ISCTE IUL

Instituto Universitário de Lisboa

ISCTE Business School

Innovation and Performance in Hotel Industry: Evidence from Portugal

Cleelia Uudam Costa

Thesis specially presented for the fulfillment of the degree of
Doctor in Management with specialization in Strategy and Entrepreneurship

Supervisor:
Dr. António da Silva Robalo
Professor Catedrático
ISCTE - Instituto Universitário de Lisboa
Co-supervisor:
Dr. Renato Telo de Freitas Barbosa Pereira
Professor Auxiliar Convidado
ISCTE - Instituto Universitário de Lisboa

December 2018

ISCTE Business School

Innovation and Performance in Hotel Industry: Evidence from Portugal

Cleelia Uudam Costa

Thesis specially presented for the fulfillment of the degree of
Doctor in Management with specialization in Strategy and Entrepreneurship

Jury:
President: Doutora Hélia Maria Gonçalves Pereira, Assistant Professor of
ISCTE – Instituto Universitário de Lisboa.
Doutor João Albino Matos da Silva, Full Professor of Faculdade de Economia da
Universidade do Algarve;
Doutor António Manuel Ramos Pires, Coordinating Professor of Instituto
Politécnico de Setúbal;
Doutora Denise Cristina Cunha Capela Santos, Assistant Professor of
Universidade Autónoma de Lisboa;
Doutor Renato Telo Freitas Barbosa Pereira, Invited Assistant Professor of
ISCTE – Instituto Universitário de Lisboa (co-supervisor);
Doutor António Silva Robalo, Full Professor of
ISCTE – Instituto Universitário de Lisboa (supervisor).

December 2018

ISCTE ◊ IUL
Instituto Universitário de Lisboa

Innovation and Performance in Hotel Industry: Evidence from Portugal

Cleelia Uudam Costa

December
2018

V

ABSTRACT

Together with the growing importance of tourism in world's economy, also the competitiveness of the tourism sector increases. An innovative mindset becomes a necessity for any successful tourism business. This thesis investigates innovation activity in hotels based on empirical evidence from Portuguese hotel industry. The main objectives of this thesis are 1) to analyze the determinants, areas and types of innovation, 2) to measure the degree of innovativeness and impact of innovativeness on innovation behavior, 3) to measure the degree of innovation behavior and impact of innovation behavior on performance.

Current research followed Grissemann, Plank and Brunner-Sperdin (2013) approach splitting the term 'innovation' into two different constructs, i.e., innovativeness (attitudinal level) and innovation behavior (behavioral level). Hotel innovation activity based on 11 hotel-specific innovation areas and innovation antecedents such as Hotel Size, Hotel Stars, Hotel Chain and Governance, and Personnel Training were investigated. The empirical data was collected through a questionnaire.

The results, based on a sample of 326 Portuguese hotels, showed high level of Innovativeness of Portuguese hotels. Nearly all hotels had carried out some sort of innovation within the previous three years. Information and communication technology and marketing were the leading innovation areas. The moderate level of innovation behavior showed dominance of incremental innovations. Hotel size, hotel stars, hotel chain and personnel training proved to have a significant relation with Innovation Behavior. Hotel Innovativeness impacted positively hotel Innovation Behavior and hotel Innovation Behavior impacted positively hotel performance. Overall, this research gives a contribution to hotel innovation literature in general and in Portugal. The findings provide hotel managers with relevant insights into hotel innovation.

Keywords: Hotel innovation, Hotel industry, Innovation behavior, Innovativeness, Performance, Innovation determinants

RESUMO

Com a crescente importância do turismo na economia mundial, aumenta também a competitividade no sector. Uma mentalidade inovadora torna-se necessária para qualquer negócio bem-sucedido. Esta tese investiga a inovação hoteleira baseada em evidências empíricas da indústria portuguesa. Os principais objetivos desta tese são 1) analisar fatores determinantes, áreas e tipos de inovação, 2) medir o grau de propensão para a inovação (*Innovativeness*) e o impacto no comportamento inovador, 3) medir o grau de comportamento inovador e o impacto no desempenho.

Esta investigação seguiu a abordagem de Grissemann, Plank e Brunner-Sperdin (2013) dividindo "inovação" em dois conceitos: propensão para a inovação (nível atitudinal) e comportamento inovador (nível comportamental). A investigação da atividade de inovação baseou-se em 11 áreas específicas. Foram também investigados fatores de inovação, como Dimensão, Classificação por Estrelas, Cadeia Hoteleira e Direção, e Formação. Os dados empíricos foram recolhidos através de um questionário.

Os resultados, baseados numa amostra de 326 hotéis portugueses, revelaram um elevado nível de propensão para a inovação nos hotéis portugueses. A maioria dos hotéis realizaram algum tipo de inovação nos três anos anteriores. As Tecnologias de Informação e Comunicação e o Marketing foram as principais áreas de inovação. Um nível moderado de comportamento inovador revelou um domínio de inovações incrementais. A dimensão, classificação por estrelas, cadeia hoteleira e formação provaram ter uma relação significativa no comportamento inovador. A propensão para a inovação teve um impacto positivo no comportamento inovador e este, um impacto positivo no desempenho hoteleiro. No geral, esta investigação contribui para estudos sobre inovação hoteleira num geral e em Portugal. Os resultados proporcionam à gestão hoteleira ideias relevantes sobre a inovação em hotéis.

Palavras-chave: Inovação Hoteleira, Hotelaria, Comportamento Inovador, Desempenho, Determinantes da Inovação

ACKNOWLEDGEMENTS

X

To My Little Girls..

Dream Big. Everything is Possible.

Innovation and Performance in Hotel Industry

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I INTRODUCTION

1.1. OVERVIEW

During the last decades the service sector has been growing remarkably next to manufacturing, accounting for a significant proportion of GDP in most countries and catching up in productivity with the manufacturing sector (OECD, 2017). Likewise, the contribution of tourism, as one of the largest service industries, to the world economic growth and international trade is continuously increasing. According to World Tourism Organization (UNWTO, 2018), the year 2017 was the eighth consecutive year of sustained growth following the 2009 global economic and financial crisis. The tourism receipts in destinations around the world grew in 2017 by 5% (reaching 1,340 billion Euros), in conformity with 7% increase in international tourist arrivals (UNWTO, 2018). Also, the share of tourism in world exports and in services exports has been growing, respectively 7% and 30% in 2017. The year of 2017 also marked the eighth year in a row of sustained tourism growth in Europe, the world's most visited region, with Southern and Mediterranean Europe leading the results in arrivals and tourist receipts (UNWTO, 2018). Similarly, tourism has become an important contributor to Portuguese economy, resulting in 2017 in 18% of total exports and 7.8% of GDP, while creating 7% of all the jobs (Turismo de Portugal, 2018c).

Such growing importance of tourism has also resulted in further development and increase of competitiveness within the tourism sector, where innovation becomes often a condition of survival (Sundbo, Orfila-Sintes and Sørensen, 2007). In hotel industry, which is a vital component of tourism sector, the companies are continuously forced to seek for ways of improving quality, reputation, costs and revenues. Quality and reputation can be improved through innovation, or the ability to develop and launch new and successful hospitality services (Ottenbacher and Gnoth, 2005).

Over the past two decades, the research on service innovation has become a large dynamic research area, including an increasing focus on the topic of innovation in tourism (Hjalager, 2010). But nevertheless, different scholars agree that innovation in tourism is still a young phenomenon, requiring further empirical studies in different environments in order to address different aspects of innovation and contribute to elaboration of theory (Hjalager, 2010; Pivčević and Petrić, 2011). This thesis aims to contribute to the tourism innovation literature by investigating innovation activity in hotels based on empirical evidence from Portuguese hotel industry. Additionally, it intends to contribute to the knowledge of innovation activity in Portuguese hotel industry, which so far has been only vaguely studied.

1.2. RESEARCH TOPIC

The main purpose is to investigate innovation activity in hotels based on empirical evidence from Portuguese hotel industry. Taking as reference different approaches to innovation studies in hotel sector (Grissemann, Plank and Brunner-Sperdin 2013; Orfila-Sintes et al. (2005), Orfila-Sintes and Mattsson, 2009), based on a conceptual framework, this investigation intends to elaborate an empirical support to allow to identify and analyze the determinants and patterns of innovation activity and its impact on performance in Portuguese hotel industry.

The thesis aims to analyze the degree and impact of innovativeness on innovation behavior, the areas and types of innovation practiced, the level of innovation behavior and its impact on business performance. Additionally, also to compare the innovation activity of small, midsize and big hotels to provide a groundwork for benchmarking innovation activities in Portuguese hotel establishments. Based on these objectives, the proposed research topic is stated as follows: Innovation and Performance in the Hotel Industry: Evidence from Portugal

1.3. RELEVANCE AND CONTRIBUTION

The proposed research topic and the objectives are relevant and original as they aim to contribute to the existing literature by addressing some of the gaps and improve the knowledge regarding innovation in Portuguese hotel sector. Firstly, the research in innovation in service industries in general is still in its growing phase (Crevani, Palm and Schilling, 2011; Gallouj and Windrum, 2009). Secondly, the innovation research carried out in tourism sector, and more specifically in hotel industry is still very scant (Hjalager, 2010; Ottenbacher and Gnoth, 2005). Thirdly, studies evaluating the impact of innovation on performance are far from exhaustive (Hjalager, 2010; Tseng, Kuo, and Chou, 2008). And fourthly, there has been very limited research carried out regarding innovation in Portuguese hotel industry. Therefore, it can be concluded that this thesis intends to help to fill some literature gaps, as well as provide some practical information to Portuguese hotel professionals.

The tourism industry, including the hotel industry, is an important contributor to the Portuguese economy. As previously stated, tourism formed 18% of all Portuguese exports and 7.8% of Portuguese GDP in 2017. The total number of "guests" staying in hotels and establishments of local accommodation reached 20,7 million in 2017 (growing 8.9% compared to 2016). (Turismo de Portugal, 2018c) According to the register of Tourist Establishments (RNT) of Turismo de Portugal on 15.12.2018, the total number was 4314 establishments (Turismo de Portugal, 2018a), 1509 establishments more than the total number of establishments (2805) in 2014. Additionally, on 15.12.2018 there were 80302 accommodation units registered in Portugal as "Local Accommodation" (*Alojamento Local*) (Turismo de Portugal, 2018b).

So far, there is evidence only of two larger scale studies regarding innovation activity in Portuguese tourism industry (Carvalho and Sarkar, 2014; Meneses and Teixeira, 2011), including all types of tourism enterprises. Nevertheless, some small-scale tourism and hotel innovation research, mainly based on case studies, has already been carried out (Carvalho and Costa, 2011; Fernandes, 2012; Martins

Pinho, 2012), indicating the necessity and growing interest towards further development of innovation studies.

Given the scarce academic research with empirical evidence on the topic, this thesis intends to contribute to the growing body of research in innovation in hotel industry and tourism industry in general. The results of current thesis will provide a contribution regarding hotels´ innovativeness, innovation behavior and the impact of innovation on business performance. Additionally, this research will provide relevant and novel information regarding Portuguese hotel industry and its innovation activity, hence laying foundation for future in-depth studies and for possible comparisons with results from other countries.

In managerial terms, the thesis gives hotel owners/managers a preliminary benchmarking of innovation activity in their industry, enabling them to evaluate and compare their own innovation activities with the industry patterns. Additionally, the results of this thesis intend to provide managers/owners of hotels with insights about relevant innovation antecedents and areas of innovation.

1.4. RESEARCH DESIGN AND RESEARCH QUESTIONS

The main objective of this thesis is to investigate innovation activity in hotels, aiming to make a contribution to the literature on innovation in hotel industry. To achieve its objective different theoretical approaches (Grissemann, Plank and Brunner-Sperdin, 2013; Grissemann, Pikkemaat and Weger, 2013; Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009) are combined with empirical evidence from Portuguese hotel industry. The objective of this thesis is met by seeking answers to the following questions:

1) What are the determinants of innovation activity in hotel industry?
2) What types and areas of innovation are common in Portuguese hotels?
3) What is the level of innovation behavior in Portuguese hotels?
4) What is the level of innovativeness of Portuguese hotels, and how does the level of innovativeness influence innovation behavior?

5) How does innovation behavior influence hotel´s performance?

The target population of hotels was chosen based on the list of Tourist Establishments (*empreendimentos turisticos*) obtained from Turismo de Portugal in November 2014. The target population of tourist establishments, referred to as "hotels" or "hotel establishments" in current thesis, included traditional hotel establishments such as star-hotels, hotel-apartments and inns (*pousadas*), touristic holiday villages, establishments of touristic holiday apartments, holiday villas and rural tourist establishments. The empirical data was collected through an online questionnaire that was carefully structured using previously validated scales. Firstly, a pilot study was carried out in 6 hotels with 5 managers and 1 assisting manager with the aim to test and confirm the clarity of language and the relevance of content of the questionnaire. After analyzing the pilot study results, the questionnaire was improved and finalized. An email with the link to online questionnaires was sent to the managers of all targeted hotel establishments.

The analysis of the collected data was carried out in three phases. In the first phase, the data regarding demographic indicators, innovation determinants and areas of innovation chosen based on theory was analyzed, providing a thorough picture of the relevant determinants of innovation and innovation behavior in Portuguese hotel establishments. In the second phase, the level of innovativeness, level of innovation behavior and performance of hotels was measured. In the third phase, the two hypotheses were tested, evaluating the impact of innovativeness on innovation behavior and the impact of innovation behavior on hotel performance.

1.5. RESEARCH DIFFICULTIES AND LIMITATIONS

The main difficulty of the research project was the data collection phase. Although the final sample resulted in a satisfactory 326 answers, the full process required a lot of work and time (namely one year). It was not easy to get answers possibly because hotel managers might lack interest, motivation and time to answer such questionnaires or feel uncomfortable due to confidential nature of answers regarding performance and innovation practices of their companies. Secondly, the

data for current thesis was collected from one source, and relied on hotel managers opinions and judgment, thus creating a risk for common method bias.

II LITERATURE REVIEW

2.1. INTRODUCTION

In order to better understand the essence and importance of innovation in general as well as more specifically for the hotel industry, a structured overview of the theoretical context relevant to hotel innovation is provided. Firstly, the definition of innovation and some of the most popular approaches are presented. Since hotels are part of service sector and more specifically part of tourism industry, a review of some of the relevant innovation topics related to services and tourism is provided

The theoretical background of hotel innovation is structured based on topics relevant to the thesis. Firstly, the innovation determinants and patterns are reviewed. Secondly, innovativeness and innovation behavior are discussed. And thirdly, an overview of studies regarding hotel innovation and performance is provided. Additionally, an overview of hotel innovation studies in Portuguese context is presented. Based on the literature review the gaps in the literature are discussed, followed by the presentation of the research questions and the objectives of the thesis.

2.2. THE CONCEPT OF INNOVATION

2.2.1. Defining Innovation

As previously stated, in order to have a good understanding of innovation in the hotel industry, it is important to overview the concept of innovation itself. In nowadays rapidly changing and highly competitive business world, innovation is a necessity for any company aiming to survive and be successful (Ottenbacher and Gnoth, 2005). Innovation is the key for competitive advantage. Enterprises adopt

innovations generally in order to contribute to their performance and effectiveness through seeking for better solutions or developing further their products (Damanpour, 1991; Tseng et al., 2008). Increasing importance of service sector as well as the general increase in competition has very likely led to an increased number of publications regarding service innovation and performance (Neves Ferraz and de Melo Santos, 2016). The link between innovation and performance is also discussed further in the coming paragraphs. Although the research on innovation has grown over the last decades into a substantial body of research, the objective of current chapter is only to give a brief overview of the general theory of innovation and in order to move to the main focus of this study – innovation in service sector, more specifically in tourism and hotel sector.

To answer the question of what innovation is and why it is needed, we can start by looking at its various definitions by different authors. According to the most widely used definition "innovation" means "the successful application of new ideas" (Dodgson, Gann, and Phillips, 2013; p.5). While nowadays the word "innovation" seems to be widely used, at times even "overused", everywhere around us (Dodgson et al., 2013; Trott, 2012), in order to manage innovation, it is important to understand better the term and not to confuse it with invention (Tidd and Bessant, 2009). Victor A. Thompson (1965) defined innovation as „the generation, acceptance, and implementation of new ideas, processes, products or services ", referring to „the capacity to change or adapt "(p.2). According to Nelson and Winter (1982) an innovation may involve merely "establishment of new patterns of information and material flows among existing subroutines" (p. 130), and while some innovations may be achieved through sophisticated optimization methods, then others can be the result of creative problem solving of people involved. Damanpour (1991) concluded based on previous works that "*innovation is defined as adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adapting organization*" (p. 556). Some additional definitions of the term "innovation" from prominent innovation textbooks and from the Oslo Manual Community Innovation Survey are given below:

"Innovation is a process of turning opportunity into new ideas and of putting these into widely used practice." (Tidd and Bessant, 2009)

"Innovation is both an outcome and a process, a fact and an act. An innovative outcome involves the successful application of new ideas, which results from organizational processes that combine various resources to that end." (Dodgson et al., 2013)

"Innovation is the management of all the activities involved in the process of idea generation, technology development, manufacturing and marketing of a new (or improved) product or manufacturing process or equipment." (Trott, 2012)

"An innovation is the introduction of a new or significantly improved product, process, organizational method, or marketing method by your enterprise. An innovation must have characteristics or intended uses that are new or which provide a significant improvement over what was previously used or sold by your enterprise." (CIS, 2012)

Joseph Schumpeter, an Austrian-American economist, can be considered the `godfather´ and the great initial inspiration for the research in innovation, a research field that over the last fifty years has gained growing interest from both, the academics and the practitioners (Dodgson et al., 2013). According to the logic of the economist Joseph Schumpeter (1934), who was one of the first authors to develop innovation theory (Ottenbacher and Gnoth, 2005), innovation depends on the characteristics of entrepreneurs facing dynamic environments. He proposes five different ways of innovation such as creating new products or services, creating new production processes, opening new markets, seeking new suppliers, and changing organization or management systems (Grissemann, Pikkemaat and Weger, 2013). Schumpeter (1939) makes difference between inventions from innovations, while the term "inventions" is related to scientific and technological research, defining real breakthroughs, then the term "innovations" is more pragmatic term meaning further developments of inventions into practical products, but also changes in existing products and services (Hjalager, 2002). The central theme of Schumpeter's theory of innovation is the process of "creative destruction", where there is a constant strive to seek new sources of income through establishing new rules that at the same time destroy the old ones (Tidd and Bessant, 2009).

Schumpeter also relates innovation to higher results since better production methods or better products would result in higher monetary profits (Nelson and Winter, 1982). Besides existence of different definitions of innovation, also different approaches and models of innovation exist.

2.2.2. Innovation Models and Popular Approaches to Innovation.

The field of innovation studies has developed over many decades. The traditional approach to innovation can be divided between two schools of thought, "the social deterministic" school seeing innovation as the result of external factors and impact, contrasting "the individualistic school" believing in the unique individual talents of innovators and a certain degree of serendipity (Trott, 2012).

Although Schumpeter was an important player in the field, the research on innovation is not only limited to Schumpeterian tradition. Even Schumpeter himself changed his focus over the decades. While starting the innovation research in the early 20th century, dominantly focusing on individual entrepreneurs, the formal creation of research and development (R&D) departments in companies in 1920s and 1930s guided also the focus of his works in the 1940s to the role of corporations in the context of innovation (Dodgson et al., 2013). While Schumpeter suggested that large firms and monopolies are more innovative than firms in competitive markets and saw new technology creation as a result of "creative destruction", then Kenneth Arrow (1962) argued the contrary – seeing competition favoring innovation and engagement in R&D as a way to escape competition (Baker, 2007). Kenneth Arrow´s famous essay of 1962 laid the foundations for modern economic analyses of research and development (R&D) activities, based on which a large body of research about technological inventions and innovations has been developed (Baker, 2007). Due to nowadays´ competitive environment and the increasing importance of technology **research and development** (R&D) and the **new product development** (NPD) have become the core functions to most of the companies, even in the low-tech service areas (von Zedtwitz, Friesike, and Gassmann, 2014).

Since innovation is nowadays considered as a core process of a company, it has to be organized and managed efficiently in order to benefit the organization (Tidd and Bessant, 2009). Thus it is important to look at innovation from the perspective of **innovation management**, which happens to involve a wide range of theories and approaches. However, in order to have an overview of these theories, three analytical and dynamic lenses can be summarized as follows (Dodgson et al., 2013):

- Evolutionary economics – concerned with the dynamic processes through which economies develop and grow, transformational effects of entrepreneurship and technological change, and reorganization of organisational routines (e.g. Nelson and Winter, 1982);
- Dynamic capabilities – concerned with the capacity of organizations to recognize their resources and to reorganize and rebuild these resources (e.g. Teece, 2009)
- Innovation management – widely applied, grounded in a number of analytical frameworks, e.g. complementary assets (Teece, 1986) and absorptive capacity (Cohen and Levinthal, 1990).

Another study contrasting Schumpeterian ideas is the study of **innovation diffusion**, published by Everett M. Rogers (1962) aiming to explain why and how new ideas and technologies spread. Rogers defines innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers 1983:11). Rogers considers the innovation-decision as a social and psychological process and not only as an economic one, whose adoption is divided in five key stages, such as the knowledge stage, the persuasion stage, the decision stage, the implementation stage and the confirmation stage (Ozaki and Dodgson, 2014)

For better understanding of the tendencies and dominating concerns of the last decades, it is valuable to look at the timeline comparing different theories and approaches to innovation. Paul Trott (2012) summarizes in his widely recognized textbook the chronological development of different approaches into innovation models as follows:

- 1950s – 1970s - dominated by **linear models** that saw innovation occurring in a sequence of changes, started either by an invention of technology ("technology push) or were market driven ("market pull"
- 1970s – recognition of an existing **life cycle of an innovation** as well as an emergence of a **dominant pre-standardization design**.
- 1980s – 1990s the **simultaneous coupling model** suggesting that innovation is a result of simultaneous coupling of knowledge within research and development, manufacturing and marketing functions.
- 1990s – Henderson and Clark (1990) develop the so-called **architectural innovation mode**, which divides the technological knowledge into the knowledge of the components and the knowledge of the linkage between these components. The model is developed further by **interactive model** that joins together "market push" and "technology pull" models and sees innovation more like a continuous process compared to the initial linear models.
- 1990s – 2000s - The development of new technologies (of communication) brings along the importance of external **networks** and accumulation of knowledge. Chesbrough (2003) suggests that the process of innovation shifts from a closed system to an open mode, involving a variety of external players.

