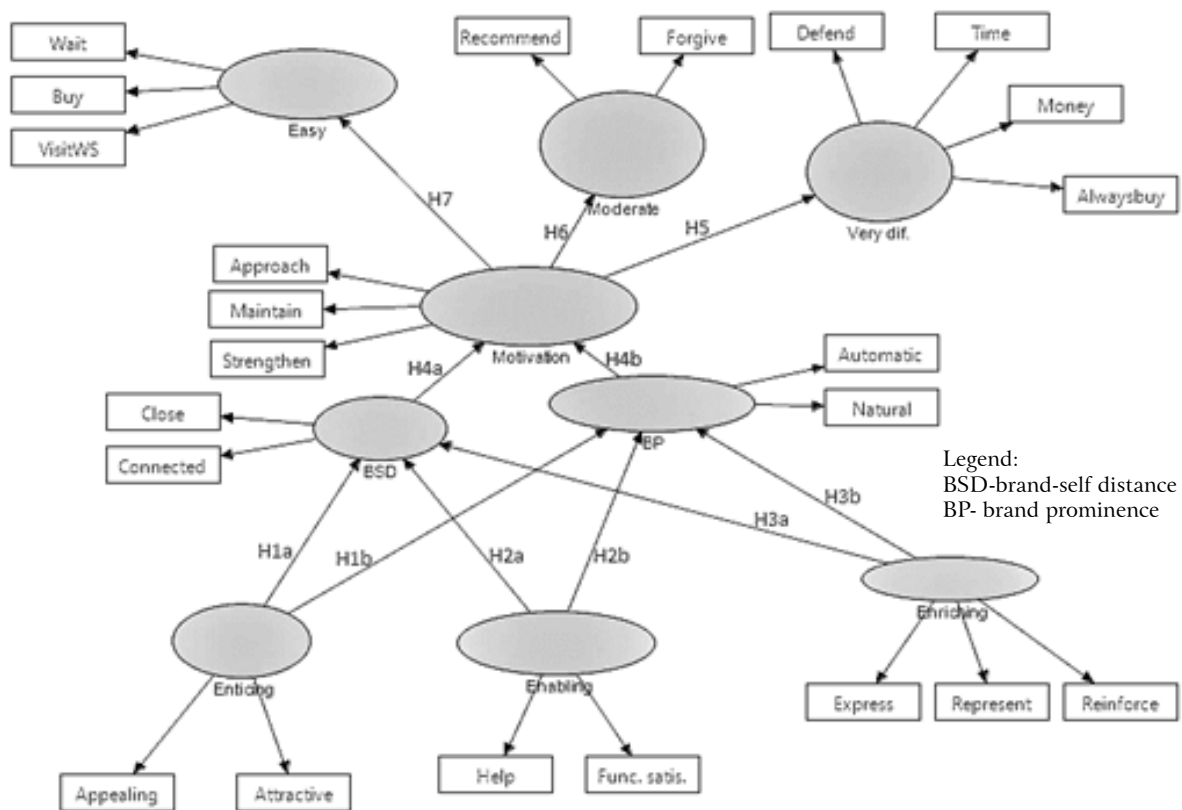


**Table 2. The scale of Attachment-aversion model of consumer-brand relationships**

Group of constructs	Construct	Questions
Determinants of consumer-brand relationships	Enticing (annoying)	To what extent is [brand name] unappealing or appealing to you?
		To what extent is [brand name] unattractive or attractive to you?
	Enabling (disabling)	To what extent does [brand name] hinder or help how you manage problems in your daily life?
		To what extent is [brand name] functionally unsatisfying or satisfying to you?
	Enriching (impoverishing)	To what extent does [brand name] misspeak or express who you are as a person?
		To what extent does [brand name] misrepresent or represent who you want to be?
		To what extent does [brand name] undermine or reinforce your deepest values?
AA-Relationships	Brand-self distance	To what extent is [brand name] far away or close to you and who you are?
		To what extent are you personally disconnected or connected to [brand name]?
	Brand prominence	To what extent are your thoughts and feelings toward [brand name] often automatic, coming to mind seemingly on their own?"
		To what extent do your thoughts and feelings toward [brand name] come to mind so naturally and instantly that you don't have much control over them?
Motivational strength	Approach (avoidance)	How intensely do you want to approach [brand name]?
	Maintenance (termination)	How much do you want to maintain (terminate) your current relationship with [brand name]?
	Enhancement (destroying)	How much do you want to further strengthen your current relationship with [brand name]?
Behavioral intentions	Easier behaviors to enact	In the future would you be more likely to wait 4-6 weeks to buy [brand name] or to wait 4-6 weeks to buy another brand?
		In the future would you be more likely to buy [brand name] or another brand?
		In the future would you be more likely to visit the web/site of [brand name] or of another brand?
	Moderately difficult behaviors to enact	In the future, which would you be more likely to do, recommend [brand name] to others or recommend another brand?
		In the future, which would you be more likely to do, forgive if [brand name] malfunctions or forgive if malfunctions another brand?
	Very difficult behaviors to enact	In the future would you be more likely to defend [brand name] when others speak negatively about it or another brand?
		In the future, which would you be more likely to do, spend time at [brand name] charity events or spend time at another brand's charity events?
		In the future, which would you be more likely to do, spend money at [brand name] charity events or spend money at another brand's charity events?
		In the future which would you be more likely to do, always buy the new model of [brand name] or always buy the new model of another brand?

Source: Own elaboration based on Park *et al.*, 2013

Figure 1. AA-Model



Source: Own elaboration based on the AA-Model

The model to be analysed requires a focal brand. The present study was conducted with the Chanel brand in focus as it differs from the brands in the original study of Park *et al.* The brand pertains to another product category- perfumes and it is an high end brand. At the same time the brand is known withing the target population.

### 3. METHODOLOGY

#### 3.1 Data collection and Sample

The target population of the present research consists of students and alumni of Belarusian universities. All of the respondents are Russian-speaking. This allows achieving similar cultural background of the respondents. In this case, they would be exposed to relatively similar brands and promotion companies. At the same time it allows to achieve a different cultural background in comparison with the Park's analysis in 2013.

Next requirement to the target population is that all the respondents should be fluent in English, as good knowledge of English language is obligatory in order to participate in questionnaire that was in English. The questionnaire wasn't translated to Russian language, as during the translation process there can be distortion of the meaning and the questionnaire could lose its reliability.

And finally, in order to reassure that all the respondents understand the questions correctly, was decided to limit the target population to the respondents that have marketing knowledge. So was decided to spread the questionnaire only between the students and alumni of Belarusian universities that had marketing studies and had a class in branding.

This way was reassured that all the respondents are familiar with the terminology needed and clearly understand the concept of brand and will not confuse it with other marketing constructs.

The time for the collection of the filled in questionnaires was a little more than two months (end of June 2015-middle of September 2015).

All in all in Belarus by 2015 year there are four universities that hold classes in branding. These are: Belarusian States University (BSU), Belarusian State Economic University (BSEU), Institute of entrepreneurial activity (IEA) and Minsk Innovation University (MIU). Each of the universities is composed of different departments. So, for the current study were chosen only the departments that had marketing studies and the class in branding in particular. By the year 2015, BSU had 4 departments studying branding, BSEU had 5 departments, IEA – 2 and MIU – 1. So all in all, the target population consists of 12 departments of four Belarusian universities.

In order to calculate the size of the sample needed for the research, first, there is a need to evaluate the size of the target population. For the current study the target population consists of approximately 11000 people. That number can be precisely calculated, taking in to consideration the number of universities that propose a class in branding (4), the number of departments of those universities that have the class (correspondingly 4, 5, 2 and 1), the average number of people in the university group (85). Also should be taken in to consideration that the class was included into the curriculum in 2004. So the number of years of the class being taught is 11. Using the listed numbers is possible to calculate the precise size of the population.

Next step is calculating the sample size. As for the confidence level, it was chosen to be 95%, what is considered to be a traditional choice for the research and guarantees the acceptable amount of uncertainty for the study. As for the confidence interval, also known as margin of error, for the current research was decided to choose it to be 6%. According to the “BOLD Academic Research Resource Center”, for the random sample is possible to choose a higher interval – 8% or 9%, whereas for the nonrandom sample is advised to choose 5% or 6%. In this course, 6% confidence level appears to be an acceptable medium value and can be applied to the current study.