The recent literature focuses more on the "drivers" of innovation, while dividing the views into the "market – based" view" and the "resource-based" (Trott, 2012). Networks are considered to be an important part of innovation, but also a valuable resource. The innovation concept, **innovation networks,** is supported by the following arguments (Kastelle and Steen, 2014):

- A strong theoretical justification from the evolutionary economics perspective that sees the economy as an evolving complex network. An economic growth emerges through the evolutionary processes of variation, selection and retention. While innovation drives variation, then the network connections drive the selection and retention.

- The economy and its subsystems are considered as "complex adaptive systems" that are best analyzed as a whole opposed to individual parts.
- It is easier and faster to carry out changes through managing a network.

An **open innovation** is one of the most frequently used new terms of innovation that has emerged during the recent years (Alexy and Dahlander, 2014; Salter and Alexy, 2013). The concept of open innovation, originally proposed by Henry Chesbrough, can be defined as *"all flows of knowledge across the boundary of the firm, independent of the form or direction, that are deliberate and that aim to create and capture value for the firm.* (Alexy and Dahlander, 2014)

Besides open innovation, also the **disruptive innovation** concept has been common over the recent years. When disruptive innovation occurs, the changes are significant and not continuous, thus resulting in phenomenon called **discontinuous innovation**. Such innovation has been quite common during the last decades, during which many industries were highly changed, including photography (photographic changed to digital film), banking (telephone banking changed to online banking), music industry (with occurring of digital music downloads) (Trott, 2012).

While there do exist many different approaches to innovation, there seems to be no one dominant theory in the field thus resulting in a wide field of research. Distinctions could be made between studies of "diffusion" and "adaption" of innovations, "innovating" and "innovativeness" (Damanpour 1991). Researchers have examined sources and adoption of innovation in organizations, factors influencing innovation and innovativeness, but also typologies of innovation.

2.2.3. Typology of Innovation

Innovation researchers have introduced different conceptual typologies of innovation as environmental and organizational factors have a different impact on their characteristics and adoptions (Damanpour, 1991), and also since innovations can be divided in different types based on the nature of the change in knowledge involved (Enz and Harrison, 2008). However, it is not always easy to make distinctions between different categories as innovations can occur not only one type at a time, but also in combinations or bundled, meaning that one type of innovation can lead to other types of innovations (Hjalager, 2002; (OECD, 2005). Technological innovations can bring along additional management and organizational changes, which can also be considered as innovations, while such chain of changes is often described as innovation cycle of an industry (Trott, 2012).

A classic or most widely studied distinction in innovation research is made between the two main types - **product innovations** and **process innovations** (Salter and Alexy, 2013). While product innovation is about successful changes in the output of an enterprise, either goods or services, then process innovation can be either technological innovations or changes regarding how things are done within an enterprise (Nybakk and Hansen, 2008). Often some additional categories are added to the categorization of product and process innovations. Oslo Manual (OECD, 2005a; OECD, 2005b) identifies besides **product innovations** *("new or significantly improved goods or services")* and **process innovations** *("new or significantly improved methods for production or delivery (operational processes")* also **organizational innovations** *("new or significantly improved methods in a firm's business practices, workplace organization or external relations (organizational or managerial processes)")* and **marketing innovations** (*"new or significantly improved marketing methods"*).

Another widely used distinction is made between **incremental** and **radical** innovation (Sundbo, 1997), depending on the nature of the change in knowledge (Jones, 1996) or the intensity of the changes and the impact of the innovation introduced (Tseng et al., 2008). Innovations are considered to be "radical" when the

necessary knowledge is different from the existing one, while "incremental" innovations involve gradual knowledge building (Tseng et al., 2008). Henderson and Clark (1990) found the distinction between incremental and radical innovations incomplete, thus working with typologies such as architectural and modular innovations. While an architectural innovation means changes between the combination and integration of different components or knowledge, then the modular innovation refers to a change in a single component without impacting the rest (Salter and Alexy, 2013).

Keith Pavitt (1994) approached the innovation looking at the existence of sectorial patterns of technological change, based on the argument that some firms use technology while others are the providers. Pavitt proposes a four-part taxonomy based on the flows of technology between the firms and their usage of technology: (1) **supplier-dominated** firms; (2) **science-based** (or technology intensive) firms; (3) **scale-intensive** firms; and (4) **specialist equipment suppliers**. (Trott, 2012; Tseng et al., 2008).

2.2.4. Innovation Determinants

Innovation activity in companies is determined by numerous factors or so-called innovation determinants. Many authors study the antecedents of successful innovations by measuring the relationships between innovation activity and possible innovation antecedents (e.g. Damanpour 1991; Grissemann, Plank and Brunner-Sperdin, 2013; Jong, Bruins, Dolfsma, and Meijaard, 2003). Whilst company size is one of the most frequently observed antecedents of innovation. Already Schumpeter suggested large firms and firms holding monopoly to be more innovative than firms in competitive markets (Baker, 2007). However, the influence of different factors on company's success can be ambiguous, and often also depend on the company life cycle (Jong et al., 2003).

Damanpour (1991) carried out a meta-analysis in his paper examining the relationship between 13 different determinants, a list compiled based on previous

studies and organizational innovation, resulting in statistically significant relationships between innovation and specialization, functional differentiation, professionalism, centralization, managerial attitude towards change, knowledge resources, administrative intensity, slack resources, and external and internal communications. Van der Panne, van Beers and Kleinknech (2003) reviewed 43 papers about factors behind success and failure of innovative projects. Based on an exhaustive comparison and analyzes, the authors found that factors such as firm culture, experience with innovation, the multidisciplinary character of the R&D team and explicit recognition of the collective character of the innovation process and the advantages of the matrix organization were agreed to have a positive impact on innovative success.

De Jong et al. (2003) in this research paper focuses on success factors manageable by the company itself, leaving aside the unmanageable external conditions such as market conditions, knowledge infrastructure (public versus private) and government policy. De Jong divides these manageable success factors into two groups a) factors directly related to innovation activities and new service development, and b) factors creating an internal climate supportive to innovations. The 17 factors directly interfering with NSD phase of a company are divided into four main categories: 1) people, 2) structure, 3) resources, and 4) networking. The 10 factors helping to create a supportive innovation climate to the company are divided between a) culture and leadership, b) strategy and c) company characteristics.

According to Souitaris (2003) the studies about innovation determinants, over the last decades, have not been conclusive due to diverse nature and non-standardized definition and measurement of innovation, but also due to differences in measurement of innovation determinants. While some of innovation determinant are objective or factual, thus easy to measure and compare (e.g. company size, company age, number of employees with degrees), others include more subjective factors such as attitudes and perception (e.g. complexity of knowledge, attitudes towards risk taking) Souitaris (2003). Souitaris (2003) divides the studies of innovation determinants in two broader categories:

1) Categorization based approach:
   a. Project level studies – looking for determinants of success and failure of innovative projects;
   b. Firm level studies – studies looking at firms and their innovation activities

2) Categorization based on the number of innovation determinants tested:
   a. Studies including large number of factors (identifying the most relevant ones);
   b. Studies testing one or a few specific factors.

Although the focus of studies is mainly to analyze the impact of different antecedents of innovation on innovation activities, there are also some factors preventing firms from introducing innovations. Identifying barriers or impediments preventing firms from innovating could also contribute to understanding better and to improving innovation activities (Martinez, Vargas 2013). Community Innovation Survey (2014) includes 4 types of factors preventing or hampering companies from innovating, such as: 1) cost factors (high costs, lack of internal and external funds), 2) knowledge factors (lack of qualified personnel and information), 3) market factors (dominant competitors or uncertain demand), and 4) reasons not to innovate because of recent innovations or lack of demand for it.

However, as mentioned earlier, the impact of different factors on company's success can be ambiguous, e.g. size (bigger companies have better resources, whereas smaller companies have more internal motivation and flexibility) or company's life cycle (de Jong 2003). Regardless of what are the determinants and sources of innovation for an organization, the main objective of innovation is most of the time to improve company's performance.

2.2.5. Innovation and Performance.

Business performance can be defined as *"the achievement of organizational goals related to profitability and growth in sales and markets share, as well as the accomplishment of general firm strategic objectives"* (Hult et al., 2004; p. 431). Companies carry out innovations in order to contribute to their performance (Damanpour, 1991), either in order to survive in rapidly changing market environments or to improve their effectiveness and results. Innovativeness and capacity to innovate are important determinants of business performance regardless of its market turbulence (Hult et al., 2004). However, empirical research on the relationship between innovation and company performance has also led to some controversial results (e.g Pikkemaat and Peters, 2005; Campo, Dias and Yagüe, 2014). Rosenbusch, Brinckmann, and Bausch (2011) concluded based on their extensive literature review that in case of small and medium sized enterprises, the relationship between innovation and performance depends to large extent on the context, whilst highlighting such factors as the company age, the type of innovation and cultural context. Pikkemaat and Peters (2005) found no relation between the innovation degree and entrepreneurs' satisfaction with the hotel's revenue in small and midsize Alpine hotels and Campo et al. (2014) found hotel´s tendency to innovate not contributing directly and positively to hotel´s short term performance.

As innovation activities have been connected to higher economic profits already since Schumpeterian times, there does exist growing interest on academic, firm and national level towards measuring innovation as well as its impact on performance. "*Although researchers propose and discuss different approaches to define and measure innovation, they agree that methodology and instruments always have to be selected and developed in relation to the specific research question*" (Pikkemaat and Peters, 2005: 96).

2.2.6. Measuring Innovation

Innovation forms part of European Union Europe 2020 Strategy for its contribution in job creation, increasing enterprises´ competitiveness in the global market,

improving the quality of life and contributing to more sustainable growth ("Eurostat. Innovation statistics." 2015). European Union has collected information regarding innovation activities in its member countries via Community Innovation Surveys (CIS) since 1992. Besides various demographic and general questions regarding innovation, the respondents have to specify if the enterprise introduced, within the previous three years, any new or significantly improved product, process, organizational method or marketing method. The results of CIS have provided with valuable statistics and information not only the offices of European Union, but also many academics who used the CIS data for their papers. Similarly, the CIS questionnaire itself or its adopted and/or shortened versions have been used in academic research regarding hotel innovation (e.g. Pivčević and Petrić, 2011).

In order to measure innovation activities, the mainstream innovation research tends to focus on measurement of R&D (Research and Development) intensity in research bodies and enterprises. The amount of resources (financial and human labor) spent is considered to be a valid indicator showing the effort made on research and developing activities, assuming that this devotion results in new products or processes (Hjalager, 2002). Additionally, the extent of cooperation between companies, universities and research institutions is considered as an indicator of innovation or R&D activities. However, such measures tend not to be adequate in case of smaller enterprises or in service sector, where resources for R&D activities are in scarcity. Similarly to the number of registered technology licenses or patenting intensity may be lower in some industries (e.g. tourism) than others, therefore requiring more industry-specific indicators and ways of measuring innovation (Gallouj and Windrum, 2009; Hjalager, 2002; Pikkemaat and Peters, 2005). R&D statistics can also show industry-bias as some of the sectors classify their development work as design or production (Tidd and Bessant, 2009). Due to limitations of R&D and patents in the context of innovation, many more recent studies have chosen market-based measures such as counts of innovations and new product launches (Tidd and Bessant, 2009).

As stated before, companies are innovating generally with the objective to improve their effectiveness and performance (Damanpour, 1991; Tseng et al., 2008).

Innovations are almost always created with the objective to capture from them some sort of value, either "commercial success, market share, cost reduction or as in social innovation, changing the world" (Tidd and Bessant, 2009; p.85).

In order to justify the necessity and the impact of an investment, there must exist a way to measure its success. However, in order for a company to measure the success of its innovation, firstly the term success itself in this context has to be defined clearly for the company, always taking into consideration that a successful innovation does not always equal with business success (Tidd and Bessant, 2009). Due to some uncertainty related to an innovation in the development stage, it is not always easy to predict the success level of each innovative effort and it is not easy to capture and measure the returns of such investments (Salter and Alexy, 2013). The results tend to be skewed, and it is also argued that the skills to generate innovation are not the same as the skills to capture their returns (Salter and Alexy, 2013). A successful innovation might fail to become a successful innovation even with a proper planning (Tidd and Bessant, 2009). Despite strong evidence connecting innovation with company performance, success depends also on other factors such as the solidity of business fundamentals, success routines and management (Tidd and Bessant, 2009). Additionally, it is important not to forget the time aspect of innovations, since their impact is not always immediate and direct.

Due the economic importance of manufacturing industries in the past, the vast majority of Innovation theories and studies have mainly been developed based on the context of manufacturing industries (Grissemann, Plank and Brunner-Sperdin, 2013; Sundbo et al., 2007). Only during the last decades, the interest towards innovation in the context of service industries has started to grow, mainly due to the increasing importance of service sector in world economy. Since manufacturing is becoming more efficient and automated, the decrease in available jobs is directing the employment trends towards service sector (Tidd and Bessant, 2009). Similarly, the main focus of the literature review of current thesis is also on the innovation in service sector.

2.3. INNOVATION IN SERVICE SECTOR

2.3.1. Definition and Theories of Innovation

Since hotels are part of tourism industry and the service sector, it is important to provide also some theoretical background about innovation in services and tourism. During the last decades the service sector has been growing remarkably next to manufacturing, accounting for a significant proportion of GDP in most countries (OECD, 2017). Gallouj (1998) considers the service industries to be the heart of contemporary economics. The growing importance of the service sector in the world economy is also influencing the interest of the academic community. The debate on innovation in services has been flourishing during the last two decades, resulting in an increasing number of researchers interested in diverse topics related to innovation in service industries (Crevani et al., 2011; Gallouj and Windrum, 2009; Jong et al., 2003). However, the academics in this field are experiencing some challenges due to the diverse range of activities included in the service sector, which makes it even complicated to define what services are (Carvalho and Sarkar, 2014).

The high level of diversity of service sector makes it difficult to propose a clear definition. The range of activities of service sector includes government, healthcare, hospitality and tourism, telecommunications, financial services, retail and wholesale, consulting, education and entertainment among others. According to Sundbo (1997) m*anufacturing industries produce goods, while service industries produce non-material "products."*. The term "services" can be divided between *service functions*, meaning "transformations of the state of artefacts, human beings, or data" and *service products* that are "typically a service function or set of functions marketed as a commodity or public service" (Miles, 2008; p. 115). Based on the idea of different types of transformation processes involved, Howells, Tether, Gallouj, Djellal and Gallouj, et al. (2004) for example divided the services into four groups: a) services engaged in physical transformation, particularly of goods (e.g. transport and handling of goods, logistics), b) services related to transformation of information (e.g. data processing services, call centers), c) knowledge based services (e.g. design and related services), and d) services aiming

to transform people (e.g. healthcare,) (OECD, 2005b). Coombs and Miles (2000) bring out distinction of services for example in terms of standard statistical categories (education and research; and transport and communications etc.) and in terms of the markets they serve (e.g. state and public service, customer service, producer services).

According to (Gallouj and Savona, 2008) the difficulty in analyzing services is due to the "fuzzy" nature of its product, as the output and delivery of the production are immaterial. The nature of activities in manufacturing compared to service organizations involves some significant differences. In service organizations, dissimilarly from manufacturing, (1) the output is intangible and perishable, whilst its consumption is immediate, and (2) the delivery of the service is completed as a result of the interaction between the producer and the consumer (Mills and Margulies, 1980). Equally important aspects of services are customer's perceptions about the performance and quality as well as the location of service operations, which often tends to be more important than for production of goods (e.g. hotel, restaurant, retail operations) (Tidd and Bessant, 2009).

Research contributions in service innovation have been drawn on an extensive literature on innovation studies and theories in manufacturing (Oke, 2007). However, the nature and characteristics that differentiate service organizations from manufacturing also impact the determinants of innovation and their strength differently in each context (Damanpour, 1991). Furthermore, the service innovations and innovation processes within the service sector take various forms due to the diversity of activities (Miles, 2008).

While the core debate regarding the innovative potential of services, compared to manufacturing, can be dated back to Adam Smith's (1776) concerns regarding "personal services" and Baumol's (1967) discussion of the "cost-disease", the latter discussion has been around the so-called assimilation/ demarcation/ synthesis approaches (Gallouj and Windrum, 2009). The services innovation literature has been classified according to three different approaches:

1) A **technologist or assimilation approach** that assimilates services within the framework of manufacturing sectors, reducing innovation in services to the adoption of technology;

2) A **service oriented or demarcation approach** that seeks to identify particularities of the service sector and developing a framework for service innovation;

3) An **integrative or synthesizing approach** that attempts to develop a common conceptual framework for manufactured goods and services (Coombs and Miles, 2000; Gallouj, 1998; Gallouj and Windrum, 2009).

The research in services innovation started out with the assimilation approach as the dominating approach, thus different innovation theories from manufacturing have been applied to the context of service innovation. For example, according to Gallouj and Savona (2008), a number of researchers from the technologist school have applied to services the taxonomy of Pavitt (1984) who identified across the following categories of innovation: 1) supplier dominated, 2) production intensive, a) scale intensive and b) specialized suppliers, 3) science based and 4) information intensive categories.

Sundbo (1997) concludes based on his research that not one or the other classic theories – technological development paradigm or entrepreneur paradigm – is more adequate to explain innovation in services, but instead the strategic innovation paradigm. According to Sundbo (1997) innovations are part of company's strategy, while the ideas come from inside the organization and from external networks, top management controls the innovation process. Additionally, to innovation categories and strategies, some innovation typologies (e.g. Hjalager, 2002) and frameworks or models (e.g. Gallouj and Savona, 2008) have also been proposed in the context of service innovations.

Hjalager (1994, 2002) proposes a typology of innovations, inspired by Schumpeter work, but adapted to the reality of a service sector. According to Hjalager (1994, 2002), innovations can take place in one or a combination of the following five categories: 1) Product innovations – changed or entirely new services or products;

2) Process innovations – raise performance of operations (e.g. through new technology); 3) Management innovations – e.g. new collaborative structures, new job profiles; 4) Logistics innovations – include recomposition of external commercial liaisons; 5) Institutional innovations – collaborative and regulatory structures, transecting private and public sector.

Gallouj and Savona (2008) consider innovation as a process and not a result, thus proposing a framework to identify different models of innovation, such as: *radical innovations* (creation of new competences, technical or service characteristics), *improvement innovations* (improvements in certain element or characteristics), *incremental innovation* (when new character is added), *ad hoc innovations* (giving new solution to a problem), *recombination innovations* (association or dissociation of service and technical characteristics), and *formalization innovation* (characteristic(s) is formatted, standardized).

According to Tidd and Bessant (2009) the impact of innovation on growth is generally positive and consistent in the service sector, with possible exception of financial services. They argue that service innovations not only require investments in process innovation and technology by service providers, but also equally important are investments in skills and methods of working to change the business model as well as changes in marketing.

Based on the literature review it can be concluded that while over the last two decades the number of studies regarding innovation in service industries has been increasing, not all the approaches and topics are covered. The interest towards integrative approach to innovation in products and services is growing, especially since the boundaries between goods and services seem to become increasingly blurred (Gallouj and Savona, 2008). There is also need for further studies addressing more specifically the context and micro-dynamics of the process through which new services, processes or organizational arrangements emerge (Crevani et al., 2011). Additionally, due to great diversity of companies in service sector, further research is required within each sub-sector of the service industry to learn more about innovation activities and its economic impact.

2.3.2. Innovation in Tourism

Tourism industry is one of the fastest growing service sectors in the world. Over the last decades, tourism has increasingly contributed to the economies and wellbeing of many countries. According to the World Travel and Tourism Council (WTTC, 2018) the tourism industry is one of the world's largest economic sectors, supporting 1 in 10 jobs worldwide and generating 10.4% of world GDP. In 2017 the direct global GDP contribution of Travel and Tourism reached $8.3 trillion, while directly sustaining 313 million jobs globally. According to WTTC (2018) the role of Tourism and Travel industry as "a driver of prosperity" is clear, showing in 2017 much faster growth (4.6%) than the world economy as a whole (World Travel and Tourism Council, 2018). An increasing importance of tourism has also resulted in further development and increase of competitiveness within the tourism sector, where innovation becomes often a condition of survival (Sundbo et al., 2007). Tourism is a social, cultural and economic phenomenon incorporating travelling for leisure, business, cultural, health and family reasons. The tourism product consists of services from various supplier segments such as accommodation, transport, catering and entertainment (Hjalager, 2002).

Despite the increase of interest and growing number of innovation-related studies undertaken by tourism researchers over the last couple of decades, the research on tourism innovation is still limited (Carvalho and Sarkar, 2014; Hjalager, 2010; Sundbo et al., 2007). The scarcity of research can be explained by diverse reasons (Carvalho and Sarkar, 2014). Similarly to the service industries in general, the "fuzzy" nature of tourism services and tourism product (Gallouj and Savona, 2008) is not facilitating the research and development of empirical studies (Carvalho and Sarkar, 2014). Hall and Williams (2008) outline five distinctive features of tourism such as the clustering of related activities, temporality, spatiality, tourist-tourism industry encounters and tourist – host community encounters. Hall and Williams (2008) additionally identify four distinctive features of service innovations, such as coterminality of production and consumption, information intensity, the importance of human and organizational factors that according to these authors all apply to certain degree to tourism. All these peculiar characteristics make tourism

innovation a challenging field of research hence being dominated by case-studies and selective samples rather than wider studies (Hall, 2009; Hjalager, 2010).

According to Hjalager´s (2010) review of innovation research in tourism, the dominating innovation categories are **product, process, organizational/ managerial** and **market innovations**. While some authors adopt the OECD´s methodology and its four types of innovation such as product/service/good, process, organizational and marketing innovations (Hall, 2009; Pivčević and Petrić, 2011), others aim to address the distinctive features of tourism industry by including more specific categories, e.g. distribution innovations or institutional innovations (Hjalager, 2010). The factors impacting innovation behavior of tourist firms are also examined by different authors, whereas the empirical evidence is mainly from hotel sector (Grissemann, Plank and Brunner-Sperdin, 2013; Ottenbacher and Gnoth, 2005).