In order to calculate the sample size was used the software Raosoft that permits an automatized calculation using the determinated values. In case of the present study, with the target population of 11220, confidence level of 95% and margin of error 6%, the minimum sample size needed is 261. So for the present research 261 respondents is the minimum required amount in order to guarantee the size accuracy (Raosoft Inc., 2004).

Before spreading the questionnaire the piloting research was conducted in order to make sure that all the parts of the questionnaire will be fully understood by the respondents and moreover, there will be no misunderstandings or misleading regarding the questions. For the purpose of piloting the survey tool two weeks before the launching the survey online ten people were contacted in person and asked to fill the questionnaire in. Those ten people pertained to the target population but later they were not included in the list of the people, who received the invitation to participate in the online survey. These people were graduates of Faculty of International Relationships, BSU. All in all, for the purpose of piloting research were contacted 14 people, 4 of them refused to participate. The results of the piloting research didn't reveal major problems of the questionnaire, as the respondents understood all the questions correctly. But at the same time, it was observed that the majority of the respondents were trying to avoid the open questions. That is why those questions were replaced with questions with multiple choices.

The questionnaire was spread with the help of online tool of Google Forms, which is one of the most frequently applied tools for organizing a web survey. The total number of

the responses achieved was 292. Out of that amount of responses 19 were excluded because the respondents didn't have enough education, meaning they didn't finish any university or were not a student of any university at the moment, so they couldn't be included to the target population. The final sample is composed by 273 responses. The response rate of the survey is 16%, whereas taking into consideration only answers that were used for the study, the response rate is 15%. The relatively low response rate in case of the present study can be considered predictable and normal, as the survey was conducted online, there were no incentives to fill it in and the length of the questionnaire needed to study the topic was relatively long.

### 3.2 Data analysis methods

In order to analyze the Attachment-Aversion model of consumer brand relationships was applied the method of structural equation modelling (SEM). This procedure allows checking the relationships between the variables of the model: elements of brand attachment, its determinants, motivational strength and behavioral intentions.

For the purposes of the present study was chosen the PLS method – Partial least squares path modeling. The software used within the present research is Smart PLS 2.0 (Ringle, Wende & Will, 2005). PLS method is based on the analysis of the variances which differentiates it from the classic covariance based structural equation modelling. At the same time, the PLS has similarity with the covariance-based approaches, as it allows to estimate as measurement (outer) model, as structural (inner) model (Chin, 1998). The PLS was chosen for the present study because it produces better results with non-normal data than the covariance-based approach (Chin, 1998). In fact, the Mardia's coefficient (multivariate kurtosis) for the present study equals to 115.568., the critical value equals to 28.154, which is much more than 1,96 and shows a very significant non-normality of the data.

In order to estimate the measurement model of the AA-model, it is necessary to analyse reliability and validity aspects of the latent constructs. To check reliability were used indicator loading and composite reliability index. Convergent validity was assessed through significance of indicators and average variance extracted. To analyse the discriminant validity, the squared roots of the AVE were compared with the correlations between the latent constructs and the cross-loadings were checked.

In order to test the research hypotheses stated for the present study, the path coefficients and its significance was assessed.

## 4. ANALYSIS AND RESULTS

### 4.1 Sample description

As for the social-demographic characteristics of the sample, with the help of the questionnaire was collected information about the respondents' sex, age, marital and employment status and educational level. Out of 273 respondents of the final sample, 88 are males and 185 are females, which is 32.2% and 67.8% correspondingly. It is important to say, that the majority (92.7%) of sample are young people of age 18-34 years, that means the majority of respondents are studying in the university at the moment of the research or they are rather recent alumni, which completely suits to the goal characteristics, determined for the final sample. 54.6% of the respondents have never been married, which is logical keeping in mind the young age of the absolute majority of the sample. Another important characteristic of the final sample in terms of the target population is educational level of respondents. As in terms of the present research is decided to analyze students and alumni of Belarusian

universities, final sample does not include people without higher education or at least started bachelor's degree. 30% of respondents were still students at the moment of carrying out the research, 41% of respondents have Bachelor's degree, 24% –Master's degree and 5% of respondents have a more advanced degree than Master's. The last analyzed characteristic of the final sample is employment status. 18% of the respondents are students. All in all, 71% of respondents are employed for wages or self-employed.

#### 4.2 Evaluation of the measurement model

The first step in structural equation modelling is to analyze the measurement model in terms of reliability and validity. The most important results are presented in the Tables 3 and 4.

As for the reliability, the model in the analysis meets all the requirements. Individual loadings of indicators are bigger than .7, composite reliability indexes and Cronbach's alphas of all the constructs are bigger than .7 (Fornell & Larcker, 1981; Gefen & Straub, 2005).

In order to evaluate convergent validity is necessary to analyze indicator's significance and AVE (Average variance extracted). All the indicators have their bootstrapping *t* values very high, therefore meet the requirement to be higher than 1.96 ( $p < .01$ ). AVE in all cases exceeds the level of .5. Those results together confirm the convergent validity of the indicators (Fornell & Larcker, 1981).

The next step of the analysis is to evaluate the discriminant validity of the indicators. For this purpose, it is necessary to compare the square roots of the AVE's and the interconstruct correlations (Table 4). The square roots of the AVEs are higher in all cases than correlations values, which means the model meets the first requirement of the discriminant validity. Another requirement lies within the cross-loadings analysis (not presented but verified). In that analysis, all the indicator's loadings are higher than loadings in other constructs, which confirms the discriminant validity of the indicators (Fornell & Larcker, 1981).

**Table 3. Measurement model indicators**

Construct	Indicator	Loading	Composite reliability index	Cronbach's alpha	AVE	Indicator's sig. (t)
Enticing	Appealing	.951	.954	.903	.912	54.338
	Attractive	.958				88.353
Enabling	Help	.886	.894	.763	.808	31.983
	Funct. Satisfactory	.911				47.444
Enriching	Express	.914	.935	.895	.827	43.094
	Represent	.915				35.903
	Reinforce	.899				40.363
Brand-self distance	Close	.930	.930	.850	.869	54.348
	Connected	.934				66.571
Brand prominence	Automatic	.933	.920	.827	.852	68.122
	Natural	.914				38.555
Motivation	Approach	.927	.946	.914	.854	52.896
	Maintain	.906				40.451
	Strengthen	.939				69.197

Easy behav.	Wait 4-6 weeks	.855	.909	.849	.768	25.830
	Buy	.911				54.505
	Visit Website	.863				25.143
Moderate behav.	Recommend	.917	.872	.712	.773	61.733
	Forgive	.840				15.561
Very diff. behav.	Defend	.815	.891	.838	.673	20.015
	Spend time	.844				19.659
	Spend money	.833				20.289
	Always buy new model	.787				15.527

Source: Own Elaboration

**Table 4. Inter construct correlations**

	BP	BSD	Easy	Enabling	Enriching	Enticing	Moderate	Motivation	Very diff.
BP	.923								
BSD	.612	.932							
Easy	.529	.724	.876						
Enabling	.586	.758	.728	.899					
Enriching	.647	.809	.648	.749	.909				
Enticing	.544	.707	.669	.749	.729	.954			
Moderate	.523	.693	.759	.668	.638	.707	.879		
Motivation	.611	.773	.795	.789	.723	.729	.686	.854	
Very dif.	.589	.694	.801	.713	.671	.695	.769	.742	1

Note: The square root of each AVE are shown on the diagonal of the matrix.

Source: Own Elaboration

### 4.3 Testing the hypotheses

In order to confirm the research hypotheses, it is necessary to evaluate the structural model. It is important to pay attention to the path coefficient and its significance and also to the  $R^2$ s. The results of the testing of the structural model are demonstrated on the Figure 2.

As Figure 2 show, the explained variance ( $R^2$ ) is higher in relation to 'brand-self distance' ( $R^2 = 0.713$ ), 'motivation' ( $R^2 = 0.628$ ) and 'easier behaviours to enact' ( $R^2 = 0.632$ ). In relation to other variables the results are moderate: 'brand prominence' ( $R^2 = 0.443$ ), 'moderately difficult behaviours to enact' ( $R^2 = 0.471$ ) and 'very difficult behaviours to enact' ( $R^2 = 0.550$ ).