Some of the researchers of innovation in tourism have also discussed the aspect of **collaboration and innovation networks** (Grissemann, Plank and Brunner-Sperdin, 2013) and external innovation systems (Sundbo et al., 2007). Due to imitability of ideas, the firms in tourism sector tend to engage less in cooperative networks, even if a positive impact of such networks on innovation is found (Grissemann, Plank and Brunner-Sperdin, 2013; Pikkemaat and Weiermair, 2007). The enterprises in tourism sector have little mutual trust and see others as competitors rather than colleagues, hence cooperation is mainly carried out by intermediation of other organizations, e.g. tourist offices (Hjalager, 2002). While tourism firms are rather conservative in collaboration patterns, vertical cooperation within supply chain and horizontal cooperation are more common in larger tourism enterprises, whilst many small and medium sized firms seem not to be inclined towards cooperation and strategic alliances (Grissemann, Plank and Brunner-Sperdin, 2013). Restaurants and accommodation providers, the traditional tourist industries, are found to be using networks the least when innovating (Sundbo et al., 2007). However, tourism should be viewed as a whole value chain (Pikkemaat and Peters, 2005), where vertical cooperation could potentially influence innovation decisions of different elements within the chain.

Innovation in tourism has to be considered in a wider economic, social and political context and changes that all impact innovation also on firm level (Hall and Williams, 2008). Not only should innovation in tourism be observed on firm and inter-firm level, but also within the settings of broader **innovation systems**, such as regional, national and sectorial innovation systems (Sundbo et al., 2007). The public sector is considered to be the main stakeholder and influencing force in tourism innovation systems, being responsible for infrastructures, legal frameworks and helping with strategic capacity and facilities for developing research, knowledge and skills (Hjalager, 2010). The intersection of tourism and **innovation policies** is also slowly gaining some academic interest (Hall, 2009; Mei, Arcodia, and Ruhanen, 2012; Rodríguez, Williams, and Hall, 2014). Although the respective literature is mainly conceptual or prescriptive (Hjalager, 2002), some empirical work already exists. The research with empirical evidence from Australia, New Zealand (Hall, 2009) and from Norway (Mei et al., 2012) showed that despite an increasing economic importance of tourism, the governments are not yet investing much resources in formulation and implementation of tourism innovation policies.

The majority of innovation studies in tourism use empirical evidence from hospitality sector, mainly accommodation enterprises. Based on previous literature it is concluded that innovation in tourism is moderate or non-existent (Hjalager, 2002), examples of that being Alpine small and medium sized hotels (Pikkemaat and Peters, 2005) and Croatian hotels (Pivčević and Petrić, 2011). The lack of innovation in tourism enterprises can partly be explained by the dominating small size of companies, high turnover of employees and semi-skilled labour, lack of cooperation (Hjalager, 2002; Pikkemaat and Peters, 2005). The tourism industry is dominated by micro and small businesses (Hjalager, 2002) that lack economies of scale and resources to be invested in research and development activities and do not favour cooperation and strategic alliances (Pikkemaat and Peters, 2005). The bigger size and participation in a chain, at least in case of hotels, has been positively related to innovation success (Hjalager, 2002; Orfila-Sintes and Mattsson, 2009). The existence of higher levels of knowledge, abilities, skills and engagement of employees impact positively introduction of management innovations

(Grissemann, Plank and Brunner-Sperdin, 2013; Nieves, Quintana and Osorio, 2014). Since employees are considered to be the critical aspect of innovation, kind of moderator for differentiating services, the high turnover of employees and dominance of semi-skilled labour in tourism sector is not helping to increase the level of innovation (Ottenbacher and Gnoth, 2005).

However, when it comes to innovation in tourism companies, a lot of diversity can be noticed between countries and within the sector. Contrary to moderate levels of innovation in Croatian and Alpine hotels, some studies have also found higher levels of innovation, for example in case of Spanish tourism enterprises (Orfila-Sintes, Crespí-Cladera and Martínez-Ros, 2005; Sundbo et al. 2007) or hotels in Southern Thailand (Leekpai and Jaroenwisan, 2013). Similarly, there exist some evidence of inter-sectorial differences within countries and between countries. For example, Evangelista (2000) conducted a broad study of innovation in services based on empirical evidence from Italy, finding the innovation performance of hotels and restaurants (19.6%) below the innovation performance of travel and transport services (29.8%) and the average of service companies (31.3%). Then again Hall (2009) showed that the percentage of innovating "accommodations, cafes and restaurants" (50%) in New Zealand was comparable with the average of all industries (52%) and in Australia this percentage (35.6%) was even slightly above the average of all business sectors (33.5%). According to the comparative study of Sundbo, Orfila-Sintes and Sørensen (2007), in case of Spanish tourism enterprises, the hotels were most innovative, followed by leisure activities (e.g. attractions) and then restaurants, whereas in Denmark the hotels and restaurants were found to be the least innovative, while tour operators and travel agencies were the most innovation oriented. Hence it may be concluded that there does exist some higher levels of innovativeness in tourism, and therefore it is necessary to promote innovation in tourism firms, and carry out further research on innovation based on different tourism industry sectors in different countries (Hjalager, 2002; Sundbo et al., 2007).

2.4. INNOVATION IN HOTEL INDUSTRY

The tourism industry contains of a broad range of activities such as food and beverages, accommodation, events and conferences, adventure tourism and recreation, attractions, transportation, and travel trade and services. The hotel sector is the central activity within the tourism industry, including a homogeneous set of companies with similar production functions (inputs, outputs and available technology) and market environment (Orfila-Sintes et al., 2005). The highly competitive business environment forces hotels constantly to seek for ways to improve their quality and reputation, to decrease costs and increase sales. The modern, more educated and more demanding, consumer pressures constantly the tourism enterprises to develop new products, services and experiences (Pikkemaat and Peters, 2005). In such competitive and mature market, it is vital to consider innovation activity within a hotel as a requirement and not merely as one of the strategy alternatives (Alves, 2013).

However, despite the increasing awareness of the necessity for innovation and new developments in hotels, the academic research and knowledge regarding innovation in hotel sector is still limited (Ottenbacher and Gnoth, 2005; Pikkemaat and Peters, 2005). According to Ottenbacher and Gnoth (2005) the hospitality innovations are difficult to monitor and evaluate due to their intangible nature, ranging from true innovations (totally new services for a new market) to fairly minor modifications to an existing service. Hotel industry innovations are characterized as supplier-dominated, since innovating is frequently accomplished through incorporation of technological elements developed by its suppliers (Hjalager, 2002). The more traditional ways of observing innovation in firms is not adequate in case of hotels, since research and development expenses or the number of licenses or patents registered in the hotel industry are low when compared to other industries (Pikkemaat and Peters, 2005). The dominance of small businesses is a disadvantage in terms of innovation, research and product development (Pikkemaat and Peters, 2005). Additionally, the innovation propensity of hotels has to be observed in the complex context of three hotel-industry specific characteristics, such as a) categorization (the existence of "stars" categorization determining the service

quality, b) governance (different possibilities e.g. managed by owner, management contract, franchising), and c) chain organization (existence of hotel chains with separate central office) (Orfila-Sintes et al., 2005).

Despite the limited research regarding innovation in hotel industry, an increasing interest towards this topic has been demonstrated over the last two decades. Different researchers have included hotel industry in their services innovation study as part of a bigger sample, whilst comparing results from different service sectors (e.g. Chan, Go, and Pine, 1998; Oke, 2007). Ottenbacher and Gnoth (2005) examined factors impacting innovation success in hotels. Some researchers have focused on identifying different types of innovation activities, patterns and strategies (Guisado-González, Guisado-Tato, and Sandoval-Pérez, 2011; Tejada and Moreno, 2013) and measuring the level or degree of innovativeness (Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Pivčević and Petrić, 2011). Investigating the relationship between various aspects of innovation and performance in hotels is also a recent subject of interest, including research papers that investigate the relationship between the types of innovation and performance (Oke, 2007; Orfila-Sintes and Mattsson, 2009; Tseng et al., 2008), and also between innovativeness and performance (Grissemann, Plank and Brunner-Sperdin, 2013; Leekpai and Jaroenwisan, 2013; Oke, 2007; Pivčević and Petrić, 2011).

2.4.1. Innovation Determinants

A variety of determinants can trigger and impact the innovation decision and activity of hotels. In the hotel industry an innovation can originate from various sources e.g. employee orientations, technology orientation, quality orientation, competitor orientation, and client orientation (Stegerean and Petre, 2013). Innovation activity is widely observed in the context of different factors, so-called innovation determinants, that can be either company specific or related to the market. According to Orfila-Sintes et al. (2005), the three hotel-specific characteristics, such as hotel size, star category and governance are important determinants of innovation. Importance of size and star category in hotel innovation

has also been supported by Pikkemaat and Peters (2005) and Pikkemaat and Weiermar (2007). Additionally, Orfila-Sintes and Mattson (2009) observe the influence of channel of commercialization and focus on hotel specialization on innovation activity. Additionally, Orfila-Sintes and Mattson (2009) study in the context of hotel innovation the following three groups of key determinants: service provider characteristic (size, use of assets, additional services; customer competences (travel motive, booking way, and board preference) and the market drivers (competitive strategy). Tejada and Moreno (2013) propose four determinant factors of innovation, such as size, capital structure, cooperation and dependency on tour-operators. The impact of hotel size on innovation is most frequently examined, and usually supporting the idea that the larger the hotel the more innovative it is (Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009; Pikkemaat and Peters, 2005). However, some contrasting results have been obtained, for example Pivčević and Pranicevicy (2012) found no statistically significant relationship between hotel size and innovation based on Croatian hotels, and similarly the findings of Tejada and Moreno (2013) showed lack of evidence to support importance of size (in number of employees) as innovation predictor.

Furthermore, also human capital quality and practices have been increasingly related to higher innovation activity in hotels (Chang, Gong and Shum, 2011; Nives and Segarra-Cirpés 2015; Nieves et al., 2018;). The role of human capital as an antecedent of knowledge creation and innovation is often emphasized in literature (Nieves and Segarra-Cirpés, 2015). Grissemann, Pikkemaat and Weger (2013) concluded that employee engagement (i.e. permanent training and empowerment of employees) encourages innovation activities and emphasized the importance of implementing structured training and investing in the training of employees in line with the findings of Ottenbacher et al. (2006) and de Jong et al. (2003). Nieves and Segarra-Cirpés (2015) findings suggested that employees with high level of knowledge, abilities and skills play an important role in introduction of management innovations. Chang et al., (2011) found a significant positive relationship between hiring "multi-skilled core customer-contact" employees and innovation as well as between training "core customer-contact employees for multi-skills" and innovation.

2.4.2. Innovation Patterns

When studying innovation in services, it is also important to know which level of innovation is studied (Chan et al., 1998). Meyers (1984) defined three categories of innovation based on two different dimensions: the type of technology implied, and its effects on established consumption patterns (Chan et al., 1998). The three categories include: (1) **distinctive** innovations that represent significant improvements over present procedures or processes, (2) **breakthrough** innovations that represent significant improvements based on new technologies or approaches, requiring great adjustments in delivery systems and customer behavior, and (3) **incremental** innovations representing small improvements of present processes and procedures. It has been concluded that incremental innovations are the most common ones in service industries (Chan et al., 1998).

A number of scholars have aimed to investigate the **innovation patterns or configuration of innovation types** in hotel industry. Some researchers define, in line with the Oslo Manual, four types of innovation: *product, process, marketing and organizational innovation* (Pivčević and Petrić, 2011; Tejada and Moreno, 2013) or make distinction between **radical** and **incremental** innovations (Martínez-Ros and Orfila-Sintes, 2009). Others seek for more industry-specific solution (Orfila-Sintes and Mattsson, 2009). Hjalager (2002) proposes a model categorizing innovation levels in tourism using core competences as the unit of analyses. According to the model of Hjalager, four types of innovations can be identified as follows: *regular innovations, niche innovations, architectural innovations, and revolutionary innovations* (Hjalager, 2002; Pikkemaat and Peters, 2005). Taken into consideration the supplier-driven nature and importance of human resources for hotels, innovation activities have also been formulated based on the following three different sources: *technological, organizational, and human capital innovation* (Tseng et al., 2008). Orfila-Sintes and Mattson (2009) propose in the context of hotel industry specificity a model of four types of innovation: *management (quality of management processes), external communication (high information-tangible content), service scope (service output) and back-office (new technologies for productivity improvement).* Some authors have also examined the

innovation performance through the **existence of innovation strategies** (e.g. Guisado-González et al., 2011) and strategic management process (Martínez-López and Vargas-Sánchez, 2013).

2.4.3. Innovativeness and Innovation Behavior

Higher levels of innovativeness are associated with higher level of successfully implemented innovations (Hurley and Hult, 1998). Based on Zaltman, Duncan, and Holbeck´s (1973) differentiation of the initiation and implementation phases of innovation, Hurley and Hult (1998) introduced two innovation constructs: 1) innovativeness, and 2) the capacity to innovate. While innovativeness is the notion of openness to new ideas as part of organization´s culture, then innovation capacity, a term first introduced by Burns and Stalker (1961) means the ability of the organization to adopt and implement successfully new ideas, processes and products; hence it can be measured by the number of innovations an organization is able to adopt and implement successfully (Hurley and Hult, 1998). Innovation capacity, also known as **innovation behavior** shows the extent to which innovation is carried out within companies (Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Grissemann, Plank and Brunner-Sperdin, 2013). Innovativeness can be distinguished from innovation behavior (preferred term for innovation capacity in current thesis) as innovativeness is organization´s orientation, its attitude, towards innovation, whereas innovation behavior is measured in the number of new products and services actually implemented by the company (Grissemann, Plank and Brunner-Sperdin, 2013). According to Hurley and Hult (1998), innovativeness in a firm's culture, when adequate resources are present facilitates the implementation of innovations (innovation behavior), resulting in more successful response to their environment, hence leading to competitive advantage and superior performance.

2.4.4. Innovation Behavior

Few scholars have so far studied the level of innovativeness and innovation activity in hotel industry; and the relationship between innovation activity and other factors e.g. size, ownership type, personnel training (e.g. Leekpai and Jaroenwisan, 2013; Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Pivčević and Petrić, 2011). It has been found that innovation activity in hotels intensifies with the increase in size (Pikkemaat and Peters, 2005; Orfila-Sintes et al., 2005, Orfila-Sintes and Mattsson, 2009; Jacob and Groizard, 2007; Pikkemaat, 2008, Martinez-Ros and Orfila-Sintes and Mattson, 2009) and with higher hotel category (Orfila-Sintes et al., 2005; Pikkemaat, 2008). Additionally, also hotels belonging to chains have shown higher level of innovation activity (Orfila-Sintes et al., 2005, Orfila-Sintes and Mattsson, 2009), and the innovation pattern between chain hotels and independent hotels tend to differ. The **level of innovation activity** has also been related to **human resources quality,** e.g. higher professional leadership (Sundbo et al., 2007; Orfila-Sintes et al., 2005; Martinez-Ros and Orfila-Sintes,2009), higher level of employee training (Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009) and employee engagement have found to be contributing to innovation activity (Grissemann, Pikkemaat and Weger, 2013).

The hotel innovation studies carried out in **different countries have shown different levels** of innovation. While Alpine hotels (Pikkemaat and Peters, 2005) and Croatian hotels (Pivčević and Petrić, 2011) have been concluded to be little or moderately innovative, then on the contrary, hotels from Balearic Islands of Spain have been associated by some researchers with higher level of innovativeness (Orfila-Sintes et al., 2005). However, differences also exist among studies conducted in the same country, e.g. while Orfila-Sintes found hotels from Balearic Island to be more innovative, then according to the study of Campo, Díaz, and Yagüe (2014), based on hotels from 52 Spanish cities, the hotel sector is not in the high innovation tendency group. Even if such variations are largely explained by differences in definition and measurement of innovativeness and innovation activity, such results suggest that innovation in hotels can be also context (country, region) specific and requires further exploration (Orfila-Sintes et al., 2005; Pivčević

and Petrić, 2011). Innovation studies based on hotel sector have also related innovativeness and innovation behavior to constructs like **market orientation, learning orientation and entrepreneurial orientation** (Chan et al., 1998; Grissemann, Plank and Brunner-Sperdin, 2013; Tajeddini, 2010). In current study innovativeness refers to the kind of organizational culture that encourages the introduction of new services, products and ideas (Grissemann, Plank and Brunner-Sperdin, 2013; Hurley and Hult, 1998), whilst innovation behavior (innovation capacity) refers to the extent to which innovations are implemented in different areas of a company (Grissemann, Plank and Brunner-Sperdin, 2013).

2.4.5. Innovation and Business Performance

Firms that have a greater capacity to innovate are able to develop more successfully competitive advantage, often accompanied with higher levels of performance (Hurley and Hult, 1998). Business performance of a firm is usually measured in financial and non-financial terms. In the context of hotel industry financial performance refers to "objective measures" such as the average occupancy rate, lodging index, and market share (Orfila-Sintes and Mattsson, 2009), and non-financial measures refer to "perceptual measures" such as customer retention and reputation (Grissemann, Plank and Brunner-Sperdin, 2013). While during the recent years, the economic goals of a firm (e.g. profitability, sales growth, earning per share) have been the most popular ways to measure performance, there is a trend towards inclusion of a operational (non-financial) component such as quality improvement, customer satisfaction, increase of market share and the pace of introducing new products (Martínez-López and Vargas-Sánchez, 2013).

The adoption of innovation is generally intended to contribute to the performance or effectiveness of the firm (Damanpour, 1991). Firm's innovativeness serves as an intervening variable linking market, learning, and entrepreneurial orientations to business performance (Hult, Hurley and Knight, 2004). Although the research regarding the impact of innovation on performance in hotel industry is still "far from exhaustive" (Hjalager, 2010) and not conclusive, some scholars have

demonstrated an existence of positive relationship between innovation activity and performance in hotels (Campo et al., 2014; Grissemann, Plank and Brunner-Sperdin, 2013; Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009; Pivčević and Petrić, 2011; Tseng et al., 2008). The existence of a link between innovativeness and performance (Grissemann, Plank and Brunner-Sperdin, 2013; Sandvik, Duhan and Sandvik, 2014) and entrepreneurial orientation, innovativeness and performance in hotel context has also got some interest by academics (e.g. Jogaratnam and Tse, 2006; Leekpai and Jaroenwisan, 2013; Tajeddini, 2010).

Although, a number of studies have found a positive relationship between hotel innovation and performance, also some contradicting and not fully conclusive results have emerged. For example, Pikkemaat and Peters (2005) found no relation between the innovation degree and entrepreneurs' satisfaction with the hotel's revenue in small and midsize Alpine hotels. According to Campo, Dias and Yagüe (2014) hotel´s tendency to innovate does not contribute directly and positively to hotel´s short term performance but does have an impact on medium and long-term performance. Taking into consideration the scarcity, partly contradictory nature of the results, and also the differences in measurement of innovation and performance, additional research in this field is needed to shed more light on this topic.

2.5. INNOVATION IN THE PORTUGUESE HOTEL SECTOR

Before moving on to the conceptual framework of the thesis, it was important also to overview the existing literature of hotel innovation in Portugal. It was concluded that number of research papers regarding innovation activity in Portuguese hotels (and in tourism sector in general) is currently still very limited, including mainly case-study based (Carvalho and Costa, 2011), and often master thesis level research (Fernandes, 2012; Martins Pinho, 2012). Table 1 shows a list of Portuguese research papers about innovation in tourism (including hotels) and hotel industry.

Innovation and Performance in Hotel Industry

Table 1. Research Papers on Innovation in Tourism in Portugal

YEAR	AUTHOR(S)	TOPIC	TYPE OF WORK / SOURCE	OBJECTIVE /CONTRIBUTIONS	DATA SAMPLE	MAIN FINDINGS
2008	Ileana Monteiro, Fernando Sousa	**The innovative leadership in the hospitality industry at Algarve** *(Original title: A liderança inovadora na hotelaria algarvia)*	REVISTA PORTUGUESA E BRASILEIRA DE GESTÃO (ESGHT da Universidade do Algarve + ISCTE)	This paper summarizes a research designed to explain the process innovation in high quality hospitality industry through the action of innovative hotel managers and to identify the collaborators' perceptions of innovative managers.	30 interviews with managers + questionnaires to their employees	The results showed the differences between innovative and non innovative manager; it was concluded that innovation was more likely to happen in back office departments, where the clients' contributions were filtered by the employees. The results stressed the importance of interactive communication processes, aimed at increasing the learning and the quality of the interactions leader-collaborator.
2011	Luisa Carvalho, Teresa Costa (Polytechnic Institute of Setúbal)	**Tourism Innovation – A Literature Review Complemented by Case Study Research**	Book of Procedings VOL I -International Conference on Tourism Management Studies - Algarve	Addresses a general question: how to explain innovation in the tourism sector.Two objectives: 1) to discuss what innovation in services is, presenting literature review; 2) to develop case study research as applied to an international hospitality group.	Casestudy based on Hotel Tivoli Oriente.	The results corroborate all the hypotheses that the implementation of a Hotel Integrated Management System is an important innovation in that it contributes mainly to organizational innovation and firms use politics of sustainability as a strategy for innovation and differentiation from competition.
2011	Odília A. M. Meneses, Aurora A. C. Teixeira	**The innovative behaviour of tourism firms**	Economics and Management Research Projects: An International Journal	A thesis proposal with the aim to provide empirical evidence of the innovative behaviour of Portuguese tourism firm and to investigate firms' innovativeness and their determinants and then compare the results with data from Danish and Spanish tourism firms.	Planned: direct survey on all the Portuguese tourism firms	No results published yet
2012	Bruno António Martins Pinho	**Innovation Behaviour in Hospitality** *(Original title : Comportamentos em hotelaria face à hotelaria)*	MASTER THESIS; The University of Aveiro, Economics Department	Aims to assess and understand better the hoteliers' practices and approach to the innovation process. Case study and interviews with hotel managers.	Casestudy based on Hotel Infante Sagres; 18 interviews with managers from different hotels	Results suggested that the changes introduced in the hotel industry essentially match innovations of a regular, incremental nature. These innovations tend to match changes in products and processes. "Knowledge" was identified as a key factor in innovation and cooperation partnerships, playing a relevant role as an innovation tool. The implementation costs of these changes were recognized as the major conditioning factor.
2012	Juliana Carina Camilo Fernandes	**Entrepreneurship and Innovative Attitude in Companies. Case studies applied in hospitality** *(Original title: Empreendedorismo e Atitude Inovadora nas Empresas Estudos de caso aplicados à hotelaria)*	MASTER THESIS; Polytechnic Institute of Setúbal	The aim of the study: to understand the innovation and entrepreneurial activity in hospitality companies, and to evaluate the entrepreneur's perspective of these concepts, as their motivations to innovate.	Case study based on two chains: Vila Galé Hotels and Pestana Hotels & Resorts	It was concluded that searching and identifying opportunities (benchmarking & brainstorming), people and resources are related to each other, establishing a balance that positively influences entrepreneurial activity in the hospitality companies
2013	Isilda Gomes da Silva	**Market segment study based on hotel industry: Factors of Differentiation and Innovation** (Original title: Estudo de segmento de mercado da indústria hoteleira: Fatores de diferenciação e inovação)	Master Thesis: University of Minho	This study aims also to understand how innovation in hospitality contributes to differentiate hospitality offers and to what extend this strategy is perceived and valued by the customers.	Interviews and online questionnaire to customers of 4-5 star hotels	The results showed that gender influences the customer's positive perception regarding the offer of experiences, innovation and also influences the positive emotions of the customer. Age is another factor that influences the positive perception related to innovation in hospitality. Also the travel motif influences the positive perception of innovation in hospitaly and experience offerings.
2014	Luisa Margarida Cagica Carvalho, Soumodip Sarkar	**Market structures, strategy and innovation in tourism sector**		Study aims to add to the existing body of knowledge the link between market structures, strategy and innovation by applying the diagnostic test of the integrated model of innovation, and present the results of an empirical study applied to tourism.	Survey responses from 158 Portuguese firms.	The findings indicate links between service, market structures and innovation strategies considering geographical agglomeration of firms in a small economy, and also different innovation trajectories and positions in the model.

Monteiro and Sousa (2008) aimed to explain the process of innovation through innovative managers, thus concluding that differences exist between hotels with innovative and non-innovative manager. Carvalho and Costa (2011) based their paper on a literature review and case study confirming that hotels use policies of sustainability as a strategy for innovation and differentiation. Bruno Pinho (2012) aimed in his master thesis to assess and understand better the hoteliers' practices and approach to the innovation process, his results showed the dominance of incremental innovations in his chosen hotel. Juliana Fernandes (2012) conducted a case study in two hotel chains in order to understand the entrepreneurial and innovation activity within hotel chains. Isalda Gomes da Silva (2013) approached in her thesis the topic of hotel innovation through the eyes of hotel clients.

Only two larger-scale research projects about innovation behavior in Portuguese tourism firms were found (Carvalho and Sarkar, 2014; Meneses and Teixeira, 2011). The project of Meneses and Teixeira (2011) aimed to collect information regarding innovation from all the tourism enterprises, and thereafter compare its conclusions with Spain and Denmark. Carvalho and Sarkar (2014) collected valid answers from 158 tourism enterprises, obtaining results that indicated links between service, market structures and innovation strategies. The review of literature on innovation in Portuguese hotels suggested an ongoing need for more research in the area thus confirming the importance of this thesis.

2.6. SUMMARY AND RESEARCH QUESTIONS

2.6.1. Literature Review Summary

The Literature Review chapter of current thesis provided an overview and theoretical context in order to understand better the essence and importance of innovation in general as well as more specifically for the service sector. The flow diagram of literature review (Figure 1) depicts the flow of information gathered through different phases. The literature review of current thesis started with

providing an overview and theoretical context of innovation in general with the aim to create a better understanding of the essence and value of innovation. The decades-long importance of manufacturing sector in context of innovation studies was acknowledged and an ongoing increase in relevance of service sector in world economy as well as in interest of academic world was stated.
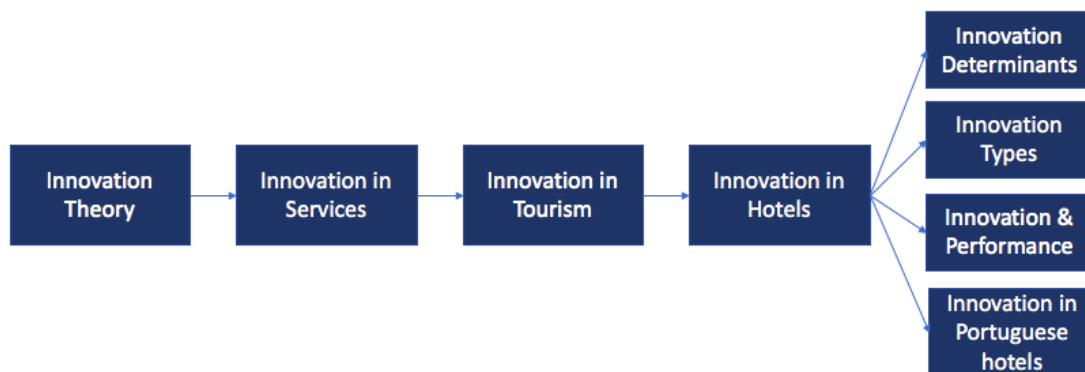
Figure 1. Flow chart of literature review

The definition and theoretical background of innovation were reviewed in the context of service sector while highlighting the fuzzy nature and peculiarities of services compared to manufacturing sector. An overview of innovation research in tourism industry was provided, based on which a lot of diversity between different countries within the industry was noticed. Innovation was discussed in more detail based on hotels. An overview regarding innovation types, hotel characteristics and relevant determinants contributing to innovation and innovation relation with performance were reviewed. Additionally, a review of research papers about innovation in Portuguese hotels was conducted. Based on previously discussed literature review some research gaps were identified, which influenced the choice of topic and research questions for current thesis.

2.6.2. Gaps in Literature and Research Question

Based on literature review regarding innovation activity in service sector and more specifically in hotels, some interesting opportunities for further research were identified. The research body in innovation in services has been growing over the last two decades, however some topics are not yet fully covered. Firstly, there is a need for further studies addressing more specifically the context and micro-dynamics of the process through which new services, processes or organizational arrangements emerge (Crevani et al., 2011). Secondly, there is a **growing interest towards providing a new integrative approach to innovation** in products and services since the boundaries between goods and services seem to become more blurred (Gallouj and Savona, 2008).

According to Hjalager (2010) the **innovation research in tourism** is a young phenomenon, where issues are only gradually being elaborated in theory and supported by empirical evidence. Until now the majority of tourism innovation research has been carried out case-by-case manner, which means that better and more quantifiable empirical evidence about innovation in tourism is required (Hall, 2009; Hjalager, 2010). Hjalager (2010) outlines the **need for further research in various areas**, among others innovation processes and the role of entrepreneurship. Regarding innovation and performance, Hjalager (2010) identifies the need for finding answers about which types of innovation produce what type of results, and in which categories of enterprises or in which destinations/nations. Additionally, the need for further studies regarding innovation policies has been addressed (Hall, 2009; Hjalager, 2010).

Even though the interest in innovation in services has been growing over the last couple of decades, and some studies have already been conducted in hotel context (e.g. Ottenbacher and Gnoth, 2005; Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Orfila-Sintes and Mattsson, 2009; Jacob and Groizard, 2007; Pikkemaat, 2008, Martínez-Ros and Orfila-Sintes, 2009; Tajeddini, 2009; Tajeddini, 2010; Lu Tseng; 2010; Pivčević and Petrić, 2011; Leekpai and Jaroenwisan, 2013; Martinez-Lopez, 2013; Tejada and Moreno, 2013), the **research in innovation activity in**

hotel industry is still limited (Ottenbacher and Gnoth, 2005; Pikkemaat and Peters, 2005). The hotel industry related innovation research is dominated by empirical evidence from two different countries: Spain (Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009; Martínez-Ros and Orfila-Sintes, 2009; Martinez-Lopez and Vargas-Sánchez, 2013) and Austria (Pikkemaat and Peters, 2005; Pikkemaat and Weiermair, 2007; Pikkemaat, 2008). Bigger hotels dominate Spanish hotel industry, whereas Austria is known for small and mid-sized hotel enterprises, hence the results giving insights of very distinct parts of hotel industry (Pivčević and Petrić, 2011). However, the number of papers based on empirical evidence from Asian hotel industries is also recently increasing (Chan et al., 1998; Leekpai and Jaroenwisan, 2013; Lu and Tseng, 2010).

The number of **research papers regarding innovation activity in Portuguese hotels** (and in tourism sector in general) is currently also **still limited**, including mainly case-study based (Carvalho and Costa, 2i011), and often master thesis level research (Martins Pinho, 2012; Camilo Fernandes, 2012; Gomes da Silva, 2013). Only two bigger projects regarding innovation in tourism (Carvalho and Sarkar, 2014; Meneses and Teixeira, 2011) have been so far undertaken by the researchers, which indicates a strong need for further research in the are of innovation in tourism in general and in more specific sub-sectors of tourism, e.g. hotel sector.

Based on literature review on innovation activity in service sector, and more specifically in hotel sector, it was concluded that further empirical studies regarding innovation in hotels from different perspectives and in distinct environments (including countries) were needed for addressing different questions and concerns emerging from the existing literature and from practitioners. Additionally, the scarcity of research regarding innovation in Portuguese hotels helped the author of current thesis to **identify a unique opportunity to contribute to existing literature** and theory building. Thus the topic of innovation activity in the services sector, based on evidence from Portuguese hotel industry was proposed.

Based on the literature review relevant aspects of hotel innovation were identified (such as innovation determinants and types of innovation, management

innovativeness and level of innovations completed, innovation impact on performance), resulting in the following research questions:

 1) What are the determinants of innovation activity in hotel industry?

 2) What types and areas of innovation are common in Portuguese hotels?

 3) What is the level of innovation behavior in Portuguese hotels?

 4) What is the level of innovativeness of Portuguese hotels, and how does the level of innovativeness influence innovation behavior?

 5) How does innovation behavior influence hotel´s performance?

Based on these aforementioned research questions the objective of current thesis is to identify and analyze the determinants and patterns of innovation activity and its impact on performance in hotel industry based on empirical evidence from Portuguese hotels. The conceptual framework underlying the empirical part of this thesis will be presented in the following chapter.

III METHODOLOGY

3.1. INTRODUCTION

The methodology chapter introduces the conceptual framework based on which the questionnaire was developed. A thorough overview is given about the questionnaire design and the pilot study is discussed. Besides introducing the research design, this chapter also gives an overview of the data collection procedures, including sampling procedure and data collection procedure. Additionally, a basic analysis regarding questionnaire response and comparison of sample profile with the population is provided. An important part of current chapter is the evaluation of possible bias concerns, namely non-response bias and common method bias.

3.2. RESEARCH DESIGN

3.2.1. Conceptual Framework and Hypothesis Development

We aim to give answers to the previously proposed five research questions through a combination of a theoretical approach and empirical evidence. It is important to note first, that following Grissemann, Plank and Brunner-Sperdin (2013) approach the term 'innovation' is in current thesis split into two different constructs, i.e., innovativeness (attitudinal level) and innovation behavior (behavioral level).

The framework of the research comprises three parts. The first part aims to answer the first three research questions: 1) What are the determinants of innovation activity in hotel industry? 2) What type of innovation is common in Portuguese hotels? 3) What is the level of innovation behavior in Portuguese hotels? Firstly, the hotel innovation determinants impacting innovation activities and hotel -

specific innovation areas and innovation types are examined, and the degree or level of innovation (innovation behavior) is measured. The relevant innovation determinants are proposed based on literature review. We have chosen hotel innovation determinants based on the work of Orfila-Sintes et al. (2005), Orfila-Sintes and Mattson (2009) and Grisseman and Pikkemaat (Grissemann, Pikkemaat and Weger, 2013). Hotel size, hotel star category, hotel chain and management (chain hotels/ hotels managed by management contract instead of by owner) have been previously related to higher innovation activity (Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009). Personnel training as innovation antecedent, was chosen based on the work of Grissemann, Pikkemaat and Weger (2013), where ongoing training was part of Employee Engagement Construct ("Our employees get constantly further education."), whereas Employee Engagement was found to positively influence service and management innovation. Also, training was part of human capital skills of Orfila-Sintes et al. 2005 and Orfila-Sintes and Mattsson (2009) that found some importance of human capital skills to innovation.

Secondly, the innovation behavior is measured using the eleven function areas relevant to hotels (quality management, environmental quality management, information and communication technology, room equipment, maintenance, and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing) defined by Grissemann, Plank and Brunner-Sperdin (2013) based on the previous works of Orfila-Sintes et al. (2005) and Pikkemaat and Peters (2005). Asking hotel managers to rate their innovative behavior, based on these eleven hotel-specific function areas, provides information to evaluate in which areas innovation is most common and relevant and provides basis to determine the importance of incremental and radical (breakthrough) innovations in Portuguese hotels. Following Martínez-Ros and Orfila-Sintes (2009) the difference between incremental and radical innovations is made depending on weather they were introduced for the first time (including learning and exploring) or they consisted of modifications, improvements or extensions to previously introduced innovations.

Innovation and Performance in Hotel Industry

The second part of the conceptual framework addresses the fourth research question: What is the level of innovativeness of Portuguese hotel establishments and how does the level of innovativeness influence innovation behavior? Firstly, the level of innovativeness is measured and thereafter the relationship between innovativeness and innovation behavior is examined. The existence of a positive relationship between innovativeness and innovation behavior is supported by previous research of Hurley and Hult (1998) and Grissemann, Plank and Brunner-Sperdin (2013), who both found that higher levels of innovativeness in firm's culture are associated with a greater capacity for adaptation and innovation (number of innovations successfully implemented). This study investigates if similar patterns can be found based on the evidence from Portuguese hotel industry, thus proposing:

Hypothesis 1: Innovativeness positively influences innovation behavior of hotels.

The third part of current conceptual framework investigates the relationship between innovation activity and performance, thus aiming to respond to the fifth research question: How does innovation behavior influence firm's performance? Higher levels of performance can be achieved through competitive advantage based on greater innovation capacity (Hult et al., 2004). The assumption of an existing positive relationship between innovation behavior and hotel´s performance has been supported by several scholars, whereas performance has been measured in various ways, including increase in occupancy rate (Orfila-Sintes et al. 2005; Orfila-Sintes and Mattsson, 2009 and 2014; Pivčević and Petrić, 2011); profit goal achievement, sales goal achievement and ROI (Tajeddini, 2010), divided between financial performance, customer satisfaction and reputation (Chen, Hung Tai Tsou and Huang, 2009; Grissemann, Plank and Brunner-Sperdin, 2013). Based on previous literature, the following is proposed:

Hypothesis 2: Innovation behavior positively influences hotel performance.

The conceptual framework of current thesis (presented in Figure 2) provides the foundation for carrying out the empirical research with the objective to respond the

research questions proposed. Additionally, we also aim to compare the innovation activity of small, midsize and big hotels and provide groundwork for future research and for benchmarking of innovation activities for Portuguese tourist establishments.
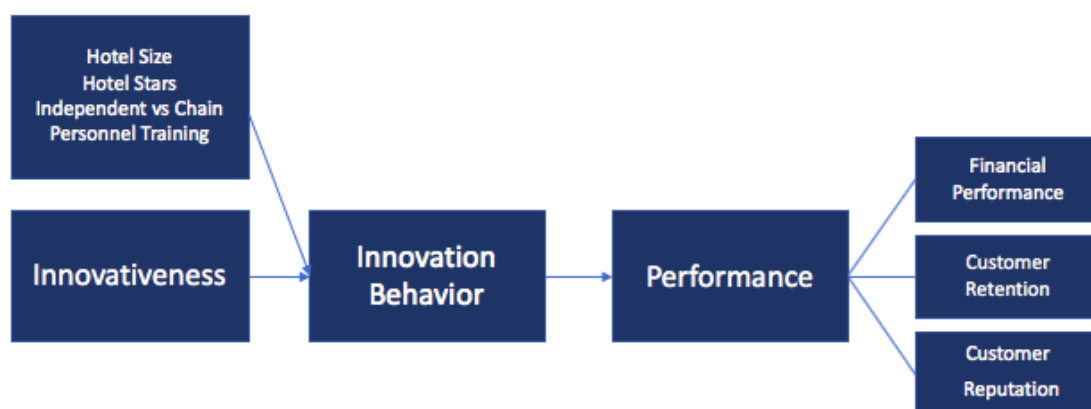
Figure 2. Conceptual framework of the thesis

3.2.2. Questionnaire Design

The questionnaire was designed based on the previously presented conceptual model. The construction of the questionnaire took place between December 2014 and April 2015. The final questionnaire was compiled based on parts of questionnaire of Orfila-Sintes and Mattsson (2009), CIS (Community Innovation Survey) of 2012 and scale used by of Grissemann, Plank and Brunner-Sperdin (2013). During this time Dra. Francina Orfila-Sintes (Spain) and Dra. Ursula Grissemann (Austria) were contacted in order to clarify some doubts. Dra. Orfila-Sintes sent a copy of their original questionnaire (Orfila-Sintes and Mattsson, 2009) and Dra. Grissemann responded via email some relevant questions regarding scales used in their work of 2013 (Grissemann, Plank and Brunner-Sperdin, 2013).

The final questionnaire ended up containing **five sections (41 questions).** The **first section/page** was an introduction to the questionnaire. The **second section**

(questions 1-8) was concerned with hotel´s demographic characteristics (including age, size, type). The **third section** (**questions 9-15**) gathered further information regarding the ownership of an establishment. The **fourth section (questions 16-21)** collected further information regarding the facilities and service as well as about the origin of guests and reservations. The **fifth section (questions 22–27)** of the questionnaire collected information regarding employees and human resources activity. Some of the questions of sections 2 to 5 were adapted from the original work of Orfila-Sintes and Mattsson (2009).

The **sixth section (questions 28-36)** of the questionnaire was based on questions regarding hotel´s **innovation activity**. Hotel innovation behavior (also known as innovation capacity) was measured following Grissemann, Plank and Brunner-Sperdin (2013) approach, hence asking **(question 28)** whether any innovative changes had been implemented in the hotel within the past three years by presenting the eleven innovation areas of the work that Grissemann, Plank and Brunner-Sperdin (2013) compiled based on previous studies of Orfila-Sintes et al. (2005) and Pikkemaat and Peters, (2005). The eleven innovation areas included quality management, environmental quality management, information and communication technology, room equipment, maintenance and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing. For each area the respondents could rate their innovation behavior on a 7- point Likert scale, corresponding to the following values: 1 - no innovations, 2 – slights changes to existing products/services, 3 - some improvements of existing products/services, 4 – substantial improvement of existing products/services, 5 – substantial improvement and extension of existing products/services, 6 – Launch of products/services that are new to the hotel but already exist on the market, 7 – launch of totally new products/services. Due to ordinal measurement scale, following Grissemann, Plank and Brunner-Sperdin (2013), instead of the number of innovations introduced, a grade or rating of innovation was generated for each hotel. For better understanding, comparison and for subsequent analysis a single metric, a grand mean of innovation behavior was calculated. Although in case of ordinal measurement scales median values are more appropriate, median values were not used since they do not allow aggregation, instead the more appropriate

arithmetic mean, that does enable aggregation of data, was used (Pivčević and Pranicevic; 2012).

The **question 29** was a scale to measure the level of hotel´s **innovativeness.** The level of innovativeness was measured through a 5-item scale adapted from the research of Tajeddini (2010). The original, developed by Hurley and Hult (1998), has previously been several times used and adapted by other authors, also in hotel innovation research (e.g. Grissemann, Plank and Brunner-Sperdin, 2013; Leekpai and Jaroenwisan, 2013; Tajeddini, 2010). The scale incorporated management opinion regarding innovation and new ideas and was measured based on 7-point Likert scale (where 1 equaled to "totally disagree" and 7 equaled to "totally agree". The five statements of Innovativeness scale, adapted from the research of Tajeddini (2010), are as follows:

1. Management Actively seeks innovative ideas.
2. Innovation, based on research, is readily accepted in our organization.
3. Innovation is readily accepted by management.
4. People are penalized for new ideas that don't work. (Reversed)
5. Innovation in our organization is encouraged.

The **questions 30-35** were based on CIS (2012) with the objective to collect additional information regarding innovation activity that could complement and contribute to the results and conclusions. Questions regarding obstacles and goals for carrying out innovation activities, as well as questions about cooperation and sources of innovation were included. The formulation of these questions was based on the original version of CIS of 2012, whereas the multiple answers proposed for **questions 30, 31** were adopted from the original questionnaire of Orfila-Sintes and Mattson (2009). Orfila-Sintes and Mattson (2009) had modified the original CIS answers options to be more suitable for hotels.

Performance, as discussed earlier, can be evaluated from different aspects, including financial or non-financial aspect. This research chose to measure performance **(question 36)** in terms of financial performance, customer retention

and reputation following Grissemann, Plank and Brunner-Sperdin (2013). Performance was measured through the scale validated by Grissemann, Plank and Brunner-Sperdin (2013), whose original scale was based on the work of Chen, Hung Tai Tsou, and Huang (2009). The scale of performance included four items for financial performance, two for customer retention, and two for reputation. It is argued that it is not possible to obtain objective (i.e. certified by third party) measures of performance on business unit level (Slater and Narver, 1995; Tajeddini, 2010), whereas also subjective measures have been shown to be correlated to objective measures of performance. All items of performance scale were measured, based on 7-point Likert scale, whereas 1 equaled to "totally disagree" and 7 to "totally agree". The statements of performance scale, following Grissemann, Plank and Brunner-Sperdin (2013), were as follows:

1. We have been profitable.
2. We have achieved profit objectives.
3. We have achieved sales objectives.
4. We have achieved market share objectives.
5. We have improved the loyalty of existing customers.
6. We have attracted a significant number of new customers.
7. We have had a well perceived image.
8. We have had a good reputation.