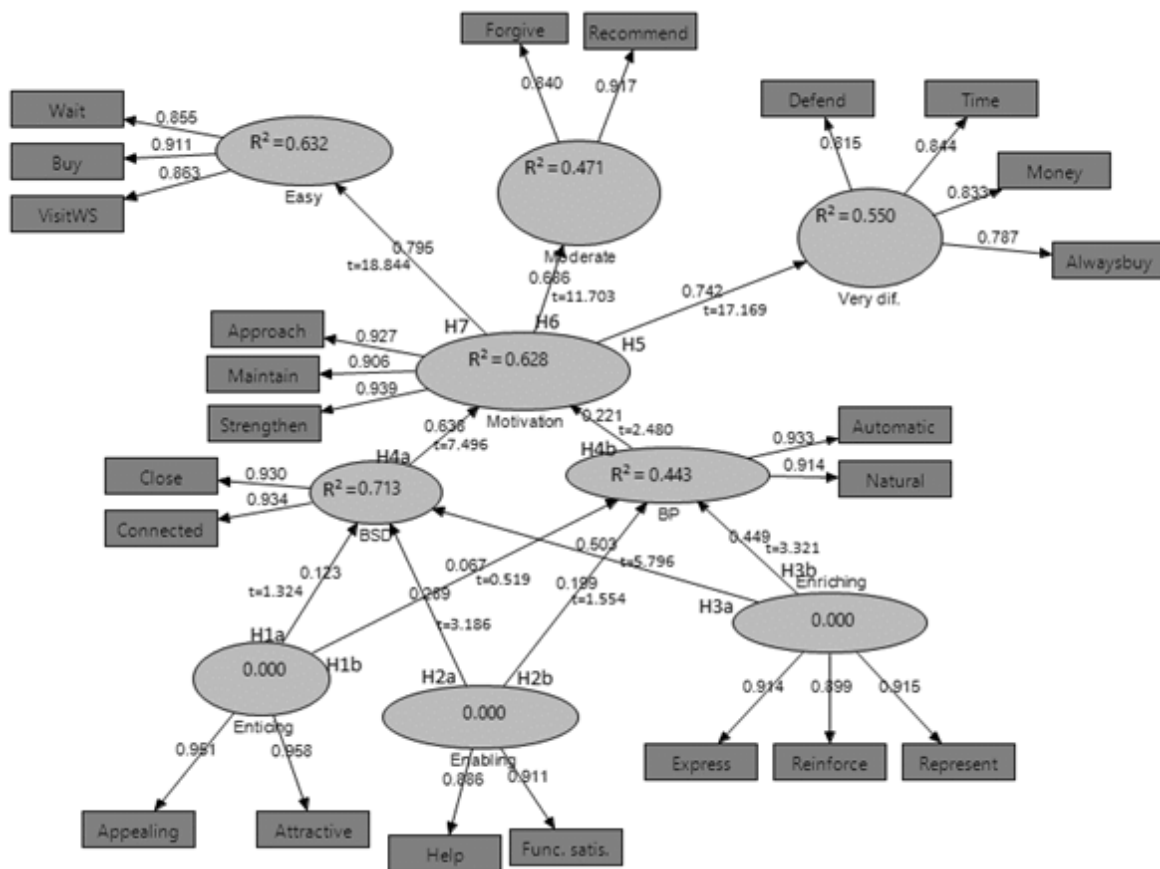
The next step was evaluating the path coefficients and its significance. The significance values were achieved through the bootstrap procedure, were 1000 sample were randomly generated. In case of the hypotheses H1a, H1b and H2b the significance levels were lower than the required 1.96 (1.324 for H1a, 0.519 for H1b and 1.554 for H2b). That means that the corresponding hypothesis was not confirmed by the analysis.

As for the all the other hypotheses, the  $t$  values are rather high that makes it possible to state that the results of the analysis confirmed the research hypotheses H2a, H3a, H3b, H4a, H4b, H5, H6, H7.

The further analysis of the path coefficients, which were proved to be statistically significant, showed that 'enriching' determinant has a slightly stronger impact on 'brand-self distance' than on 'brand prominence'. The 'brand-self distance' has a greater effect

on 'motivation', while 'motivation' affects 'stronger easier behaviours to enact' and 'very difficult ones'.

Figure 2. Results of Model Testing



Source: Own Elaboration

## 5. CONCLUSION

The present study has made an attempt to confirm the Attachment-Aversion model of consumer-brand relationships, elaborated by Park *et al.* in 2013, using other type of brand and with the sample within another cultural background. The focal brand for the study was chosen from a high-end beauty category (Chanel). The final sample consisted of the current students and alumni of Belarusian universities that are Russian-speaking, fluent in English and had a class in branding.

The results have shown that the model has a good measurement fit, as all the constructs are proved to have good values, confirming their reliability, convergent and discriminant validity. As for the structural model, the results were not so flawless. Not all the research hypotheses were confirmed during the analysis. In fact, the AA-model claims that attachment-aversion relationships have three determinants. The first determinant is the brand being enticing. The present analysis didn't find a statistically significant effect of this determinant neither on the brand-self distance nor on brand prominence. Moreover, as for the second determinant, the brand being enabling, the analysis have revealed the statistically significant effect only on brand-self distance while no effect on brand prominence.

Within the AA-model of consumer-brand relationships, the attachment to the brand is explained through brand-self distance and brand prominence constructs. The analysis,

conducted within the present research, confirmed that both constructs affect the consumer's motivation towards the brand. Furthermore, the effect that brand-self distance has on motivation is much stronger than the brand prominence has.

The AA-model claims that motivation affects the behavioral intentions that appear in consumer. All the behavioral intentions are divided into easier to enact, moderately difficult and very difficult to enact. The present research confirmed that the Motivation construct influences all the three groups of behavioral intentions. While the strength of the effect doesn't differ much, the results have shown that the effect is the strongest for the easier behaviors to enact, and the weakest for the moderately difficult behaviors to enact.

All in all, the results of the analysis, conducted within the present research partly confirmed the Attachment-Aversion model of consumer-brand relationships, elaborated by Park *et al.* in 2013. While trying to apply the same model to another type of brand and to the sample with another cultural background, some of the elements of the model have shown to be insignificant. The enticing determinant has no effect on AA-relationships and the enabling determinant has no effect on the brand prominence. That shows that the Attachment-Aversion model of consumer-brand relationships has not proven to be completely versatile, while applied in the conditions of the other cultural background.

The main implication of the present study for the managers is that in the conditions of a cultural background, similar to the one, analyzed in the present study, the model can be still applied, but it requires some adjustments. For example, while planning a brand strategy, it is more important to concentrate on the brand characteristics enriching the consumer. While demonstrating that the brand is enticing for the consumer will not lead to the forming of brand attachment relationship. Also in order to stimulate consumer for action towards brand is more important concentrate on the perceived distance with the brand, then trying to achieve high levels of brand prominence.

The model was not fully confirmed while applied in conditions of other country. This finding corresponds to some other studies, performed in the field of branding while comparing cultural differences. Godey *et al.* (2012), while analyzing samples from seven countries and a similar brand category (luxury products), came to the conclusion that consumer behavior towards luxury brands significantly differs between the countries with a stable luxury market and countries, where it is still developing (like Russia, India or China). Matzler *et al.* (2016), while analysing destination brands, also came to conclusion that strategies, developed for a brand for one nations might not be effective for another.

The further analysis required to be conducted, checking the model for consumers from the countries still not analyzed and speaking other languages and also it is necessary to keep working on the model, in order to make it universal and make it possible to use it with no difference for the brand or the cultural background of the respondents.

The limitation of the present study is a relatively small number of the respondents of the final sample (273 responses). Another limitation is low response rate. The main reason for these limitations to appear is that the data was collected via online without any incentives for respondents to fill the questionnaire in, while the number of questions was quite high. So, for the future research, can be useful to verify the results with the help of a larger sample, collecting the data via other sources than Internet. This may add reliability to the findings of the study.

The analysis of the research conducted was based on the AA-model, which requires a focal brand. The choice of certain brands for analysis can be also considered as limitation, as that choice may influence the results. For the future study would be useful to support the results obtained with the help of other focal brands. The choice of the focal brand also means choosing the brand of some particular group of products that also may influence the



results. For the future study would be interesting to confirm the results of the present study on focal brands, pertaining to other group of products.

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# FAST-FOOD MARKETING STRATEGIES AND THEIR IMPACT ON CHILDHOOD OBESITY

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## ABSTRACT

Overweight and obesity are growing health problems in children. The increase in fast-food consumption has greatly contributed to this phenomenon. Children are a frequent target for fast-food advertising, and the television is one of the most used marketing channels. We assessed the frequency of fast-food ingestion, television viewing time and body mass index (BMI) in children from 8 to 12 years of age. A quantitative approach was followed, using a self-report questionnaire. The sample was composed of 60 children with an age average of 9.88 years ( $SD=1.37$ ). It was found that longer television viewing times were associated with higher frequency of fast-food ingestion for both school days ( $r_s = 0.54, p < .001$ ) and weekends/holidays ( $r_s = 0.50, p < .001$ ). A positive and moderate correlation between television viewing times and BMI ( $r_s = 0.51, p < .001$ ;  $r_s = 0.55, p < .001$ ) was also observed. The results indicate that television advertising makes children wanting to try the fast-food advertised (67%;  $n = 40$ ), and ask parents to buy it (60%;  $n = 36$ ). The good taste (72%;  $n = 43$ ) and the gifts (38%;  $n = 23$ ) are what the children in our study most appreciate in fast-food restaurants. Despite legal regulatory mechanisms, marketing continues to have a strong impact on the promotion of fast-food consumption in children.

Keywords: Fast-Food, Television Advertising, Body Mass Index, Childhood Obesity.

JEL Classification: D10

## 1. INTRODUCTION

Over the last decades, the increase in the consumption of fast-food has had a detrimental effect on consumers' health, including a higher risk of excessive weight and obesity. Children are particularly susceptible to fast-food negative effects (Fulkerson, Farbachsh, Lytle, Hearst, Dengel, Pasch & Kubik, 2011).

Fast-food usually refers to food with short cooking times, high on calories, low priced and easily accessible (Muda, 2007). We use the term fast-food to encompass food (including drinks) with high energy density and poor on micronutrients, but rich in calories, fat, sugar and salt (World Health Organization, 2003). According to Poti and Popkin (2011), fast-

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food is one of the main sources of calories for individuals between the ages of two and eighteen, and in the USA its consumption has been increasing since the 70s. In Portugal, more than half of pre-school children (52%) consume soft drinks daily, over half (65%) eat sweets at least once a day and most (73%) consume savoury snacks (pizza, hamburger, chips and others) one to four times a week (DGS, 2016).

The fast-food industry invests heavily in commercials, gifts and other marketing strategies to generate consumer patterns and long-term fidelity (Evans, 2008). Children and adolescents are important groups for this industry, for they can directly buy the products, manipulate and influence their family into buying them, and will be future consumers (Boulos, Vikre, Oppenheimer, Chang & Kanarek, 2012). Due to its hypercaloric composition, children who regularly consume this type of food have higher risk of obesity and related health issues. This phenomenon is a public health problem increasingly present in modern society, sometimes of alarming or even epidemic proportions (Cattaneo, Monasta, Stamatakis, Lioet, Castetbon, Frenken, Manios, Moschonis, Savva, Zaborskis, Rito, Nanu, Vignerová, Caroli, Ludvigsson, Koch, Serra-Majem, Szponar, van Lenthe & Brug, 2010). Also in Portugal, inadequate eating habits constitute the first risk factor in the reduction of healthy life years (19%), followed by arterial hypertension (17%) and high body mass index (13%) (DGS, 2016). A high percentage of children between seven and nine ingest values of saturated fat (81.4%), sugar (97.3%) and cholesterol (53%) above those recommended by the World Health Organization (WHO) (Valente, Padez, Mourão, Rosado & Moreira, 2010).

The fast-food high consumption rate in younger population layers and the ensuing health problems render pertinence to the study of fast-food marketing targeting children and teenagers. This study focuses on the association between marketing, in TV ads, with excess weight and obesity. The authors conducted a research on television viewing time, fast-food consumption frequency and body mass index, with a sample of 60 children between 8 and 12 years of age.

## 2. FAST-FOOD CHAINS MARKETING STRATEGIES

Advertising strategies aims to create a meaning for actions and enhance communication power (Pérez, 2012). Food marketing is strongly directed to younger groups, especially towards children, including pre-school children, with the intent of creating not only brand recognition but also preference and loyalty. A specific product can be asked for by a child as young as 2 years old, and 76% of the times it will be requested inside a supermarket. In most of those times, it will be about a food product, frequently required by its brand (McNeal, 1999). Therefore, marketers aim to foster brand preference, which precedes buying, and tends to be long-lasting, shaping future consumer habits (Moore, Wilkie & Lutz, 2002; Boulos, Vikre, Oppenheimer, Chang & Kanarek, 2012). Babies as young as six months are already able to form mental images of logos and mascots, recognizing them by their characteristic shape and form. At two years of age, children are able to ask their parents for objects associated with those images (Nadeau, 2011).

Marketing specialists, when creating their strategy, are aware that young children, as young as 24 months of age, do influence their families' consumer habits. This influence is exerted from a persuasive and insistent behaviour towards their parents. This phenomenon, known as the nag factor or pester power, consists of a constant request for the appealing and familiar products, created by marketing, without concern for the family financial capacity (McNeal, 1999; Boulos *et al.*, 2012; Anitha & Bijuna, 2016).

Fast-food chains use several marketing channels, like TV advertising, marketing in schools, marketing through the Internet, sponsoring, and placing products and promotions.

Of these six techniques, the most frequently used is TV advertising, which is also the more regulated (Hawkes, 2004).

## **2.1 TV advertising**

The main food marketing vehicle to reach children is television. Fast-food companies spend the majority of their budget for publicity on it (Gallo, 1999; Boulos *et al.*, 2012). Children start to watch TV quite early, and do it for several hours each time. In Portugal, the reported average is 2.7 daily hours for eleven years old (Klepp, Wind, Bourdeaudhuij, Rodrigo, Due, Bjelland & Brug, 2007), increasing to four to six hours in children between seven and nine years old (Carvalho, Padez, Moreira & Rosado, 2006). Between 2007 and 2008, a study from the Portuguese Regulatory Entity for Social Communication (Entidade Reguladora para a Comunicação Social, 2009) estimated that children between 4 and 14 years old watch TV shows (addressed to their age group or otherwise) an average of 2 hours and 51 minutes per day. The same study also reports that viewing time is inversely proportional to social class. The difference between opposite classes is about 90 minutes. Viewing time is also higher for girls, around 40 minutes longer than for boys (Entidade Reguladora para a Comunicação Social, 2009). In 2010, the average viewing time in this age group (4-14) was about three hours per day, even on weekends (Pereira, 2011). In the USA, food products are among the most frequently advertised in children's television channels. It is estimated that children between 2 and 7 years of age watch an average of 12 food products' advertisements a day, which represents more than 4400 commercials of that type of product every year (Walter, Schwartz, Angelini & Rideout, 2007). Television advertising of food products directed towards children and teenagers have some appealing characteristics, such as pleasant flavour (in 34% of the commercials), fun (18%), prizes or contests (16%), and innovative or special products (10%). Other strategies include promoting a website, referencing an active life style, claiming health benefits, and using a TV or children's movie character (Paiva, Sousa & Mendes, 2014; Walter, Schwartz, Angelini & Rideout, 2007).

In Portugal, as in other European countries, hypercaloric food advertisements, unlike healthier foods, are the most viewed commercials by children, appearing mostly during children's programmes (DECO, 2005, cited by Rodrigues, Carmo, Breda & Rito, 2011).

## **2.2 Other marketing channels**

Marketing in schools is an ever increasing reality. One of the reasons is the fact that on a single location there is an agglomeration of the desired marketing targets (Nadeau, 2011), in a repetitive and daily environment, allowing messages to be transmitted without much competition. The advertising campaigns are not just of the direct type (hallway posters, free food tasting, etc.) but also involve indirect advertising (for example, including sponsors' logos in school materials) (Union des consommateurs, 2006).

Internet marketing is playing an ever increasing role among children and adolescents. In fact, within a business context, the Internet has become a main marketing channel (Cardoso & Cardoso, 2012). In Europe, and according to a study carried out in several European countries, including Portugal, young people use the Internet a lot and increasingly from an early age. In addition, 77% of young Europeans aged 15 to 16 claim to use the Internet on a daily basis (European Union, 2010). The number of hours that young people spend on the Internet also seems to be increasing (Kaiser Family Foundation, 2002; Rideout, Foehr & Roberts, 2010). In the advertising that fast-food companies conduct through this platform, interactive tools that are appealing to children and adolescents are often used, such as games, puzzles, contests, downloading of recipes and wallpapers for computers, music clips and the

sending of newsletters. Companies often advertise their websites on the packaging of the food products they market (Montgomery, 2001).