The **final section (questions 37–41)** collected information regarding the questionnaire respondents. Besides age and sex, also information was gathered regarding the level of education and experience. All respondents were asked to share the number of years of experience in current hotel unit and in the hotel industry in general.

Since the questionnaire was initially compiled in English, "back translation" technique was chosen in order to achieve a good translation and to guarantee a clear understanding and base for comparable results. In April 2015 the questionnaire was translated into Portuguese by a native Portuguese (with fluent English language

skills, tourism degree and hotel reception experience). In the beginning of May 2015, the questionnaire was translated from Portuguese language back to English language by another native Portuguese (also fluent in English, with master's degree from Hotel Management and hotel reception experience). After completing the translation of the questionnaire, and comparing the English versions, some minor changes were still concluded, followed by inserting the questionnaire in previously created SurveyMonkey account (www.surveymonkey.com). Some additional changes were also carried out after pilot-study. A copy of the questionnaire form in English and Portuguese is included in the Appendices (in English, Appendix A; in Portuguese, Appendix B).

3.2.3. Pilot Study

The pilot study was carried out before finalizing the questionnaire with the aim to test and confirm the clarity of the language used and the relevance of questions. The Pilot Study phase did give good insights and helped to correct and improve the questions and answers. In pilot study phase an interview was carried out in 6 hotels, in five of them with hotel directors and in one hotel with the assistant director. The initial objective was to carry out the pilot-study-interview with about 6 - 10 hotel managers. However, the final pilot study included only 6 interviews as the process of finding managers available to participate ended up being difficult and time consuming. Initially four hotels were visited with the objective to get the contact of the hotel manager, however this attempt proved unsuccessful as the hotel receptionists would simply indicate the general email contacts of the hotels. Also, some hotels were contacted via phone, however also this attempt would result in getting the general email contacts of a hotel. Therefore, a decision was taken to contact the hotels directly through general email or the email of the manager available in rare cases. During this phase 52 hotels in Lisbon and Lisbon area were contacted by email. Firstly, a request to participate in pilot study was sent (May 2015 – June 2015), secondly the same emails were followed up in autumn (September 2015 - November 2015).

Out of 6 interviews, 3 were booked as a result of direct emails, 2 managers were contacted with the help of references from acquaintances and 1 manager was recommended by one of the pilot study participants. The pilot study phase lasted from May to October 2015, following the schedule of interviews as shown below:

- ●22.05.2015 Pilot-study interview in a 4 Star hotel (Lisbon)
- ●22.05.2015 Pilot-study interview in a 5 Star Hotel (Lisbon)
- ●12.06.2015 Pilot-study interview in a 5 Star Hotel (Lisbon)
- ●10.07.2015 Pilot-study interview in a 5 Star Hotel (Lisbon)
- ●27.10.2015 Pilot-study interview in a 3 Star Hotel (Lisbon)
- ●11.11.2015 Pilot-study interview in a 4 Star Hotel (Oeiras)

The pilot study participants filled in a copy of a questionnaire while making comments about the questions and discussing their doubts. In order to avoid any additional difficulty or resistance in this phase, it was decided not to record the interviews. Each pilot study participant was asked to fill in the questionnaire on a paper, while making (verbal and written) notes and comments on the questions. Some of the participants filled in the questionnaire fully, while others focused more on commenting the questions verbally. During each interview notes were taken of the comments and suggestions of the managers.

The initial idea was to ask the managers to fill in the questionnaire online during the meeting, however after the first interviews it was obvious that the managers would prefer to carry out the interview in the common area and not in their office, while not carrying with them any electronic equipment besides their mobile phone. Therefore 2 copies of the questionnaire were taken to each interview, one for the manager to fill in and the other one for the interviewer to make notes.

The pilot study phase helped to understand better the reality of hotels in Portugal and therefore carry out some necessary changes and improvements in the questionnaire. The main improvements of the questionnaire were related to improving the industry specific terminology in order to be better understood by hotel managers from all over the country.

3.3. DATA COLLECTION PROCEDURES

3.3.1. Sampling procedure

The database for this thesis was obtained from Turismo de Portugal, IP (hereafter referred to as Turismo de Portugal) - the central public authority responsible for promotion, enhancement and sustainability of Tourism activities in Portugal. Turismo de Portugal has an online public register of all Tourist Establishments of Portugal. It is important to add that besides Tourist Establishments, there does exist also a separate register of Local Accommodations that were not included in current research. According to the information provided in the register of Tourist Establishments, the global population of tourist establishments on 14th of November 2014 was 2085 establishments (Turismo de Portugal, 2014). The original Portuguese Tourist Establishments categories with a translation to English language (EEC-NET, 2008) are as follows:

- (Traditional) Hotel Establishments*:
  - Hoteís (hotels)
  - Hoteís – Apartamento (hotel apartments)
  - Pousadas (Inns in historic buildings)
- Aldeamento Turístico (touristic holiday village)
- Apartamento Turísticos (touristic holiday apartments)
- Empreendimento de Turismo de Habitação (holiday villas)
- Empreendimento de Turismo no Espaço Rural (rural tourism)
  - Agro Turismo (agro tourism)
  - Casa de Campo (country house)
  - Hotel Rural (rural hotel)
- Conjunto Turístico (resort)
- Parque de Campismo e/ou Caravanismo (camping and caravans)
- Quintas da Madeira (Madeira country houses)
- Moradias Turísticas (Madeira) (Madeira tourist villas)

From Turismo de Portugal website the full list of Tourist Establishments, as well as its sub-lists, filtered by stars, types and location were downloaded. The full list included 2085 establishments in November of 2014. This list was narrowed down to 1759 units based on two different criteria: the type (camping parks were excluded) and the size (only establishments with 10 or more housing units (rooms or apartments) were contacted). The size criteria of 10 housing units was found to be in accordance with hotel definition based on AHP (Portuguese Hotel Association) technical dictionary, according to which hotels are establishments destined for providing accommodation in return for payment, with or without offering meals and other supportive services, while having minimum 10 housing units (AHP, 2018). The stratification of the final target population is shown below in Table 2.

Table 2. Stratification of Hotel Establishments (on 13.11.2014)

Hotel Establishments	Total Number of Establishments	%	Target Population	%
Estabelecimento Hoteleiro - Hotel	1366	48.7	1362	77.4
** *Hotel*	*1206*		*1203*	
** *Hoteis-Apartamento*	*125*		*125*	
** *Pousadas*	*35*		*34*	
Aldeamento Turístico	51	1.8	51	2.9
Apartamento Turístico	167	6.0	160	9.1
Empreendimento de Turismo de Habitação	163	5.8	35	2.0
Agro Turismo	80	2.9	28	1.6
Casa de Campo	709	25.3	46	2.6
Hotel Rural	175	6.2	77	4.4
Conjunto Turistico	*11*	*0.4*		
Parque de Campismo e/ou Caravanismo	*71*	*2.5*		
Quintas da Madeira	*8*	*0.3*		
Moradias Turísticas (Madeira)	*4*	*0.1*		
Total	2805	100.0	1759	100.0

Although not all the establishments listed with Turismo de Portugal had the special star-classification, then 1616 establishments (91.9%) of target population did have a star – classification, divided as follows: 123 units (7.0%) with 5 stars, 550 units with 4 stars (31.3%), 572 units with 3 stars (32.5%), 314 units with 3 stars (17.9%) and 57 units with 1 star (3.2%). The list of 143 units without star category was made out of holiday villas (*empreendimentos de turismo de habitação*) and rural

tourism (*empreendimentos de turismo no espaço rural*) and historic Inns (*pousadas*).

3.3.2. Data Collection

The list provided by Turismo de Portugal included besides hotel name also further details, including the address and contact details that facilitated the phase of questionnaire implementation. During the period of **December 2015 and December 2016**, an online questionnaire was e-mailed to the managers of all 1759 hotels via email (initial email as well as up to four follow up emails). All emails were sent "in care of" hotel manager *(A/C Director do hotel)*. A copy of the first email is also included in Appendix C. During the emailing phase the number of hotels effectively reached resulted in 1585 establishments due to invalid or inactive contact details, duplicated establishment information in the database or closed business operation. In case of invalid e-mail or duplicated contact details, the information was always confirmed through general Internet search or by phone if available. The target sample size 316 answers (in case of population of 1759) or 310 answers (when considering population of 1585) – was calculated based on 5% margin of error and the confidence level of 95% (with 50% response distribution) (Raosoft.com, 2014).

The empirical data for this research was collected through an online questionnaire that was carefully structured using previously validated scales from earlier research (Grissemann, Plank and Brunner-Sperdin, 2013; Tajeddini, 2010) as well as some questions adapted from the Community Innovation Survey of 2012 (CIS, 2012). Also, a pilot study was conducted, including 6 interviews with hotel managers, with objective to improve and validate the questionnaire.

After improving the questionnaire based on feedback from the pilot study phase, the next step was sending the emails. Between the months of December 2015 and December 2016, an email with personalized questionnaire link reached successfully 1585 hotels of the 1759 hotel establishments on the list. The online questionnaire

was sent to the respondents through one of the world's leading web-based survey websites www.surveymonkey.com. An online survey form was chosen due to its easy handling for both – the respondent as well as the researcher – especially when taken into consideration such a large population. Emails were sent to hotels manually (without any emailing application) using the contact details obtained from the list of tourist establishments of Turismo de Portugal. However, in most cases the information was double checked by simple Internet search thus resulting in numerous corrections and updates in contact details enabling to send the questionnaire form to maximum number of hotel establishments.

During emailing phase, it was noticed that the Portuguese hotel scene was going through some **reorganization and modernization** probably partly due to recovering from the period of crises and due to getting ready to accompany the increasing popularity of Portugal for tourists. Some of the hotels had been during crises taken over by financial funds from banks, who stayed responsible for the hotels until their successful sales. Many establishments had changed owner/name or were not at the time reachable through the contacts provided in the register of Turismo de Portugal, resulting in a high number of invalid emails and returned questionnaires. However, all efforts were made to find alternative contact details, which did reduce a bit the number of units to be eliminated from the target population.

Out of the 1759 hotel establishments it was not possible to reach 132 establishments, whereas 58 units were not contactable via email due to invalid email address and lack of available online information regarding alternative email address or contact details. Additionally, 51 establishments could not be contacted directly due to not having available direct contact details. Although the questionnaire was sent to hotels general email, it is not clear how many of these hotel units actually received the request. Besides the hotels that did not provide any direct or valid email contacts, 23 units turned out to be closed (permanently or temporarily) due to various reasons such as construction works, change of management or financial bankruptcy. Some of the hotels responded the questionnaire by stating such info,

while information regarding other hotels (with invalid emails) was found in (local) news releases.

Additionally, a list of so-called "duplicated" establishments (42) was created, which also had to be extracted from the total number of hotel population. This list included interrelated or connected establishments, based on the address and other contact details. In most cases there seemed to be a separate registration of different physical buildings in the same address, however functioning as one unit or most likely under the same management. It was assumed that different registrations were made partly due to natural physical growth or development of the property over time. In case of separate physical units with the same brand name in the same location e.g. hotel and apartments, it was found to be too optimistic to expect the same manager to fill in twice the same questionnaire thus the two units were addressed together in the same email.

Based on these previously discussed circumstances and considerations, the effective number of the email addresses equal to the **Population of the Study was 1585** (1759 – 51 without direct contact info – 81 invalid contacts/closed – 42 "duplicated"), thus requiring a **Sample Size** of **310,** considering:

- Margin of error – 5%
- Confidence level - 95%
- Response distribution – 50%

(Sample Size Calculator from Raosoft.com, 2014)

Due to handling of a large number of questionnaires, emails and responses, in order to avoid impact of any unintentional mistakes, also the **Sample Size** was calculated in case of the original **Population of 1759**. In case of population of 1759, considering margin of error 5%, confidence level of 95% and response distribution 50%, the required sample size would be **316 responses** (Raosoft.com, 2014). The sample size requirement was satisfied through **326 completed responses as the final result.**

During one year period, from **December 2015 till December 2016** the target hotels were contacted up to 5 times via email: 1) Initial Introductory Email (December 2014 – May 2015); 2) 1st Follow-up Email (reminding the first email; January – May 2016); 3) 2nd Follow-up Email (a new email, including info about number of questionnaire answers collected; May – September 2016); 4) 3rd Follow-up Email (informing about the number of answers collected and the total number needed; September – October 2016); 5) 4th Follow-up Email (last call and follow-up of the 4th e-mail; November – December 2016).

The number of emails to be sent decreased every round due to new responses received. Also, over these months, some special follow-up emails were sent to hotels with kind reminder to finish their incomplete questionnaire. Additionally, every hotel manager who personally responded any of the emails was thanked for their availability and cooperation.

Based on a request of a manager, one questionnaire was also sent in English language, which unfortunately stayed incomplete. Two hotel managers preferred to fill in the questionnaire manually. In both cases a PDF file was sent to the hotel, which was then printed, filled in, scanned and emailed back. The answers of both questionnaires were manually inserted into the online database.

3.3.3. Questionnaire Response and Sample Profile

The questionnaire was successfully sent to 1585 hotels, resulting in 326 answers, thus yielding a response rate of 20.6%. One fifth of the hotels (67 hotels equal to 20.6%) responded after the first introductory email, 89 hotels (27.3%) after the 2nd email (so-called 1st follow-up email), 66 hotels (20.2%) after the 3rd e-mail (2nd follow-up email), 51 hotels (15.6%) after the 4th email (3rd follow-up) and 53 hotels (16.3%) still after the 5th email (the last follow up). Majority of the establishments, namely 207 establishments, responding the questionnaire were independent hotel units (63.5%), whereas 106 respondents (32.5%) belonged to hotel chains and 13 respondents (4.0%) were part of a group of diversified businesses. Large majority

of respondents, namely 284 hotels (87.1%) belonged to Portuguese owners and only 42 establishments (12.9%) had a foreign owner.

Although originally the questionnaire was directed to hotel managers, due to their comprehensive understanding and knowledge of their business, the questionnaire was filled out not only by hotel directors, but also by the owners (who are not always the managing directors) and other specialists. The last section of the questionnaire asked some basic information regarding the respondent. It was possible to mark oneself as the owner, the director or other. Additionally, a field for specifications for provided. Out of 326 respondents 64 were the owners of the property (19.6%), 207 hotel directors (63.5%) and 55 respondents (16.9%) represented other positions (including, commercial director, financial director, reception supervisors, director assistants).

The stratification of the sample was not very different from the stratification of the population (see Table 3). The traditional hotel establishments, namely Hotels, Hotel-apartments and Inns (*pousadas*) formed 80.4 % of all the responses (respectively 70.6%, 7.7% and 2.1% of respondents), a proportion quite close to that of the same group in target population (77.4%). Also, the responses from touristic holiday villages (*Aldeamento Turistico)* and holiday villas (*Empreendimento de Turismo de Habitação)* were comparable with that of population values. The touristic holiday villages (*Aldeamento Turistico)* formed 2.8% of the sample, compared to 2.9% of the total population; and the answers of holiday villas (*Empreendimento de Turismo de Habitação)* formed 2.8% of the sample compared to 2.0% of the population. The proportion of rural tourism establishments ended up being slightly higher in the sample (11.0%) compared to the 8.6% share in the target population.

Table 3. Tourist Establishment Type Distribution in Sample and Population

	Hotel Sample		Hotel Population	
Hotel Establishment Type	N	%	N	%
Estabelecimento Hoteleiro - Hotel				
Hotel	230	70.6	1203	68.4
Hoteis-Apartamento	25	7.7	125	7.1
Pousadas	7	2.1	34	1.9
Aldeamento Turistico	9	2.7	51	2.9
Apartamento Turístico	10	3.1	160	9.1
Empreendimento de Turismo de Habitação	9	2.8	35	2.0
Empreendimento de Turismo no Espaço Rural				
Agro Turismo	6	1.8	28	1.6
Casa de Campo	15	4.6	46	2.6
Hotel Rural	15	4.6	77	4.4
Total	326	100.0	1759	100.0

The only category that was poorly represented in the sample were the touristic holiday apartments (*Apartamentos Turisticos*), equivalent to only 3.1% of the responses in the sample compared to their 9.1% share in the target population. This low number can partly be explained by the possibility that a number of touristic holiday apartments have been registered as separate units, while being managed by the same company. Due to sharing the management and contact information, in most cases only one questionnaire was sent to the management. It was considered unlikely to obtain separate responses from one manager. Additionally, it is possible that some of the establishments of touristic holiday apartments self-determine themselves differently or have changed their status to hotel-apartments since their first official register.

It is also important to take into consideration that although these aforementioned categories are designated to a hotel establishment officially in the moment of completing their listing with Turismo de Portugal, it is also likely that due to sort of an era of changes, reorganization and growth in the Portuguese hotel industry, some of the establishments had changed or upgraded their type either for marketing purposes or had not yet updated their official registration information thus resulting in a different answer from the original register. Also, it is possible that in some

cases the respondent did not know the originally registered establishment type, therefore choosing the option based on the available information.

The final sample consisted of 169 higher category establishments (five- and four-star rating), 130 lower category establishments (three-, two- and one-star rating) and 27 establishments without star category rating. Based on the comparison of the stratification of the sample and the population (Table 4) we can conclude that the high star category establishments gave more answers to the questionnaire, compared to establishments with lower star-category, thus resulting in a higher percentage (51.8%) than the four and five-star establishments in the target population (38.3%). Such a difference was predicted already during the questionnaire´s pilot phase since only one hotel from lower star category accepted to participate in the questionnaire´s pilot phase. Additionally, the majority of invalid email addresses belonged to the lower-star category establishments.

Table 4. Sample and Population Distribution Based on Hotel Star Category

Hotel Star Category	Hotel Sample		Hotel Population	
	N	%	N	%
5 star	25	7.7	123	7.0
4 star	144	44.2	550	31.3
3 star	90	27.6	572	32.5
2 star	38	11.7	314	17.9
1 star	2	0.6	57	3.2
No star	27	8.3	143	8.1
Total	326	100.0	1759	100.0

The most common measure of a hotel size is the number of rooms or maximum capacity of guests. Since the original list from Turismo de Portugal included a measure "number of accommodation units" (*numero de unidades de alojamento)* and the capacity; the current study did the same. It is assumed that the number of rooms also in current research does not strictly mean number of rooms but rather number of "units", which can be rooms, apartments or villas. Although the maximum capacity of people per "unit" can be different when comparing a room and an apartment or a villa, it does impact the variable costs and revenue level, however the final "unit of sales" or "cost center" still remains room/apartment or

villa itself. It is assumed that these possible variations in number of beds per unit do not impact the results of current study. When suitable or more adequate, the "maximum capacity/number of beds" will be used to define the size. However, it is important to note that the number of accommodation units (rooms) is a more concrete and solid number, since the maximum number of beds / capacity could depend slightly on interpretation of each hotel, either including all temporary bed structures or only fixed bed options. The questionnaire asked hotel managers to fill in these both measures – the number of rooms and the maximum capacity of people. The following Table 5 shows the distribution of respondents regarding number of rooms/units and maximum capacity.

Table 5. Number of Rooms/Units and Maximum Capacity of People - Sample Profile and Population

Hotel Sample

Number of Rooms	N	%	Maximum Capacity of People	N	%
Up to 20	75	23.0	Up to 40	56	17.2
21–50	95	29.1	41 - 100	109	33.4
51–70	34	10.4	101 - 140	27	8.3
71–90	28	8.6	141 - 180	30	9.2
Over 90	94	28.8	Over 180	104	31.9
Total	326	100.0	Total	326	100.0

Hotel Population

Number of Rooms	N	%	Maximum Capacity of People	N	%
Up to 200	430	24.5	Up to 40	428	24.3
21–50	563	32.0	41 - 100	552	31.4
51–70	203	11.5	101 - 140	191	10.9
71–90	150	8.5	141 - 180	148	8.4
Over 90	413	23.5	Over 180	440	25.0
Total	1759	100.0	Total	1759	100.0

When comparing the hotels regarding room number and maximum capacity, the distribution of hotel establishments remained rather similar. Slightly over 50% of the responding hotels had 50 or less rooms and capacity below 100 people, showing similar distribution to the target population of hotel establishments. Another indicator of hotel size, besides the number of rooms and beds, is the number of

employees. Based on Table 6, showing the distribution based on number of employees we can conclude that more than 50% of the hotels in current hotel sample had only up to 20 employees.

Table 6. Number of Hotel Employees in Hotel Sample

Number of employees	N	%
Less than 10	106	32.5
10–20	83	25.5
21–40	65	19.9
41–60	36	11.0
More than 61	36	11.0
Total	326	100.0

Additionally, all the respondents were asked to fill in their location and postal code on voluntary basis. Large majority of establishments, namely 316 units (97.7%) provided information regarding their location. Only 10 establishments chose full anonymity regarding their location. Table 7 demonstrates the division of tourist establishments' answers based on Eurostat NUT 2 (Nomenclature of Territorial Units for Statistics).

Table 7. Hotel Respondents Location Based on NUT 2 Division

Location (NUT 2)	N	%
Açores	6	1.8
Alentejo	36	11.0
Algarve	56	17.2
Centre	72	22.1
Lisbon Area	51	15.6
Madeira	15	4.6
North	80	24.5
No Info	10	3.1
Total	326	100.0

Based on the previous table (Table 7) it can be concluded that current sample had participants from all over Portugal, providing a good overview of Portuguese hotel industry. Based on visual comparison of the previously presented stratifications of Hotels Sample and Hotel Population no big differences were found regarding

compilation of hotel types and hotel size, therefore it was concluded that current hotel sample represented adequately the population of hotel establishments for the purpose of this thesis. Before moving on to the literature review, the questionnaire responses were evaluated regarding non-response bias and common method bias.

3.4. NON - RESPONSE BIAS

In order to test for non-response bias, similarly to Grissemann, Plank and Brunner-Sperdin (2013) the approach of Armstrong and Overton (1977) was applied. The Armstrong and Overton´s (1977) test suggests that subjects responding "less readily", in this case meaning later, are more like non-respondents than early respondents. Current data set was split into early and late respondents based on how many emails were sent before obtaining an answer. The dataset was split between early respondents (response was obtained after 1st or 2nd email) and late respondents (response was obtained after 3rd, 4th or 5th email/follow-up). The first group of early respondents, consisted of 156 answers (48%) and the second group, late respondents, contained 170 answers (52%). The two groups were tested for difference in terms of scale means of the three main constructs using t-test.