Sponsorship is another channel used. Fast-food chains usually sponsor activities such as sporting events, television programmes and music shows (World Health Organization, 2013b). Product placement is also used by fast-food chains. This technique typically involves displaying the brands on films, TV shows, video clips, video games, etc., through financial support (Hawkes, 2004). This placement is done, for example, through the inclusion of products as an integral part of the background or setting or of the script itself, making the plot more realistic as it gets closer to an everyday image (Nadeau, 2011).

Promotions are another marketing tool, and aim to encourage the purchase of products directly at the points of sale. The most frequently used promotions by fast-food chains include giving prizes, sweepstakes or discounts on products (Union des consommateurs, 2006; Boulos *et al.*, 2012).

### 3. CHILDREN'S UNDERSTANDING OF MARKETING

Children, especially up to 8 years of age, have not yet attained a sufficient level of cognitive and psychological development to become aware of the nature and intentions of marketing and advertising and are, therefore, defenceless regarding them (Committee on Communications, American Academy of Pediatrics, 2006; Swinburn, Sacks, Lobstein, Rigby, Baur, Brownell, Gill, Seidell & Kumanyika, 2008).

Thus, some authors have drawn attention to children's fragility in the face of marketing and advertising, as they often still cannot distinguish, for example, television advertising from the programming itself (World Health Organization, 2013a). It is estimated that children begin to make this distinction between the ages of 4 and 7 years, becoming aware of the intention of persuasion at 8 years. However, it is only around the age of 11 or 12 that they can formulate critical thinking about advertising itself (Livingstone & Helsper, 2004; Andronikidis & Lambrianidou, 2010, cit. por Iglesias, Calda & Lemos, 2013).

### 4. MARKETING REGULATION AIMED AT CHILDREN

Of all marketing channels, the one that is, globally, best regulated is television. According to a study published by the WHO (Hawkes, 2007), 85% of the 73 countries surveyed had regulations regarding television advertising aimed at children. It was also found that, in 44% of these countries, the regulations covered specifics, such as limiting the time and content for advertisements directed directly to the child population.

In Portugal, the Law on Television and Audiovisual Services stipulates that children's programmes may only be interrupted by advertisements once every half hour, if the programmes are over thirty minutes long (Alves, 2011). In turn, the Advertising Code makes it clear through Articles 13 and 14 that child advertising must be alert with regard to the psychological fragility of minors, which requires caution as to their content, thus avoiding the encouragement of behaviour that is detrimental to consumer health and safety and especially to children (*Diário da República* – Government's Official Gazette, 1990).

### 5. THE INFLUENCE OF MARKETING ON CHILDREN'S BEHAVIOUR

Several studies carried out since 1970 have focused on the role that television can play on childhood obesity. These studies led to the conclusion that children who were most exposed

to TV commercials were more likely to prefer food advertised in them. An association between the number of hours of television viewing and the number of requests that children make to their parents to buy specific products from certain brands has also been shown. It was also found that the number of hours children watch television is associated with a higher consumption of high energy density foods rich in calories, fat, sugar and salt. Likewise, the relationship between the number of hours of television viewing and the prevalence and incidence of obesity has also been demonstrated (Coon & Tucker, 2002; Boulos *et al.*, 2012; Bingham, Varela-Silva, Ferrão, Gama, Mourão, Nogueira, Marques & Padez, 2013).

Children between the ages of 2 and 11 are the most vulnerable to the effects of advertising on food consumption (Rodrigues *et al.*, 2011). Given that most advertised foods are unhealthy, the WHO considers television advertising to be an important element in weight gain and childhood obesity (World Health Organization, 2013b).

## 6. THE IMPACT OF FAST FOOD ON CHILDHOOD OBESITY

Obesity and overweight are defined by the relationship between weight and height of the individual, i.e. body mass index (BMI). This refers to the quotient between the weight in kilograms and the square of the height in metres.

The criteria for defining overweight and childhood obesity situations vary somewhat depending on the entity that defines them (table 1). The three entities most used to define these situations are the Centers for Disease Control and Prevention (CDC), the International Obesity Task Force (IOTF) and the WHO.

**Table 1. Definitions of overweight and obesity. Adapted from Antunes & Moreira, 2011**

Reference	Definition	Index used	Cut-off point
CDC	BMI percentile for age.	IMC	Overweight = percentile >85 e <95; Obesity = percentile ≥95
IOTF	Cut-off points defined through interception with BMI points for overweight and obesity classification in adults.	IMC	Overweight regarding the BMI >25 and < 30 in adults; Obesity regarding the BMI ≥30 in adults.
WHO	Distribution of the height to weight z-score, i.e. the relationship between the weight found and the ideal weight for the height.	Weight and height	Overweight = score $z > 1$ and <2; Obesity = score $z \geq 2$

Source: Antunes and Moreira, 2011

All definitions have in common the use of weight and height, and the definition most frequently used in studies is that proposed by the CDC. For the CDC, children whose BMI is above the 95th percentile for age and gender are considered obese. Children with a BMI between the 85th and 95th percentile are considered to be overweight (Antunes & Moreira, 2011), between the 5th and 85th percentile are considered normoponderal and below the 5th percentile are considered to be underweight (Centers For Disease Control and Prevention, n.d.).

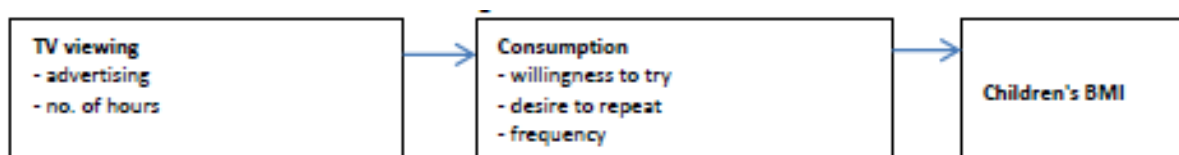
In Portugal, a number of studies were carried out to show that, between 2 and 10 years of age, the prevalence of overweight varies between 9.1% and 27.4% in the male gender and between 13.4% and 26.5% in the female gender, with obesity being between 5.9% and 19.8% for males and between 6.1% and 21.3% for females. These values were calculated according to the CDC criteria. For adolescents between 10 and 19 years of age, and also

according to the criteria of the CDC, the prevalence of overweight is 8.3% for males and 18.9% for females. In this age group, obesity is between 15% and 12.2%, for the male and female genders, respectively (Antunes & Moreira, 2011). According to Antunes and Moreira (2011: 283), the results described above “show the existence of high levels of overweight and obesity, confirming these states as a serious public health problem in Portuguese children and adolescents, making it necessary to repress this epidemic and reverse the situation as soon as possible”. Using IOTF criteria, Bingham, Varela-Silva, Ferrão, Gama, Mourão, Nogueira, Marques & Padez, (2013) have verified that between 3 and 10, the overweight prevalence is 19.7% and obesity, 8.2%, and higher in females.

Frequent fast-food consumption is a worrying health risk issue, since most of these foods have high levels of saturated fats, carbohydrates and sodium, all of which are associated with obesity and problems such as hypertension, cardiovascular diseases, type 2 diabetes (World Health Organization, 2007), and even the risk of depression (Sánchez-Villegas, Toledo, de Irala, Ruiz-Canela, Pla-Vidal & Martínez-González, 2012; Frontini, Gouveia, Moreira & Canavarro, 2016). Obese children are also more at risk to be subject to negative stereotyping, becoming victims of bullying, developing negative emotions and unhealthy behaviors (Farhat *et al.*, cited by Bingham *et al.*, 2013). Obese children report worse quality of life and higher levels of psychological problems than normoponderal children (Frontini, Gouveia, Moreira & Canavarro, 2016). Quality of life is multidimensional, and includes self-esteem, emotional and psychological stability, and subjective well-being, which in turn are influenced by others’ and self perception (Malveiro & Jesus, 2015).

Given that currently overweight and childhood obesity have a significant prevalence, it is pertinent to study the factors that may influence it, such as fast food consumption. As television advertising is one of the marketing strategies most used by fast-food companies to increase the consumption of this type of food by children, it is relevant to investigate its influence on children’s eating behaviour. This increase in consumption may have an impact on the prevalence of overweight and childhood obesity. These questions formed the basis of the research model used in this study (Figure 1). The 8 to 12 years old age group was chosen because at these ages children are still quite vulnerable to the influence of advertising and can already express themselves well enough to be able to respond individually to a simple questionnaire.