An independent samples t-test was carried out to compare the level of innovativeness, level of innovation behavior and performance score of early respondents and late respondents. Firstly, there was no significant difference found in the scores of innovativeness for early respondents (M = 5.75, SD = .96) and late respondents (M = 57, SD = .81); t(324) =1.18, p = .24. Secondly, no significant difference was found in the scores of innovation behavior for early respondents (M = 3.90, SD = 1.21) and late respondents (M = 3.91, SD = 1.16); t(324) = .09, p = .93. Last, the scores of performance were tested, resulting in no significant difference between the scores of early respondents (M = 5.72, SD = 1.05) and late respondents (M = 5.78, SD = 1.05); t(324) = .471, p = .64). It was concluded that non-response bias was not a concern for current research project.

3.5. COMMON METHOD BIAS

A **common method bias** could be a potential concern for the thesis since data regarding independent variables and dependent variables was collected from the same respondent at the same time (Tajeddini, 2010). Method biases can be problematic since they are one of the main sources of measurement error, therefore threatening the validity of the conclusions regarding the relationships between measures (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). In order to minimize this effect, some of Podsakoff et al. (2003) recommendations were followed.

Firstly, a full anonymity and confidentiality was guaranteed to the respondents. The online questionnaire form allowed the respondents to start responding the questionnaire without filling in the hotel name and location. Secondly, the complete conceptual model of current thesis was not fully explained in the emails or in the questionnaire. Thirdly, the questionnaire was compiled with an extra attention to keeping questions simple and using industry specific terms. The questionnaire pilot phase with hotel managers offered substantial contribution to improving the wording and the use of industry specific terms in current questionnaire. Thirdly, the predictor and outcome variables of the main constructs were presented in different order and mixed with complementary questions. Additionally, the response format of one of the main constructs had different meanings for its Likert-scale values compared to the other two constructs thus creating some methodological separation of the measurement (Podsakoff et al. 2013).

Finally, a Hartman´s single factor test to evaluate common method bias was conducted in SPSS. All the variables of two main constructs (Innovativeness and Performance) were inserted in a single exploratory factor analysis. Six factors were extracted with eigenvalues bigger than 1.0 but none of these explained the majority of the variance, suggesting common method variance was not a concern.

3.6. SUMMARY

The methodology chapter provided a thorough overview regarding the conceptual framework, data collection procedures, non-response bias and common method bias. The online questionnaire that was compiled based on previous hotel innovation research and validated through pilot study phase was successfully sent to 1585 hotels through email. The 326 complete answers satisfied the necessary sample size (either 310 in case of 1585 hotels or 316 in case of 1759 hotels). Based on the comparison of the profiles of sample and population, it was concluded that the sample represents fairly well the Portuguese hotel population.

In order to eliminate any concerns regarding non-response bias and common-method bias, the questionnaire answers were tested separately for each bias. It was concluded that no significant differences existed between early respondents and late respondents regarding the main constructs of current thesis. Additionally, based on Hartman´s single factor test and further analysis, it was also concluded that common method bias was not a concern for current thesis.

IV DATA ANALYSIS

4.1. INTRODUCTION

The data analysis was based on quantitative methods, namely descriptive statistics and regression analyses. Figure 3 gives a brief overview of the outline of data analysis conducted in current thesis. Descriptive statistics was applied to analyze and describe the data with the purpose of providing a proper understanding and an overview of the characteristics and the nature of current hotel sample. Additionally, correlation analysis and t-tests were conducted to study relationships and compare means of Innovation Behavior in different hotel groups with objective to assess the relevance of different innovation determinants.
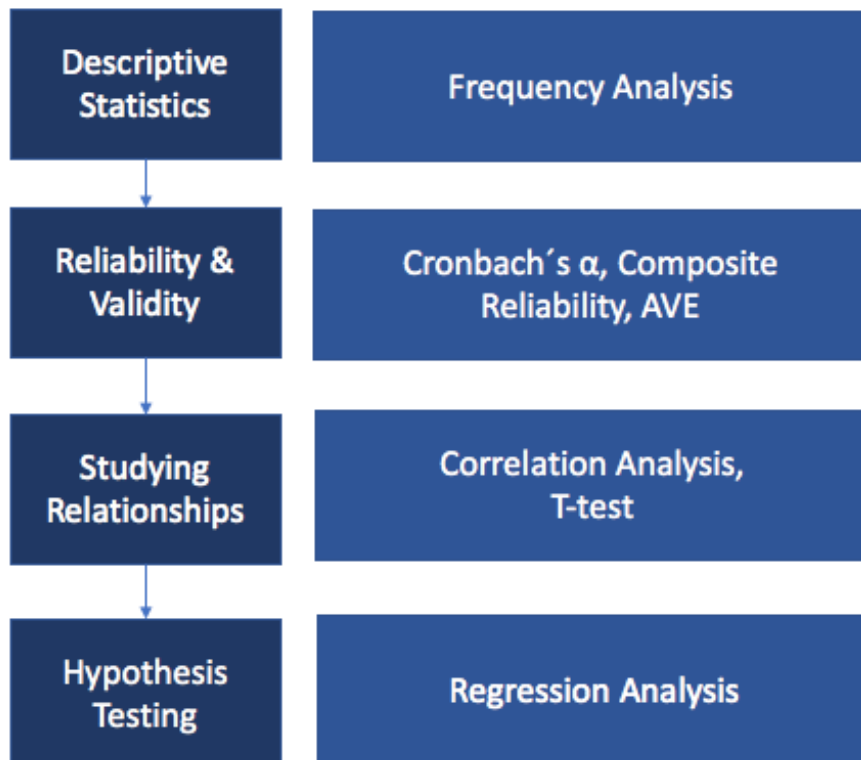

Figure 3. Outline of Data Analysis of Current Thesis

The two hypotheses were tested through regression analysis. Regression analysis was conducted with objective to estimate the relationship between Innovativeness and Innovation Behavior and between Innovation Behavior and Performance. Regression analysis was decided to be an adequate statistical method since it has previously been applied in other studies related to hotel innovation (e.g. Martínez-López and Vargas-Sánchez, 2013; Hilman and Kaliappen 2015; Tajeddini 2010; Tejada and Moreno, 2013; Nieves et al., 2014).

4.2. DESCRIPTIVE ANALYSIS OF MEASURES

4.2.1. General Hotel Characteristics

The questionnaire included numerous questions regarding hotel general characteristics with the aim to have a good overview of the demographic and organizational characteristics of current hotel sample. Before assessing the main constructs and conducting hypothesis testing, it was important to understand what kind of hotels (independent or chain, big or small, young or old), hotel features (services, facilities, target customers) and management practices regarding personnel were common in hotels of this hotel sample.

4.2.1.1. Hotel Ownership and Management

Hotel establishments operate in the market as independent units, as part of a hotel chain or belong to a diversified business group. Out of the 326 respondents 207 hotel establishments were independent units, equal to 63.5% of the total respondents (see Figure 4). Hundred and six (32.5%) hotels were part of hotel chains and 13 hotels (4.0%) belonged to a diversified business group.
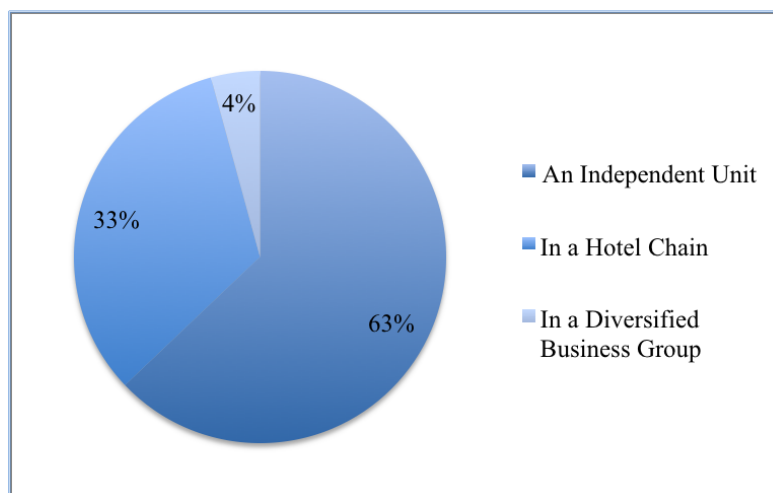
Figure 4. Independent hotels, chain hotels and hotels belonging to diversified business group

Although running a hotel business requires always an establishment of a company, in order to understand better the nature of ownership of Portuguese hotel establishments, the following three categories were suggested: sole ownership, company (more than one partner) and a group of companies. One fifth of the responding hotels (67 units equivalent to 20.6%) belonged to one owner, whereas the large majority (242 hotels equal to 74.2%) belonged to single company and only 5.2% of establishments (17 units) was part of a group of diverse enterprises. Majority of the respondents, namely 284 establishments out of 326 respondents, equivalent to 87.1%, belonged to Portuguese owners. Only 42 establishments, equivalent to 12.9% of the respondents, had a foreign owner.

Hotel establishments can be managed through different management models. In order to get an overview about the management mode of Portuguese hotels, besides management by owner, the following alternatives were proposed: a) management contract; b) rental contract; c) franchising contract; and d) other. Large majority of hotels, responding the questionnaire, were managed by the owners, which could mean that the owner is itself the active manager or manager is hired as part of the team of employees. To be specific, 266 units out of 326 units (equivalent to 81.6%) were managed by the owner company. Only 60 establishments, equivalent to 18.4%, had a different management arrangement (Figure 5). The second popular management arrangement was the management contract, also known as the

management or operating agreement. Management contract was used in 28 establishments (8.6%). The rest of the hotels used either rental agreement (21 hotels, equivalent to 6.4%), franchising contract (4 hotels, equivalent to 1.2%) or some other arrangement (7 units, equal to 2.4%).
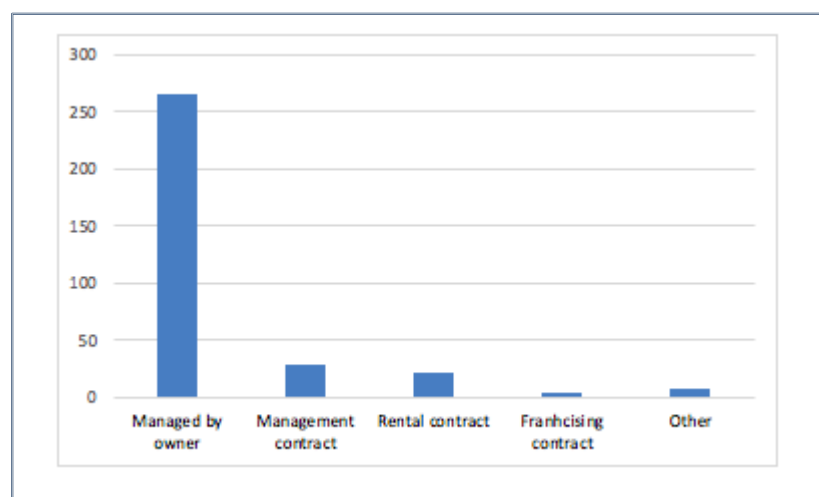

Figure 5. Division of hotel management arrangement

4.2.1.2. Hotel Age

Hotel Age, corresponding to the years of operation, can also impact innovation activity. The older hotels might be more traditional and less keen to changes or exactly the contrary, with a lot of cumulative experience and knowledge to apply in innovations. The freshly built hotels can either adopt an ongoing innovative attitude or to rely on their status quo the first years.

The age of a hotel takes the value of the difference between the year of opening and the year 2016, being equal to the time when information about all the variables was collected. The Table 8 presents the distribution of hotels based on their Age (in 2016). Nearly half of the hotels (44.5%) responding to the questionnaire had between 5 - 20 years since opening, followed by hotels (25.5%) with age between 21 - 40 years. Third biggest group of respondents (17.2%) had been open less than 5 years. Among the oldest hotels, there were three units older than one hundred years (due to confidentiality the extreme age of three hotels will not be disclosed). The average age of hotels was 21.96 years (SD = 23.42). Additionally, the average

age was calculated when excluding the three oldest units from the sample, resulting in M = 20.67 years (SD = 18.24).

Table 8. Distribution of Hotels Based on Years of Operation (Hotel Age)

Years	N	%
< 5	56	17.2
5 - 20	145	44.5
21 - 40	83	25.5
41 - 60	26	8.0
61 - 80	5	1.5
> 80	11	3.4
Total	326	100

4.2.1.3. Hotel Facilities

The questionnaire also collected information regarding hotel facilities and available services in order to understand better the reality and context of responding hotels and the hotel industry in general. Food and Beverages is generally one of the most important revenue streams for hotels, however not all the responding establishments offered meals to their guests at the time of this survey. Serving meals is often related to the type of hotel establishment, its cost structure and strategy. Sixty-five hotel units (equal to 19.9%) provided to their clients the option to book only accommodation. About 59% of the establishments (193 hotels) offered the option of accommodation and breakfast. Half-board option, with possibility to add a lunch or dinner to hotel stay, was practiced by 108 hotels (equal to 33.1%). More than half of the hotels (174 hotels, equal to 53.4%) also provided full-board option.

Besides Food and Beverages, Hotels can have a wide range of facilities and other types of services available to their clients. The hotel official star-category system is also largely based on a list of physical features, which does differ between countries. Equally important is to evaluate each feature based on the context. For example, having private parking in a rural area is an obvious feature, whereas the same thing can be sort of a luxury in the city center. The most common basic physical features among the respondents, as shown in Figure 6, were the existence of bar (85.6% equivalent to 279 units) and private parking (266 units equivalent to

81.6%), followed by disabled access (79.1% or 258 units) and a restaurant (in 68.4% of the establishments, equal to 223 establishments). Two hundred and ten (64.4%) hotels had a pool and 201 units (61.7%) had internal laundry facilities. While 118 hotels (36.2%) made sure to have for its clients available a business center, then 98 units (30.1%) had built for families a children playground. Gym was set up by 118 hotels (36.2%) and SPA facilities were available in 102 establishments (31.3%). Only 3 establishments (0.9%) reported having none of these aforementioned features available.
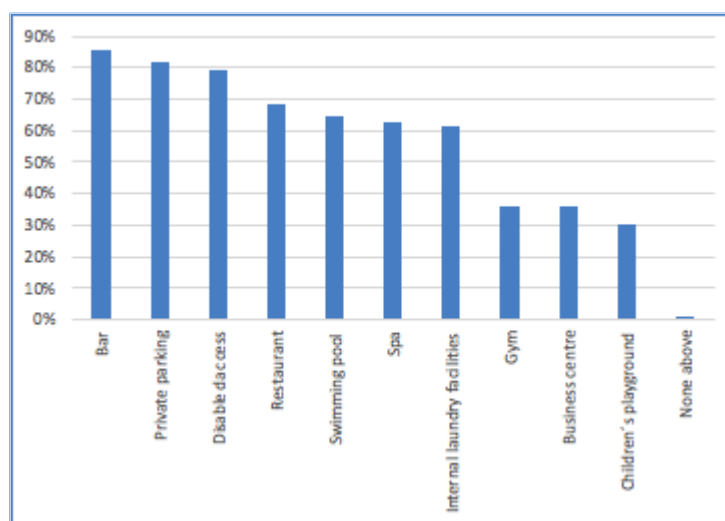

Figure 6. Hotel physical facilities and features

In addition to physical features and characteristics, hotels can also be differentiated by the range of services available to their customers, which similarly to physical features are partly related to star category. Hotels can create services internally or contract external partners. The most common hotel extras such as room amenities and minibar were available, respectively in 284 (87.1%) and 189 (58.0%) hotels. Although within the recent years providing wireless internet coverage as a free service has turned into a standard, at the time of the questionnaire, only 83.4% (272) establishments provided free wireless internet coverage all over their property. A bit more than half of the units (179 establishments equal to 54.9%) had available an internal laundry service for clients and 62 units (19%) offered an airport pick-up service.

4.2.1.4. Hotel Customers

Based on Turismo de Portugal statistics about top tourist nationalities in 2014, a list of countries was picked for the questionnaire to obtain information regarding dominating guest nationalities. Additionally, Angola was added based on the pilot study. All respondents selected the TOP 5 nationalities staying in their establishment within the previous three years. Hotels rated their five most frequent nationalities on a 5-point scale, where 1 showed most frequent and 5 showed least frequent nationality. For the purpose of better visual representation of the order of importance of nationalities, the scores were reversed, and an average score was calculated. The Figure 7 shows the importance of the chosen nationalities for the hotels responding this questionnaire. The domestic market was the most important market for current hotel sample within the previous three years, followed by Spain, France and United Kingdom. Out of 326 hotels, 163 hotels (50%) chose Portugal as their number one source of customers. Angola and Scandinavia were the least important origins for hotels during this time period. Additionally, such nationalities as Austria, Belgium, Canada, China, Japan, Poland, South Korea and Switzerland were inserted to the field of "other nationalities".
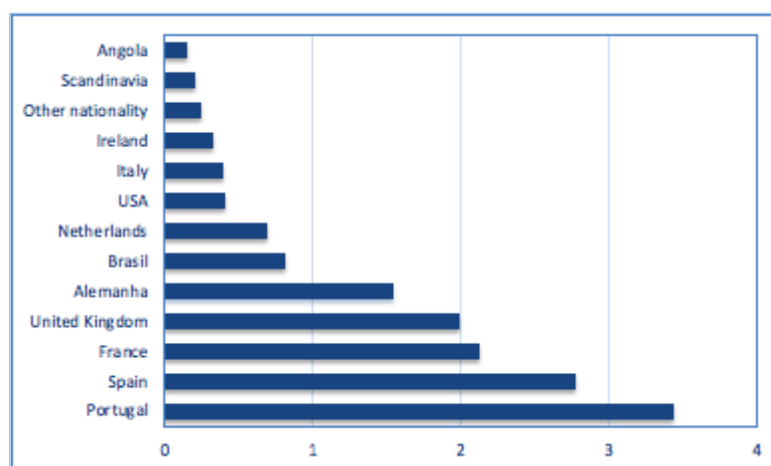

Figure 7. Order of importance of guest nationalities

Hotels were also asked to rate on a scale of 1 to 5 the most popular customer types (e.g. families, couples, business travelers, individual tourists and groups). The most represented customer profiles were "couples" and "families", whereas "couples" were also selected by the highest number of hotels (129 hotels equal to 39%) as

their most frequent "customer". Few hotels also added to the field "others" customer types such as sports teams, elderly travelers, visitors for congresses.

Nowadays the large majority of hotel reservations are made through online travel agencies, so-called OTAs (e.g. Booking.com; Expedia). The results of current study equally showed the importance of OTAs as the source of reservation. Second important source of reservations was considered to be direct reservations through hotel website and also through direct email /phone contact. Social media was considered as the least relevant source of reservations, which does not mean that social media is not important supporting factor of final decision of customers. Additionally, some hotels highlighted the role of Destination Management Companies and special corporate agreements as relevant sources of reservations. The respondents were asked to rate the importance of the source of reservations in 5-point scale (where as 1 was most important). The results are reversed (showing 5 as the most important and 1 as the least important) for the purpose of better visual representation in Figure 8 below.
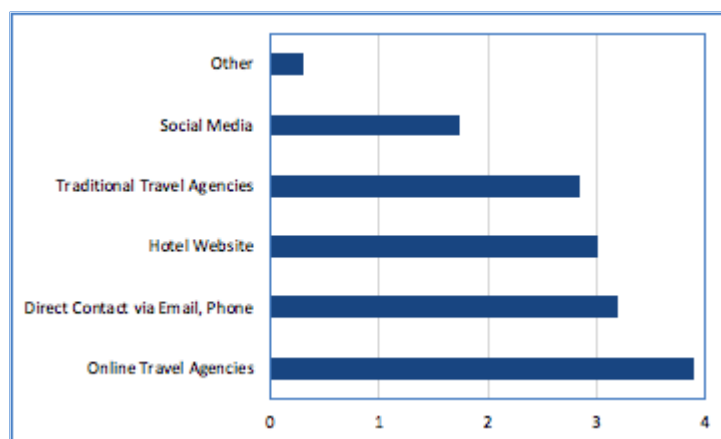

Figure 8. Sources of hotel reservations

4.2.1.5. Hotel Employment

Investment in human resources and training has also been related to the level of innovativeness of a hotel (Orfila-Sintes et al., 2005; Orfila-Mattsson, 2009) as employees participate actively in the delivery of the service. Although hotel industry is known for seasonality and recruitment of seasonal employees, based on

the respondents of current questionnaire we can conclude that permanent personnel with non-term contracts is in Portugal highly valued, equaling average to 55% of employees. Out of the 326 hotels, 51 hotels (15.6%) reported that all their personnel worked with non-term contract. More than half of the employees of current hotel sample (55.4%) had non-term contracts. Another popular employment arrangement was contracts with fixed term (in case of 37.4% of employees), traineeships (2.9%) and receipts of self-employment (*recibos verdes*) (0.9%). A small portion of hotel Personnel (3.4%) also worked through other arrangement (e.g. outsourcing).

Besides the type of contract employees have, another important measure of employment that shows the stability and human resources quality of a company is the time of employment. The average time of employment was calculated based on 320 responses as 6 responses were excluded due to possibly incorrectly filled answers (four times 0; 99 and 100). Although answer "zero" could possibly mean that the average time of working in the hotel is less than one year, due to lack of solid explanation, these answers were left out from calculating the average values related to "length of employment". Based on 320 answers the average length of hotel employment was 6.23 years. Slightly more than half (53.7%) of hotel employees stayed working in a hotel less than 5 years, which is coherent with the answer regarding employment type. Since around 45% of hotel Personnel worked without a permanent non-term contract, changing jobs seemed to be common. The Table 9 below describes the length of employment of Portuguese hotels responding the questionnaire.

Table 9. Average Length of Employment in Hotels

Average time of employment (years)	Nº	%
< 5 years	175	53.7
6 - 10 years	101	31.0
11 - 15 years	30	9.2
> 16 years	14	4.3
Incomplete answers	6	1.8
Total	326	100

The education level of employees of hotels was divided into three groups: Bachelor's degree or higher, secondary and professional education, and primary education or lower. Roughly 60% (59.3%) of hotel employees had a secondary or professional education, whereas the rest of Personnel was rather equally divided between the levels of higher education (21.3%) and lower education (19.4%). Two hotel establishments reported 100% of employees with only higher education and 17 establishments reported 100% of employees with only secondary or professional education.

While the level of education of employees can play a role in innovating, an equally important or possibly even more important factor is the ongoing training of employees during their employment. Although by law it is in Portugal obligatory to offer 35 hours of training (external or in working context) to all employees with contracts longer than 3 months, then it seems it is not a practice that is always strictly followed in reality. Based on questionnaire answers, 291 establishments (89.3%) provided training (excluding initial training) to its employees during the last three years, whereas in 175 hotels all employees had training and in 116 hotels training was provided only to part of the employees. Only 10.7% of hotels reported not carrying out training of employees within previous three years. Additionally, 319 hotels (out of 326) also classified their training either "ongoing" (planned) in case of 144 hotels or "intermittent" (occurring occasionally) in 175 hotels.

In addition to personnel training, other types of human resource practices are applied in companies in order to motivate the Personnel and to take maximum results out of their work. As shown in Table 10, the most widely used employee incentive was "Personnel empowerment" (72.7%), followed by "internal career possibilities" (52.8%) and "ongoing training" (50.3%). Only 120 hotels (36.8%) of hotels had also set up a special "reward system". Almost one fifth of hotels (19.0% equivalent to 62 units) reported practicing all four incentives for their employees. At the same time, 27 units (8.3%) reported no active involvement with any of the given motivation practices.

Table 10. Human Resources Motivation Practices

HR policies	Nº	%
Ongoing training	164	50.3
Internal career possibilities	172	52.8
Reward system	120	36.8
Personnel empowerment	237	72.7
None	27	8.3

4.2.1.6. Questionnaire Respondents

The questionnaire was sent targeting hotel directors. All the emails were sent with special attention to hotel director, however 55 respondents (16.9%) represented different job functions (including administration assistant, director of sustainability, sales director), which can partly be explained due to lack of availability of hotel manager, but also due to company specific ways of handling with tasks and different responsibilities. Majority of respondents, namely 207 (63.5%) professionals, marked themselves as hotel directors. Almost one fifth of the respondents was hotel owners (64 respondents equivalent to 19.6%). It is important to keep in mind that the role of a hotel owner can overlap with management responsibilities.

Management positions in Portugal tend to be dominated by men, a demographic also demonstrated by current questionnaire, which was divided between 60.4% of male respondents and 39.6% female respondents. A large majority of the respondents, namely 237 professionals, had completed a university degree (72.7%), whereas 86 respondents (26.4%) had either secondary or professional education and only 9 respondents (1.4%) reported primary (or below that level) education. The average age of respondents was 43.3 years. The average length of work experience in current hotel establishment was 8.4 years and the average length of work experience in the industry was 16.2 years.

4.2.2 Innovation Activity in Hotels

4.2.2.1. Factors impeding innovation and objectives fostering innovation

Following the example of CIS, hotels were asked to rate the importance and impact of different objectives fostering their innovation activity and also possible factors with negative impact thus impeding innovation. In case of negative factors, a list of 11 factors was given, while the list of objectives fostering innovation consisted of 12 items. Hotels were asked to make an overall evaluation of all their innovation projects, which meant joining also process and product/services innovations. Both lists were rated based on a four-point scale, including the measures of "high importance" (value 1), "medium" (value 2) and "low" (value 3) as well as "factor not experienced" (in case of impeding factors) and "not relevant" (in case of objectives) with scale value 4. The scores were reversed with the purpose to present more clear and readable results. Four was considered as "high importance" and 1 was considered a "low" value indicating a "factor not experienced".

The Figure 9 below presents the common objectives encouraging development of innovation in companies. Improving Quality (M = 3.42, SD = .82) and Reducing Energy Consumption (M = 3.32, SD = .83), followed by Fulfilling Laws and Regulations (M = 3.25, SD = .88) and Differentiating from Competitors (M = 3.24, SD = .91) were the most important motives helping to foster innovation within the previous three years in Portuguese hotels. Reducing Inputs Buying (M = 2.86, SD = .86) and Reducing Labor Costs (M = 2.88, SD = .90), and Replacing Obsolete Services (M = 2.97, SD = 1.01) were the three least important objectives contributing to innovation activities. Improving Service Flexibility (M = 3.15, SD = .88), Reducing Environmental Impact (M = 3.07, SD = .91), Opening New Markets and Increasing Market Share (M = 3.01, SD = 1.00) and Preventing Delay Compared to Competitors (M = 2.99, SD = .96) are the factors, lined up between the most influential and least influential motives fostering innovation activities in tourist establishments.
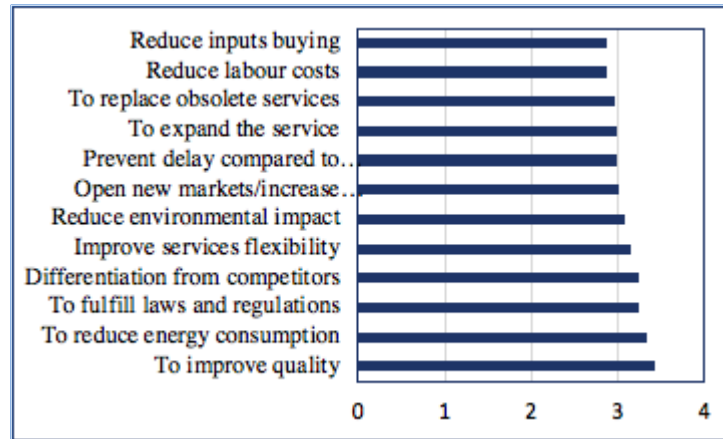
Figure 9. Factors fostering innovation

Additionally, hotel managers were asked to rate a list of factors that could possibly impede innovation activity in hotels. As shown in Figure 10, High Development Cost (M = 2.77, SD = 1.05), Laws and Regulations (M = 2.61, SD = 1.02) and Lack of Qualified Personnel (M = 2.52, SD = .99) were the biggest obstacles for hoteliers. Easy Imitation (M = 2.15, SD = .94) and Insufficient Institutions Support (M = 2.24, SD = .92) and High Risk (M = 2.25, SD = .96) were the least relevant obstacles for hotels. The rest of factors impeding innovation lined up between the most relevant and least relevant obstacles as follows: Insufficient Size (M = 2.47, SD = 1.05), Demand Response (M = 2.42, SD = .89), Lack of Information (M = 2.40, SD = .90), Organizational Inflexibility (M = 2.37, SD = .88) and Lack of Funding (M = 2.29, SD = 1.15).
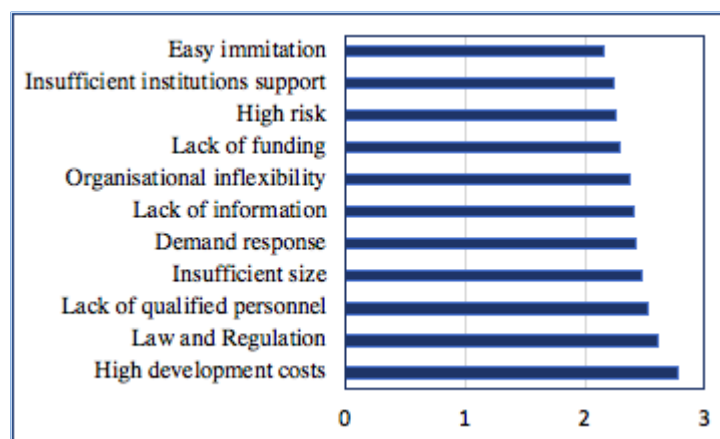

Figure 10. Factors impeding innovation

4.2.2.2. Sources of Information and Cooperation in Innovation Activities

Information and cooperation are usually important contributors to company's innovation. The questionnaire asked hotel managers to identify the sources of information that during the previous 3 years provided information or contribution to completion of innovation projects in their hotel. Slightly above three quarters of hotels, namely 251 hotels (77.0%) obtained information from internal sources (e.g. administration, hotel employees and employees from their hotel group). Secondly, 220 hotels (67.5%) also identified external sources (e.g. competitors, clients, suppliers and private consultants) as relevant sources of information. So-called "other sources" (e.g. industry fairs, scientific publications, professional and industry associations) and institutional sources (e.g. higher education institutions, government or public research institutions) were reported by smaller number of hotels, by 140 hotels (42.9%) and 98 hotels (30.1%) respectively.

The hotel managers were additionally asked about their co-operation with other enterprises or institutions regarding any of their innovation activities. Innovation cooperation was explained to hotels as active participation with other enterprises or non-commercial institutions on innovation activities, without the need of mutual benefitting and excluding pure contracting. A bit more than half of the hotels (172 units equivalent to 52.8%) used co-operation on their innovation activities, whilst 154 respondents (47.2%) opted for the answer "no cooperation". The hotels co-operating with partners, were asked to identify the types of innovation partners they have worked with (shown in Figure 11). Respondents could select all relevant answers. The most frequent hotel cooperation partners in the context of innovation activities were the suppliers (149 hotels), followed by customers (97 hotels) and other enterprises from within their group (84 hotels). A bit more than one fifth of hotels (70 units) cooperated with private consultants and research institutions, and a bit less (64 units) with competitors or companies from the same sector. Hotels cooperated the least with universities (53 hotels) and government and public research institutions (32 hotels).
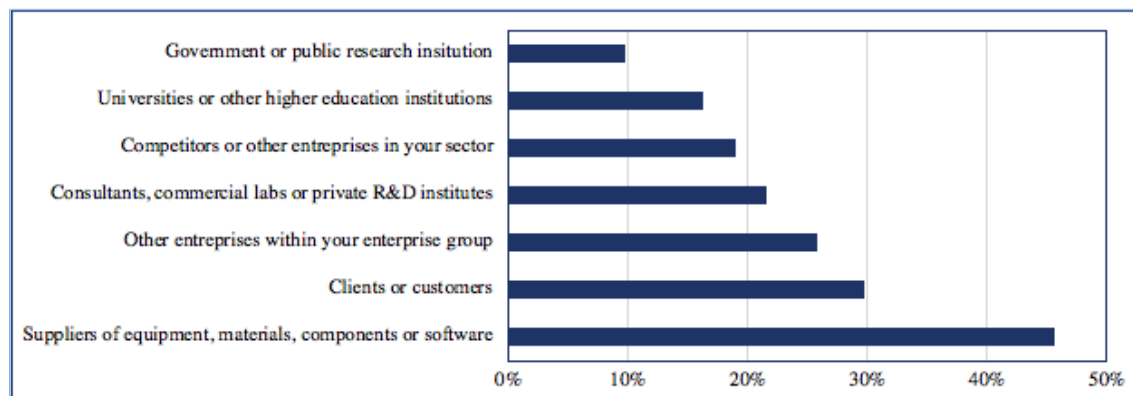
Figure 11. Types of innovation cooperation partners

In addition to collecting information regarding the sources of information and cooperation partners on innovation activities, hotel managers were also asked about who was responsible for developing their innovation projects. Hotel managers had to choose all the answers applicable to their hotel. Majority of hotels, 225 establishments (69.0%) had during the previous three years developed innovation projects internally. More than one third of hotels (125 hotels equivalent to 38.3%) had also developed innovation projects together with other enterprises or institutions. Slightly above one tenth of establishments (35 units equivalent to 10.7%) had adapted or modified goods/services/processes originally developed by others. And only 19 hotels (5.8%) had within the previous three years carried out innovation projects that were fully developed by other enterprises and institutions.

4.3. INNOVATIVENESS, INNOVATION BEHAVIOR AND PERFORMANCE

4.3.1. Reliability and Validity of Measures

All three scales used to measure the three main constructs of current thesis - innovativeness, innovation behavior and performance - were previously validated by other authors. Innovation behavior was measured following the Grissemann, Plank and Brunner-Sperdin (2013) approach, hence asking whether any innovative

changes had been implemented within the previous three years by presenting the eleven innovation areas of the work of Grissemann, Plank and Brunner-Sperdin (2013) compiled based on previous studies of Orfila-Sintes et al. (2005) and Pikkemaat and Peters, (2005). The eleven innovation areas included quality management, environmental quality management, information and communication technology, room equipment, maintenance and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing. The respondents had to evaluate their innovation behavior based on a seven-point Likert scale from 1 (no innovation) to 7 (launch of totally new product/services). Following Grissemann, Plank and Brunner-Sperdin 2013, a grand mean was calculated for each hotel with the objective to obtain a single metric for further analyses.

The level of innovativeness was measured through a 5-item scale, following Tajeddini (2010) adaption of the scale from Hurley and Hult (1998). The scale incorporates management opinion regarding innovation and new ideas in their hotel. An innovativeness score was calculated for each hotel as a mean of their answers based on seven-point Likert-scale, whereas 1 equaled to "completely disagree and 7 equaled to "totally agree".

Performance was measured based on managers judgement in terms of financial performance, customer retention and reputation by adopting the validated scale of 8 items from Grissemann, Plank and Brunner-Sperdin (2013). The scale included four items for financial performance, two for customer retention, and two for reputation. The respondents had to choose the most suitable answer on 7-point Likert scale, where 1 was equivalent to "totally disagree" and 7 was equivalent to "totally agree".

In order to evaluate reliability and validity of the construct, internal consistency (Cronbach´s α), composite reliability (CR) and average variance extracted (AVE) were calculated for the scales of innovativeness and performance. Following Grissemann, Plank and Brunner-Sperdin (2013) no Cronbach Alpha was calculated for innovation behavior scale as by nature it is an additive index and not a scale to

measure a construct. Additive indexes, differently from scales do not require high correlation with each other, therefore Cronbach's alpha and factorial analysis are not appropriate for evaluation (Nieves and Cigarra-Sirpés, 2015).

Firstly, Cronbach's Alpha was used to measure the **internal consistency** of innovativeness scale. For the scale with 5 items the Cronbach $\alpha = 0.79$. This value of Cronbach´s α is in the region of about 0.7 to 0.8 indicated by Kline that shows good reliability of the scale (Kline 1999 as of Field 2013). However, items were also evaluated based on Item-Total Statistics to see the correlation of scale items with the total as well as the values of *Cronbach's Alpha if Item Deleted*. The *Cronbach's Alpha if Item Deleted* Table 11 (below) demonstrates the correlations between each item and the total score from the questionnaire. One of the items (question 4) did not correlate well with the overall score from the scale, its value being 0.21 was below 0.3, the threshold level for eliminating items given by Andy Field (Field, 2013). The item 4 ("People are penalized for new ideas that do not work") was removed, which resulted in improved value of Cronbach's Alpha to level .86.

Table 11. Item-total Statistics of Innovativeness Scale

Performance Statements	Scale mean if item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. Management actively seeks innovative ideas.	22.96	13.87	0.65	0.47	0.695
2. Innovation, based on research results, is readily accepted in our organization.	23.48	13.32	0.61	0.51	0.701
3. Innovation is readily accepted by management.	23.53	12.42	0.67	0.59	0.675
4. People are penalized for new ideas that do not work.	23.04	12.05	0.21	0.10	0.858
5. Innovation in our organization is encouraged.	23.20	12.05	0.70	0.51	0.664

Composite Reliability (CR) and Average Variance Extracted (AVE) were calculated in SPSS (factor analysis) and Excel. The **composite reliability** for innovativeness scale was 0.899, above the conventional threshold of .60 (Grissemann, Plank and Brunner-Sperdin, 2013). **Convergent validity** was assessed by using average variance extracted (AVE), the ratio of construct variance

to total variance among indicators. The value of AVE for innovativeness construct was .69, therefore exceeding the threshold .50, and thus confirming satisfactory convergent validity of the measure (Chen et al., 2009).

When calculating CR and AVE, the factor analysis (principal components analysis using varimax rotation with Kaiser normalization) resulted in 8 performance items loading in two factors instead of three. It was decided that it was more adequate in current thesis to consider Performance subtypes as Financial Performance and Nonfinancial Performance instead of three different performance types. Financial Performance composite reliability was .93 and AVE was .77. Composite reliability and AVE for Nonfinancial Performance were respectively .91 and .71.

Cronbach's Alpha was also used to assess the reliability of performance scale, resulting in a value of .93. Additionally, the items were evaluated based on Item-Total Statistics (Table 12 below) to see the correlation of scale items with the total as well as the values of *Cronbach's Alpha if Item Deleted*. Looking at the correlation of items with scale, we can see all the items correlate well with one another, confirming an existing relation between the items of the scale. Cronbach´s α was separately calculated also for Financial Performance (4 items) and Nonfinancial Performance (4 items). Both values of Cronbach´s α showed a good reliability, being respectively .947 for Financial Performance and .933 for Non-Financial Performance.

Table 12. Item-total Statistics of Performance Scale

Performance Statements	Scale mean if item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. We have achieved market share objectiv	39.82	57.20	.77	.81	.928
2. We have achieved profit objectives	40.02	55.30	.80	.85	.926
3. We have achieved sales objectives	39.87	56.53	.84	.82	.922
4. We have been profitable	40.10	56.81	.83	.78	.923
5. We have improved the loyalty of existing customers	39.61	60.84	.75	.70	.929
6. We have attracted a significant number of new customers	39.57	60.50	.79	.72	.927
7. We have had well perceived image	39.43	61.42	.74	.90	.930
8. We have had a good reputation	39.38	62.46	.71	.90	.932

Finally, discriminant validity of constructs was checked by confirming if AVE values exceeded the square of the correlations between pairwise matched factors (Fornell and Larcker, 1981). Discriminant validity was confirmed as the values of AVE did not exceed any value of square of the correlations (shown in Table 13).

Table 13. Correlation Matrix and Average Variance Extracted (AVE)

	AVE	Innovativeness	Financial Performance	Nonfinancial Performance
AVE	1			
Innovativeness	.69	1	.19	.29
Financial Performance	.77	.19	1	.64
Nonfinancial Performance	.71	.29	.64	1

**Correlation is significant at the 0.01 level (2-tailed).

Based on reliability and validity analysis, it was decided to drop one item of innovativeness scale. Additionally, it was concluded that it was suitable to carry out further analysis of performance also separately for financial performance and nonfinancial performance. Both of the two main constructs showed good reliability and validity and thus were acceptable for further analysis. For the purpose of further analysis and with objective to use also parametric tests, the aggregated scores of three Likert scales (Innovativeness, Performance and Innovation Behavior) were treated as continuous variables, which is perfectly acceptable when the items of Likert scale factorially hold reasonably well together as a scale or subscale and are measured using a 5 to 7-point Likert response format (Carifio and Perla, 2007).

4.3.2. Innovativeness

The level of innovativeness was originally measured through a 5-item scale of management opinions, following Tajeddini (2010) adaption of the scale from Hurley and Hult (1998). Based on reliability analysis, one of the items "People are penalized for new ideas that do not work" was excluded from further analysis.

A single score, a grand mean was calculated for each hotel based on the 4 items of Innovativeness scale with the objective to carry out subsequent analyzes (similarly

to previous work of Hurley and Hult, 1998; Tajeddini, 2010; Grissemann, Plank and Brunner-Sperdin, 2013). Also, a general score of innovativeness was calculated based on the scores of all the hotels resulting in M = 5.76 (SD = .97). In order to understand better the data and the nature of the answers to the scale of Innovativeness a histogram and box plot diagram (Figure 12) were drawn.
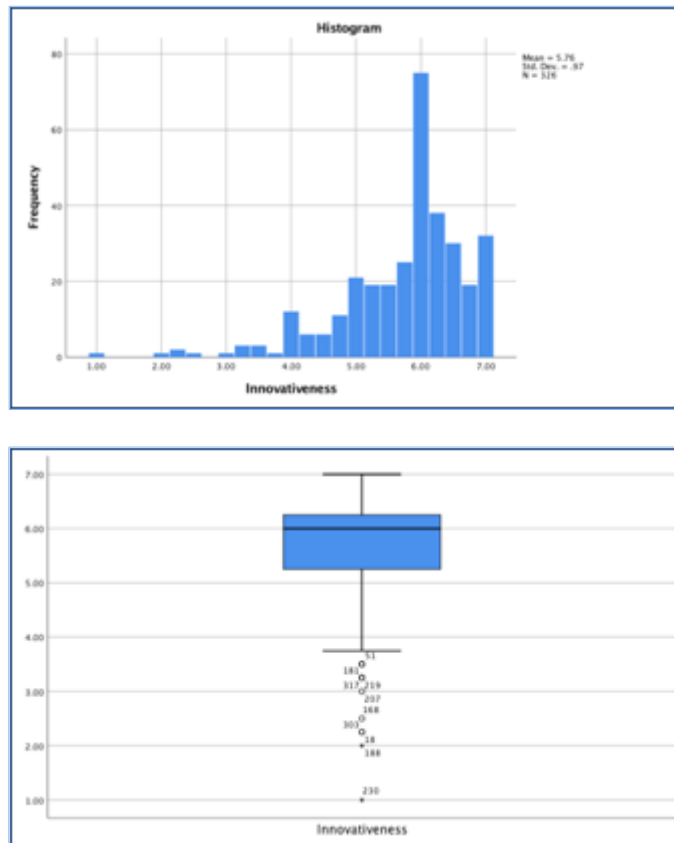

Figure 12. Histogram and boxplot of Innovativeness

Based on histogram and Boxplot diagram we can see possibly non-normal distribution and existence of 10 outliers, out of which 2 were extreme outliers. Skewness (-1.42, SE = .14), kurtosis (2.95, SE = .27). The non-normal distribution was also confirmed by Shapiro-Wilk test (S-W = .89, p = 0.000). Shapiro-Wilk test will be used throughout current thesis instead of Kolmogorov-Smirnov due to having more power to detect differences from normality (Razali and Wah, 2011 Ghasemi & Zahediasl 2012; Field, 2013).