Figure 1. Research model used



Source: Own Elaboration

This research aimed to ascertain whether fast-food choices in children aged 8 to 12 years are influenced by television advertising and to what extent it can have repercussions on their BMI. It also had specific objectives: to identify some of the factors that can induce children to eat fast-food (taste of food, fun, gifts, speed of service, low cost); to ascertain whether television advertising has a positive influence on children’s willingness to try out fast-food food they see being advertised, and to ask parents to buy them; to determine children’s perception of the need to use an insistent behaviour (nag factor); to examine the prevalence of overweight and obesity in the sample studied; to verify whether television viewing time is related to how often children consume fast-food; to examine the relationship between body mass index, television exposure time and frequency of fast-food consumption; to find out if



there is an association between gender and the children's will to try out fast-food foods they see in adverts, and to ask parents to buy them; to discover if there is an association between gender and the level of insistence with which children ask their parents to buy fast-food; to investigate whether there are statistically significant differences in the frequency of fast-food consumption between the two genders; to check whether the urges to try and ask parents for certain fast-food items, which is caused by advertising, influence the BMI.

## **7. METHODOLOGY**

The literature review allowed us to verify that television advertising is the main marketing channel for fast-food aimed at children, so the methodology used was focused on the evaluation of the impact of this type of advertising on children. A quantitative approach was used through the survey method using a questionnaire.

### **7.1 Participants**

The research used a convenience sample composed of 60 children (32 males, constituting 53.3%, and 28 females, corresponding to 46.7%), aged 8 to 12 years ( $M = 9.88$ ,  $SD = 1.37$ ), users of two paediatrics clinics located in Lisbon, regardless of the reason why they went to the paediatrician. The data were collected in person, as it was a convenience sample.

### **7.2 Instrument**

The research instrument used was a questionnaire composed of 9 questions (Annex A), in view of the proposed objectives. An exhaustive search of questionnaires on this topic validated for the Portuguese population was made, including direct contact with two national researchers with papers published in this area, but no questionnaires with these characteristics were found or recommended. Thus, it was decided to make an instrument that resulted from the fusion of questions from several Portuguese and foreign questionnaires on this subject (De Klerk, 2008; Rodrigues, 2010; Alves, 2011), selecting from each of them the questions that best met our objectives. In some cases, it was necessary to make changes to the questions in the original questionnaires. The questionnaire used closed-ended questions, with the exception of questions related to weight and height. The statistical treatment of the data was conducted using the IBM SPSS Statistics® software, version 20.0.

### **7.3 Procedure**

We contacted the persons in charge of several medical practices to obtain authorization to conduct the study. After permission was granted, one of the authors went to the waiting rooms of the clinics and spoke individually with the parents of the patients present, explaining the scope and purpose of the study and proposing the individual and voluntary completion of the questionnaire, with guaranteed confidentiality and anonymity. In all cases, the questionnaires were completed by the participants themselves, sometimes with the help of their parents regarding their current weight and height.

Then, the data were processed statistically with the software previously indicated, in accordance with the proposed objectives. The percentile corresponding to the BMI of the participants, for age and gender, was checked using the tables published by the Directorate-General for Health (2005) (Annexes B and C). Based on the percentiles obtained, the BMI was classified according to the CDC classification: low weight, normoponderal, overweight and obesity.

## 8. RESULTS

When questioned about how much time they spent watching TV on weekdays and weekends/holidays (Question 3), most respondents said they watch TV for 1 to 2 hours a day during school days ( $n = 26$ , 43.30%) and 2-3 hours a day on weekends and holidays ( $n = 28$ , 46.70%) (Table 2).

**Table 2. Distribution of responses regarding time spent watching television**

	Up to 1 hour		1-2 hours		2-3 hours		Over 3 hours		Total	
	$n$	%	$n$	%	$n$	%	$n$	%	$n$	%
School days	22	36.70%	26	43.30%	9	15.00%	3	5.00%	60	100.00%
Weekends/holidays	2	3.30%	15	25.00%	28	46.70%	15	25.00%	60	100.00%

Source: Own Elaboration

Regarding the frequency of consumption of fast-food (question 4), most (68.4%,  $n = 41$ ) responded not to have eaten or to have eaten 1 to 2 times in the last month. However, 31.60% ( $n = 19$ ) of the respondents had a frequency of fast-food consumption of 3 or more times in the last month (Table 3).

**Table 3. Frequency of fast-food consumption during the last month**

Frequency	$n$	%
None	19	31.7
1-2 times	22	36.7
3-5 times	11	18.3
6 times or more	8	13.3
Total	60	100.0

Source: Own Elaboration

Regarding question 5 – “what do you like most in fast food restaurants?”–, referring to the causes that most induce children to eat this type of food, the option answered by the largest number of respondents was “the food tastes good” with 43 answers (71.67%), followed by the options “they have nice toys” with 23 answers (38.33%) and “they are cheap” with 22 answers (36.67%). The least chosen option was “the food is healthy”, answered by 16.67% ( $n = 10$ ) of the respondents (Table 4).

**Table 4. Preferred Characteristics in Fast-Food Restaurants**

Characteristic	$n$	%
The food tastes good	43	71.67
The food is fun	20	33.33
They have nice toys	23	38.33
They are cheap	22	36.67
The service is fast	17	28.33
The food is healthy	10	16.67

Source: Own Elaboration

When questioned about the willingness to try a certain food they have not had before, when they see it advertised on TV (question 6), 40 participants (66.70%) say yes, while the remaining 20 (33.30%) respond negatively.

When asked about asking their parents to buy a particular food they like when they see it advertised on television (question 7), most children (66.00%,  $n = 36$ ) answered yes, with the negative response rate being 40.00% ( $n = 24$ ).

Of the 36 children who answered “yes” to this question, most (44.4%,  $n = 16$ ) stated that they were neither too or little insistent with their parents to get the food they wanted, followed by the children who said they were very insistent (38.90%,  $n = 14$ ) (Table 5).

**Table 5. Degree of insistence with parents to buy fast-food advertised on TV**

Degree of insistence	$n$	%
Little insistent	6	16.7
Neither little or very insistent	16	44.4
Very insistent	14	38.9
Total	36	100.0

Source: Own Elaboration

The analysis of the results of our sample shows that the prevalence of overweight and obesity in the sample studied is 35.0% ( $n = 21$ ), although most (65.0%,  $n = 39$ ) children in the sample have a normal BMI for age and gender, according to the CDC criteria (Table 6).

**Table 6. Distribution of the IMC**

Classification IMC	$n$	%
Normoponderal	39	65.0
Overweight	8	13.3
Obesity	13	21.7
Total	60	100.0

Source: Own Elaboration

In order to determine whether television viewing time is related to the frequency with which children consume fast-food (data from the last month) and if the BMI is related to television exposure time and frequency of fast-food consumption, Spearman's correlation coefficient was used. The analysis of these results revealed the existence of a significant positive and moderate intensity correlation between television viewing time and the frequency with which children consume fast-food during school days ( $r_s = 0.54$ ,  $p < .001$ ) and on weekends /holidays ( $r_s = 0.50$ ,  $p < .001$ ), as shown on Table 7.

**Table 7. Correlation between television viewing time and fast-food consumption.**

No. of TV viewing hours	Frequency of consumption	BMI
School days	0.54*	0.51*
Weekends/holidays	0.50*	0.55*

\* Significant correlation at significance level of 0.01.

Source: Own Elaboration

It was also noted that the BMI classification is significantly related, in a positive sense and with moderate intensity, to the length of television viewing in school days

( $r_s = 0.51, p < .001$ ) and on weekends/holidays ( $r_s = 0.55, p < .001$ ) (Table 7) and to the frequency of fast-food consumption ( $r_s = 0.57, p < .001$ ).

From the analysis of Table 8, we found that most boys ( $n = 23, 71.88\%$ ) and girls ( $n = 17, 60.71\%$ ) said they wanted to try and ask their parents for the fast-food advertised on TV. We performed the Chi-square test to find out the relationship between gender and children's willingness to try fast-food products they see in television advertising (question 6), which allowed us to conclude that there is no association between these two variables ( $\chi^2_1 = 0.84, p = .36$ ).

**Table 8. Relationship between gender and willingness to buy unknown food**

		Willingness to buy				Total
		No	%	Yes	%	
Gender	Male	9	28.12	23	71.88	32
	Female	11	39.29	17	60.71	28
Total		20	100.00	40	100.00	60

Source: Own Elaboration

The analysis of the results in Table 9 indicates that the majority of boys ( $n = 18, 56.25\%$ ) and girls ( $n = 18, 64.29\%$ ) answered affirmatively about asking their parents to purchase fast-food products that they like when seeing them in television advertising (question 7).

The Chi-square test between gender and the answer to this question also allows concluding that there is no statistically significant association between these two variables ( $\chi^2_1 = 0.40, p = .53$ ). We note that in any situation, regardless of gender, most of the answers lean to the "yes", either in terms of trying to, or in asking parents to purchase fast-food that they see in television advertising.

**Table 9. Relationship between gender and asking parents to purchase the advertised product**

		Request to buy advertised product				Total
		No	%	Yes	%	
Gender	Male	14	43.75	18	56.25	32
	Female	10	35.71	18	64.29	28
Total		24		36		60

Source: Own Elaboration

In order to study whether there is an association between gender and the degree of insistence with which children ask their parents to buy fast-food products, the Chi-square test was used again. However, as the percentage of cells in the contingency table with an expected frequency of less than 5 is greater than 20%, the assumption of applicability of the test is not verified, due to the small number ( $n = 36$ ) of children who answered "Yes" to question no. 7. For this reason, only the percentages were interpreted (Table 10). Thus, the data show that most boys (55.6%,  $n = 10$ ) say that they are very insistent on their parents to buy the fast food they want, while the majority of the girls (61.1%,  $n = 11$ ) affirm to be neither little nor very insistent.

Table 10. Relationship between gender and degree of insistence with parents

		Degree of insistence			
Gender		Little insistent	Neither little nor very insistent	Very insistent	Total
Male	<i>n</i>	3	5	10	18
	% within gender	16.7	27.8	55.6	100.0
Female	<i>n</i>	3	11	4	18
	% within gender	16.7	61.1	22.2	100.0
Total	<i>N</i>	6	16	14	36
	% within gender	16.7	44.4	38.9	100.0

Source: Own Elaboration

We also examined whether there are statistically significant differences in the frequency of fast-food consumption between the two genders, and whether the desire to try a particular food and the willingness to ask parents to buy a particular food caused by television advertising influence the BMI. Accordingly, we used the Mann-Whitney test, from which no statistically significant differences were detected in the frequency of fast-food consumption between genders ( $U = 143.00$ ,  $p = .534$ ), with the value for boys ( $Mdn = 19.56$ ) being slightly higher than for the girls ( $Mdn = 17.44$ ). In both genders, the greater number of answers fell on the option 1 to 2 times in the last month.

As for children who claim to be willing, and those who be not, to experience a particular food advertised on TV, statistically significant differences of a moderate effect between the BMI classification ( $U = 294.50$ ,  $p = .050$ ,  $r = .25$ ) were identified. It was found that children who were willing to try a particular fast-food product had higher BMI values ( $Mdn = 33.14$  versus  $Mdn = 25.23$ ).

Regarding the desire to ask parents to buy a particular food they already enjoyed, after TV advertising, no statistically significant differences in BMI classification were found between children who have and those who do not have that desire ( $U = 331.50$ ,  $p = .073$ ). However, it was shown that children who stated that they wanted to ask their parents to buy a particular food had higher BMI values ( $Mdn = 33.29$  versus  $Mdn = 26.31$ ).

## 9. CONCLUSION

The health problems caused by childhood obesity require strategies to combat it. According to the WHO (Hawkes, 2007), strategies to prevent obesity in children and adolescents include the following: promoting an active lifestyle, limiting television viewing time, promoting consumption of fruits and vegetables, restricting the consumption of foods with high energy density and micronutrient deficiencies (such as fast-food), restricting the consumption of sugary soft drinks.

As mentioned earlier, the fight against fast-food consumption may also involve increased regulation of advertisements aimed at children (Termini, Roberto & Hostetter, 2011).

Research suggests that television advertising of fast-food products has an influence on children aged 8 to 12 years. According to our results, what children value most in fast-food restaurants is the good taste of food and the gifts provided, which are the most prominent elements in television advertising (Nadeau, 2011; Walter *et al.*, 2007).

Gender does not appear to be associated with significant differences in the behaviour of the children studied, as no statistically significant results were found regarding the association

between gender and children's willingness to try fast-food products they see in television advertising, nor between gender and asking parents to buy these foods. Similarly, there were also no statistically significant differences in the frequency of fast-food consumption between genders.

The distribution of answers to questions 6 and 7 seems to indicate that in this sample, television advertising has an influence on children's willingness to try out fast-food products they see advertised on television and to ask parents to buy them because the majority of respondents answered yes to these questions. These findings are consistent with what has been found by other authors (Coon & Tucker, 2002; Chamberlain, Wang & Robinson, 2006).

Regarding the distribution of answers to question no. 8, although most respondents gave an intermediate response, that is, they do not need to insist too little or too much with parents for them to buy them a food product that they see advertised on TV, one notes that children in the sample feel they need to adopt an insisting behaviour (nag factor), since more than a third of respondents (38.9%,  $n = 14$ ) report that they are very insistent. This conclusion is corroborated by other authors (e.g. McNeal, 1999).

The existence of a significant positive and moderate intensity correlation between television viewing time (question 3) and the frequency with which children consume fast-food (question 4) on school days ( $r_s = 0.54$ ,  $p < .001$ ), and on weekends/holidays ( $r_s = 0.50$ ,  $p < .001$ ), seems to indicate that the longer the time children spend watching TV, the higher the number of times they consume this type of food (see Table 7).

It is also shown that the classification of the BMI is positively, moderately and significantly related to television viewing time (question 3) in school days ( $r_s = 0.51$ ,  $p < .001$ ) and during weekends/holidays ( $r_s = 0.55$ ,  $p < .001$ ) as well as the frequency of fast-food consumption ( $r_s = 0.57$ ,  $p < .0$ ).

These results seem to indicate that higher BMIs are related to longer television viewing time and higher frequency of fast-food consumption (question 4). These conclusions are consistent with the work of several authors (Chou, Rashad & Grossman, 2008).

The prevalence of overweight (13.3%) and obesity (21.7%) in the sample studied (see Table 6) was similar to that found in other studies conducted in Portugal (Antunes & Moreira, 2011).

We also noticed that children who show a desire to try new fast-food food products when shown on TV have higher BMI values ( $Mdn = 33.14$ ) than the others ( $Mdn = 25.23$ ), and this difference is statistically significant.

Therefore, it seems that the children with greater desire to consume these foods are precisely those that probably already have a less healthy diet (and therefore a higher BMI), which may indicate a cycle in which higher consumption of fast-food creates greater will to repeat the consumption. This result may signal the fact that fast-food is a potentially additive substance (Garber & Lustig, 2011).

Although this study allows us to reach the above conclusions and allows a comparison with the researched literature, the sample obtained, being of convenience and of limited size, restricts the generalization of our results. Although the characteristics of the sample allow a parametric and non-parametric statistical study, it cannot be considered sufficiently representative of the Portuguese population, so it would be interesting to do a more extensive study. In future research, one could study the influence of the children's lifestyle on overweight and television viewing time.

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## ANNEX A

### Questionnaire

This questionnaire is intended for a research work as part of the Organizational Psychology of Health and Economic Psychology course units of Universidade Autónoma de Lisboa. The questionnaire is anonymous and all your answers will be confidential.

If you are between 8 and 12 years of age, complete this questionnaire with an X where you will find a □. Your answers are very important. There are no right or wrong answers.

1 – How old are you?

\_\_\_\_\_ years old.

2 – What is your gender?

☐ Male

☐ Female

3 – How many hours a day do you watch television?

	Up to 1 hour	1 – 2 hours	2 – 3 hours	Over 3 hours
School days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weekends and holidays	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 – Last month, how many times did you eat at a fast-food restaurant? (For example, McDonald's or Pizza Hut, Burger King, KFC).

☐ None

☐ 1 – 2 times

☐ 3 – 5 times

☐ 6 or more times

5 – What do you love the most at fast food restaurants? (You can choose more than one option).

☐ Food tastes good

☐ Food is fun

☐ They have nice toys

☐ They are cheap

☐ The service is fast

☐ The food is fast

6 – When you see an advertisement on television that you like about a fast-food product you do not know about, do you feel like buying it and trying it?

☐ Yes

☐ No

7 – When you see an advertisement that you like on television about food (for example, chocolates, sweets, biscuits, chips, sodas, hamburgers or pizzas), do you usually ask your parents to buy the product that was advertised?

☐ Yes

☐ No

8 – If you answered “Yes” in the previous question, to get your parents to buy the food you want, what is your level of insistence on these occasions?

- ☐ Little insistent
- ☐ Neither too much nor too little insistent
- ☐ Very insistent

9 – How tall are you and what is your weight? (Example: 125 corresponds to 1 meter and 25 centimetres - If you do not know, you can ask your parents).

\_\_\_\_\_ Centimetres.

\_\_\_\_\_ Kg.

Thank you very much for your participation!

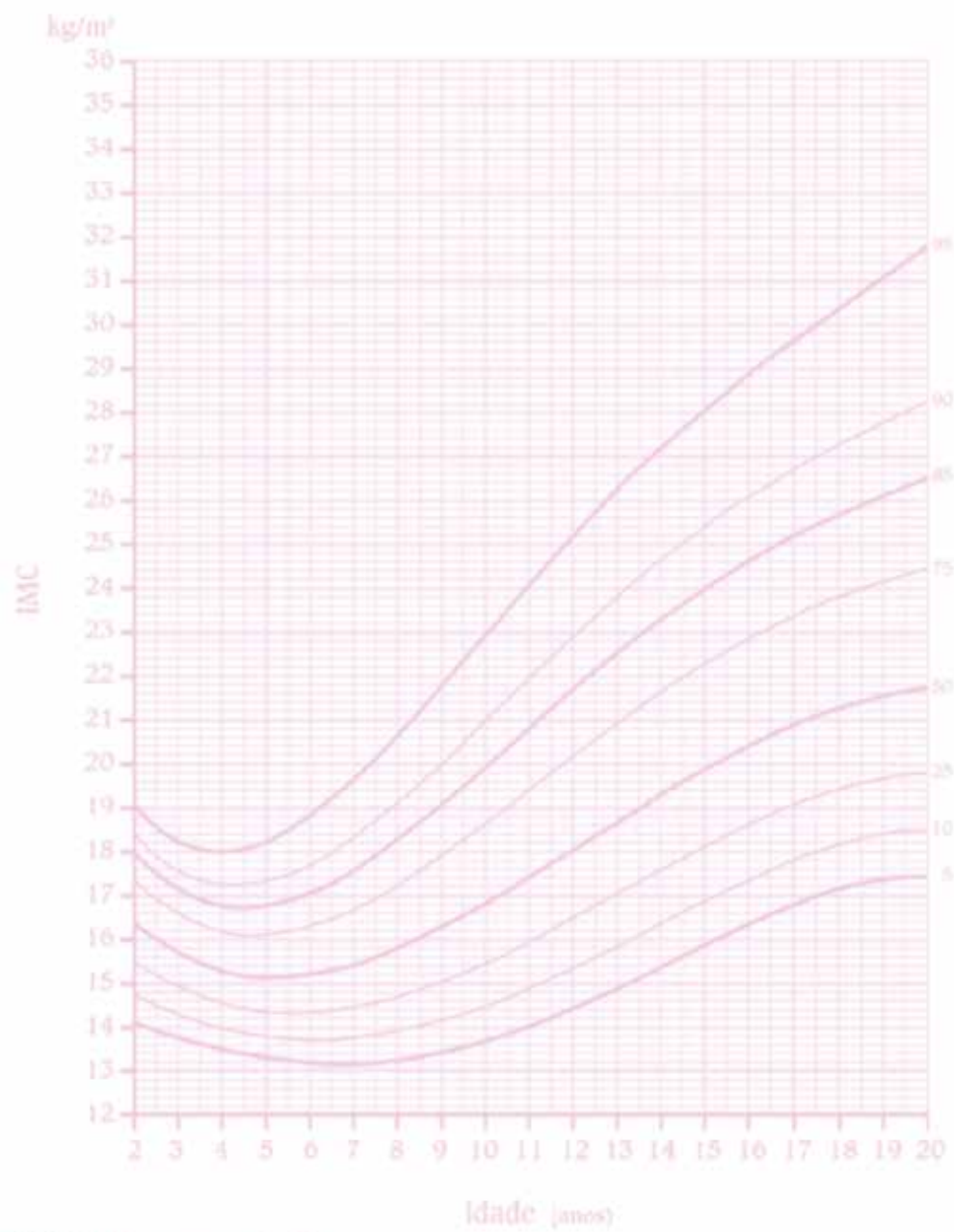
## ANNEX B

### BMI Percentile Table for the Female Gender

(Retrieved from Direcção-Geral da Saúde/ Directorate-General for Health, 2005)

RAPARIGAS

### *índice de massa corporal 2-20 anos*



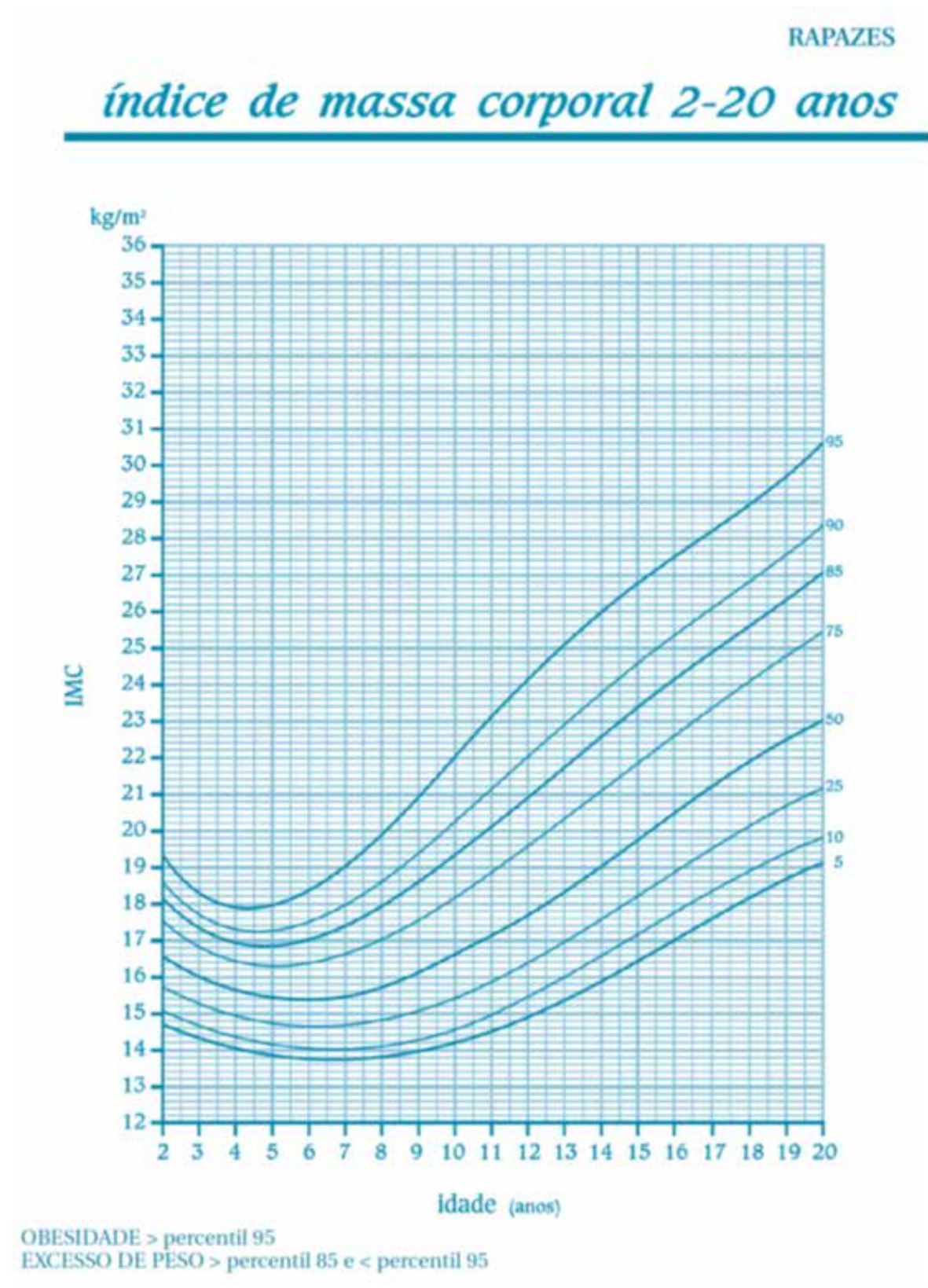
OBESIDADE > percentil 95

EXCESSO DE PESO > percentil 85 e < percentil 95

ANNEX C

BMI Percentile Table for the for the Male Gender

(Retrieved from Direcção-Geral da Saúde/ Directorate-General for Health, 2005)





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