4.3.3. Innovation Behavior

Another important measure in the thesis was hotel innovation behavior. As stated before, hotel Innovation Behavior was measured following the Grissemann, Plank and Brunner-Sperdin, (2013) approach, hence asking whether any innovative changes had been implemented within the previous three years by presenting the eleven innovation areas of Grissemann, Plank and Brunner-Sperdin (2013) work compiled based on previous studies of Orfila-Sintes et al. (2005) and Pikkemaat and Peters, (2005). The eleven innovation areas included quality management, environmental quality management, information and communication technology, room equipment, maintenance and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing. The respondents had to evaluate their innovation behavior based on a seven-point Likert scale from 1 (no innovation) to 7 (launch of totally new product/services). Following Grissemann, Plank and Brunner-Sperdin (2013), a grand mean was calculated for each hotel with the objective to obtain a single metric for further analyses. The grand mean of innovation behavior of all hotels was 3.90 (SD = 1.18). Out of the 326 hotels, only 3 hotels (.09%) reported not having any innovation activity within the previous three years, meaning that 99.01% of hotels did carry out at least some sort of innovation activities within these 11 hotel-related fields of activity. In order to understand better the data and the nature of the answers of Innovation Behavior also a Histogram and normal Q-Q Plot (Figure 13) and boxplot were drawn.
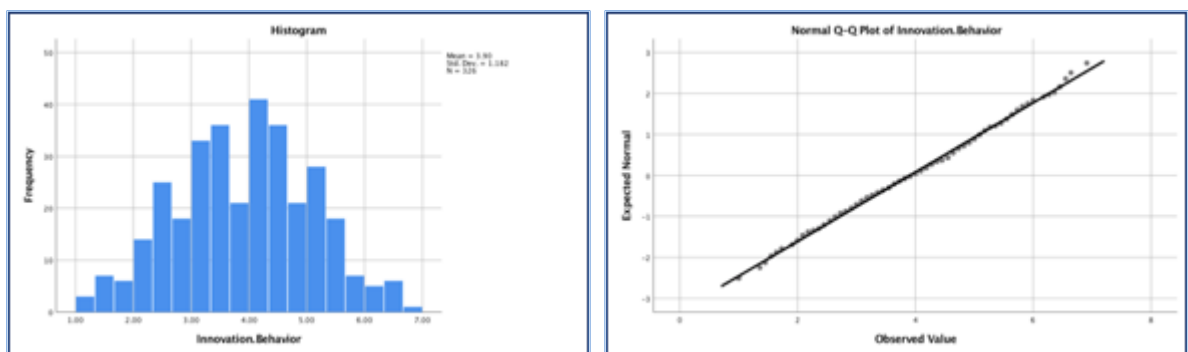

Figure 13. Histogram and normal Q-Q Plot of Innovation Behavior

The value of skewness was - .052 (SE= -.135) and kurtosis was - .447 (SE = .269) for Innovation Behavior. Based on the nearly bell-shaped curve of histogram and q-q plot with, it could be concluded that the responses of Innovation Behavior were approximately normally distributed. No outliers were detected in the boxplot of innovation behavior. Shapiro-Wilk test of normality confirmed normal distribution of the data (S-W = .99, df = 326, p = .27).

4.3.3.1. Areas of Innovation

Following the example of Grissemann, Plank and Brunner-Sperdin (2013) in addition to calculating the grand mean of innovation behavior, also grand mean for each area of innovation was determined with the objective to get a better overview of innovation activity in Portuguese hotel sector (see Figure 14). Based on these average scores we can say that the areas with most innovation were Information and Communication Technology (M=4.42, SD=1.49), Marketing (M=4.40, SD=1.70) and Wellness (M=4.13, SD=1.63), followed closely by Maintenance and Cleaning (M=4.09, SD=1.44). The areas with less innovation were Animation and Leisure Activities (M=3.18, SD=1.80) and Architecture and Design (M=3.26, SD=1.94). Between the highest and lowest innovation behavior scores, stayed the areas such as Quality Management (M= 4.06, SD = 1.60), Gastronomy (M =4.05, SD = 1.87), Room Equipment (M = 3.98, SD = 1.61), Security Systems (M = 3.74, SD = 1.65) and Environmental Quality Management (M = 3.64, SD = 1.64).
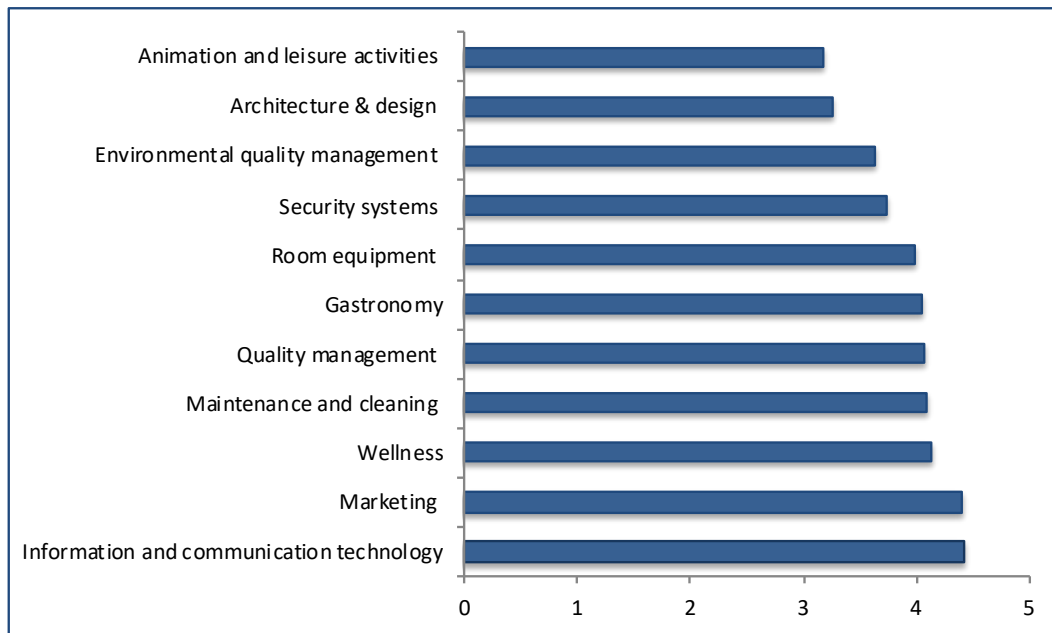
Figure 14. Bar chart of areas of innovation

For better understanding of innovation activity in hotels, an additional table (see Table 14) was compiled with the eleven innovation areas and summary of respective Likert-scale responses to observe in more detail the nature of innovation carried out in the proposed areas of innovation. Gastronomy and Marketing areas were with the highest number in Launch of totally new products/services (by 32 hotels in both areas) followed by Wellness (26 hotels) and Architecture and Design (25 hotels). The biggest number of hotels reported no innovation in areas such as Architecture and Design (87 hotels) and Animation and Leisure Activities (86 hotels). Only 10 hotels reported no innovation in the area with the highest average level of innovation - Information and Communication Technology.

Table 14. Cross Tabulation of 11 Innovation Areas and Likert-scale Answers

	No innovation	Slight changes to existing products/ services	Some improvement of existing products/ services	Substantial improvement of existing products/ services	Substantial improvement and extention of existing products/ services	Launch of products/ services that are new to the hotel but already exist on the market	Launch of totally new products/ services	Response Count
Quality management	22	33	67	77	54	56	17	326
Environmental quality management	39	50	66	63	65	30	13	326
Information and communication technology	10	25	56	71	77	65	22	326
Room equipment	22	41	64	78	59	39	23	326
Maintenance and cleaning	16	30	55	98	80	30	17	326
Security systems	44	34	64	65	68	43	8	326
Gastronomy	49	26	43	68	55	53	32	326
Wellness	28	26	51	80	78	37	26	326
Animation and leisure activities	86	46	51	64	39	26	14	326
Architecture & design	87	49	51	47	40	27	25	326
Marketing	25	21	49	72	52	75	32	326
Response Count	428	381	617	783	667	481	229	3586
%	11.9	10.6	17.2	21.8	18.6	13.4	6.4	100.0

Another observation made based on Table 14 was the distribution of responses between different Likert-scale answers. Only 11.9% of answers indicated lack of innovation. Slight changes and small improvements were reported by 27.8% of answers. The biggest portion of answers (40.4%) indicated substantial improvements and extension of existing products/services showing existence of **incremental** innovations. **Radical innovation** was reported by 19.8% of answers, "including launch of products/services that were new to the hotel but already existed in the market" (13.4%) and "launch of totally new products/services" (by 6.4% of answers.). Since innovations are generally carried out with the objective to improve or maintain results, also hotel performance was measured.

4.3.4. Hotel Performance

As previously discussed, hotel Performance was measured based on hotel managers' opinion (judgement) regarding three different aspects of performance – financial performance, customer retention, and reputation. All items were measured through 7-point Likert scale, whereas 1 equaled to "totally disagree" and 7 to "totally agree". Based on reliability analyses it was concluded that for this thesis, dividing Performance into Financial Performance and Nonfinancial Performance was the most adequate approach. The average total score of Performance of hotels

was 5.68 (SD = 1.09). The average score of Financial Performance was 5.45 (SD = 1.35) and the average score of Nonfinancial Performance was 5.90 (SD = 1.06).

Hotel Financial Performance was measured by profitability, the achievement of sales, profitability goals and increase in market share. Majority of hotels agreed that all these three aspects had been achieved, namely 270 hotels (82.8%) agreed (by choosing either "agree a little", "agree" or "agree totally") with the statement "we have been profitable". A bit lower, but still significant number of hotels (256 establishments, equal to 78.5%) agreed (selecting either "agree a little", "agree" or "agree totally") with the statement "we have achieved profit objectives". The highest number of hotels (274 hotels, equal to 84.0%) agreed with the sales-related statement "we have achieved sales objectives". The market share objectives were achieved by 250 (76.7%) hotel establishments (responding "agree a little", "agree" and "agree totally" to the statement "we have achieved market objectives").

Nonfinancial Performance included two questions regarding customer retention, which was measured through improvement of customer loyalty and increase of new customers. Improvement in customer loyalty was achieved by 290 hotels (89.0%) and increase in attraction of new customers by 289 hotels (88.7%). The highest rated were the two measures of hotel reputation. Majority of hotels agreed that they had maintained a good reputation (293 hotels equal to 89.9%) and well-perceived image (297 hotels, equal to 91.10%) over the last three years. The Figure 15 shows the performance related statements based on the average score of answers.
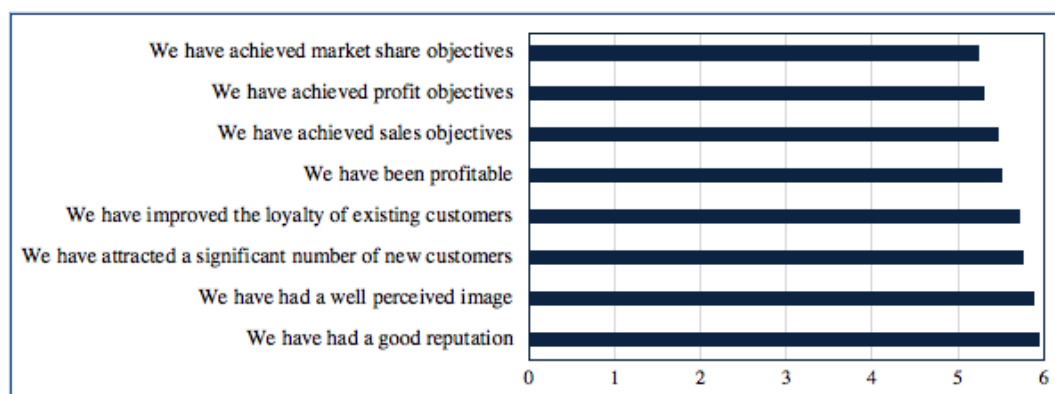

Figure 15. Bar chart of performance scale statements

For better understanding of the data, a histogram (see Figure 16) and boxplot were also drawn and observed. Firstly 14 outliers were detected on the boxplot and secondly, based on the skewness of -1.75 (SE = 0.14) and kurtosis of 3.93 (SE = 0.27) non-normal distribution was detected. Additionally, Shapiro-Wilk normality test was conducted to confirm the non-normal distribution of Performance (S-W = .85, p = .000).
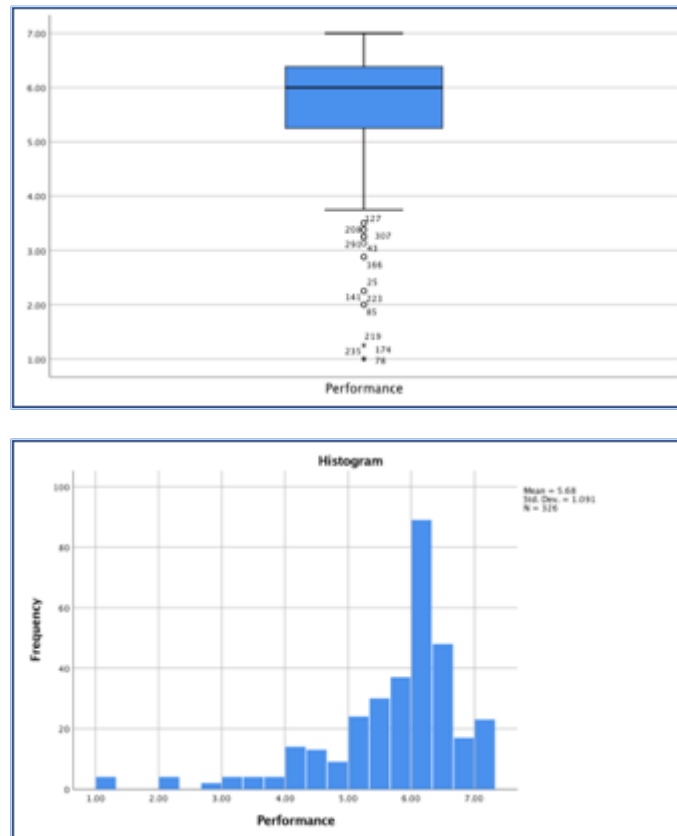

Figure 16. Histogram and boxplot of Performance

4.4. INNOVATION DETERMINANTS

We chose to follow the example of Orfila-Sintes et al. (2005), Orfila-Sintes and Mattsson (2009) and Grissemann, Pikemaat and Weger (2013) in order to evaluate some of the basic determinants of hotel innovation in the context of Portuguese hotel industry. Among other determinants, Orfila-Sintes et al (2005) and Orfila-Sintes Mattson (2009) related in their study higher innovation activity to hotel

category, hotel size, hotel chain and human capital skills (includes training) among others. Also, Grissemann, Pikemaat and Weger (2013) found employee engagement (including personnel training) have a positive relation with hotel innovation. Additionally, the relation of hotel age to hotel innovation behavior is evaluated.

4.4.1. Hotel Size and Innovation Behavior

Hotel size has been frequently considered as one of the important hotel innovation antecedents. Hotel size has been measured in number of rooms, number of beds (maximum capacity) and in number of employees. According to Orfila-Sintes et al. (2013) using hotel number of beds or number of rooms as an indicator of hotel size is a common practice in the literature on hotel activities.

Firstly, a correlation analysis was conducted to compare the three size variables in order to confirm that they all measure the same thing. Although all the Size indicators were continuous variables, the Pearson's correlation assumptions were not met due to outliers, non-normal distribution and existence of heteroscedasticity based on scatter plot. Alternatively, Spearman's Rho rank-order correlation was calculated for Hotel Size, Innovativeness and Innovation Behavior (see Table 15).

Table 15. Correlations of Hotel Size, Innovativeness and Innovation Behavior

Measure	1	2	3	4	5
1. Size in N° of Rooms	-				
2. Size in N° of Beds	.976**	-			
3. Size in N° of Employees	.841**	.822**	-		
4. Innovativeness	.002	-.004	.060	-	
5. Innovation Behavior	.154**	.132*	.251**	.398**	-

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Based on correlation matrix (Table 15) an existence of strong correlation was found between Number of Rooms, Number of Beds and Number of Employees; thus, it was concluded that the measure of hotel size in current thesis was adequately captured. The fact that the correlation between Number of Rooms and Number of Employees (r_s = .84, n = 326, p = .000) and Number of Beds and Number of Employees (r_s = .82, n = 326, p = .000) was a bit weaker than the relation between Number of Rooms and Number of Beds (r_s = .98, n = 326, p = .000) can be explained with composition of hotel human resources. Increase in number of rooms might increase number of housekeeping personnel, but not necessarily the number of front desk, back office and management positions.

The results of correlation between Hotel Size and Innovation Behavior showed a significant positive correlation between Number of Rooms and Innovation Behavior (r_s = .15, n = 326, p = .005), significant at the .01 level, and Number of Beds and Innovation Behavior (r_s = .13, n = 326, p = .02), significant at the .05 level. Slightly stronger correlation was found between Number of Employees and Innovation Behavior (r_s = .25, n = 326, p = .000), significant at the .01 level. There was no significant correlation found between hotel size and Innovativeness.

4.4.2. Hotel Category and Innovation Behavior

Hotel Category has been previously related to higher level of hotel Innovation Behavior (Orfila-Sintes 2005; Orfila-Mattsson, 2009). For better overview, an average score of Innovation Behavior was calculated for every individual hotel, for the whole hotel sample and also separately for high-star category hotels (4- and 5-star hotels) and low-star category hotels (1-, 2- and 3-star hotels), while leaving out the hotels without any star category. The Table 16 shows the average value of innovation behavior of current hotel sample 3.90 (SD = 1.18) as well as the average Innovation Behavior score for all types of hotels based on their star category.

Table 16. Hotel Category and Degree of Innovation Behavior

Star Category	Number of Hotels	%	Innovation Behavior (Mean)	Standard Deviation
5 Star	25	7.7	4.07	1.20
4 Star	144	44.2	4.14	1.17
3 Star	90	27.6	3.65	1.16
2 Star	38	11.7	3.56	1.15
1 Star	2	0.6	3.82	0.25
No Star	27	8.3	3.79	1.20
Total	326	100	3.90	1.18

In order to better evaluate the relation of hotel category and innovation activity the five official hotel categories were aggregated into two groups, by joining the 3-star, 2-star and 1-star establishments into so-called "low star" category group and the 4-star and 5-star hotels into "high star" category group as the technical specifications are very similar for hotels in each group. Additionally, there was a category called "No stars" with 28 establishments, representing 8.3% of the total number of establishments. The empirical data showed that the 169 high-star category hotels (M=4.13, SD=1.17) had a higher level of innovation behavior than the 130 low-star category hotels (M=3.63, SD=1.14). An average innovation behavior score was also calculated for the 27 hotels without star category (M=3.79, SD=1.20).

The association between Hotel Star Category and Innovation Behavior was assessed through correlation analysis. Spearman's rho was conducted since one of the variables (hotel stars) was an ordinal variable. Firstly, Spearman's rho was calculated based on 6 star levels coded as follows: 5 - 5 stars, 4 - 4 stars, 3 - 3 stars, 2 - 2 stars 1 - 1 star and 0 - no stars. Based on correlation analysis it was concluded that there does exist a statistically significant positive relationship between Innovation Behavior and hotel Star Category (r_s = .18, p = .001). The correlation was significant at the 0.01 level (2-tailed). Additionally, for more precise result, the correlation was run only with hotels that had a star category. Based on 299 hotel units with star category, a weak positive relationship was found between hotel Star Category and Innovation Behavior (r_s = .195, p = .001, significant at level 0.01).

4.4.3. Hotel Chain, Hotel Management and Innovation Behavior

Hotels operate in the market as an independent unit or as part of a bigger business operation such as a hotel chain or an integrated business group. Previous research has found independent units to be less innovative than hotels belonging to a chain (Orfila-Sintes et al. 2005; Orfila-Sintes and Mattsson, 2009). Out of 326 respondents 207 hotels were independent units with average level of Innovation Behavior 3.72 (SD=1.17), which was lower than the average level of Innovation Behavior of hotels from hotel chains (M=4.22, SD=1.14) and of hotels from diversified business group (M=4.27, SD=1.13) as shown in Table 17.

Table 17. Mode of Business Operation and Innovation Behavior

Mode of Business Operation	N	%	Innovation Behavior (Mean)	Standard Deviation
An independent unit	207	63.5	3.72	1.17
In a hotel chain (only accommodation)	106	32.5	4.22	1.14
In a diversified or integrated business group	13	4.0	4.27	1.13
Total	326	100.0	3.90	1.18

Spearman's Rho rank-order correlation was chosen to evaluate the relation between hotel Mode of Business Operation and Innovation Behavior. A positive relation, significant at the .01 level, was found between hotel Mode of Business Operation and Innovation Behavior (r_s= .20, n = 326, p = .000).

Innovation Behavior was also analyzed from the perspective of hotel governance or management arrangement (see below Table 16). The average innovation behavior value was slightly lower in case of hotels managed by Owners (M = 3.85, SD = 1.20) compared to Management Contract (M = 4.08, SD=1.20), Rental Contract (M = 4.17, SD = 1.04) and Franchising Contract (M=4.50, SD=0.58) as shown in Table 18.

Table 18. Hotel Management Arrangement and Innovation Behavior

Hotel Management	N	%	Innovation Behavior (Mean)	Standard Deviation
Managed by Owner	266	81.6	3.85	1.20
Management contract	28	8.6	4.08	1.20
Rental contract	21	6.4	4.17	1.04
Franchising contract	4	1.2	4.50	0.58
Other	7	2.1	4.18	0.95
Total	326	100.0	3.90	1.18

An independent samples t-test was carried out to compare the Innovation Behavior score means between 266 Hotels Managed by Owner (M = 3.85, SD = 1.20) and 60 Hotels Not Managed by Owner (M = 4.14, SD = 1.07). In order to carry out an independent samples t-test to compare Innovation Behavior in hotels Managed by Owners and Hotels Not Managed by Owners, the necessary test assumptions were checked. The assumption of normal distribution of the dependent variable in both groups was not violated as assessed by Shapiro - Wilk test ($p > 0.05$). The assumption of equal variances was confirmed ($p > .05$). No significant differences existed in the scores of Innovation Behavior between Hotels Managed by Owner and Hotels Not Managed by Owner; $t(324) = -1.74$, $p = .08$.

4.4.4. Hotel Age and Innovation Behavior

The age of hotel is considered as an organizational resource representing hotels´ experience and reputation that possibly influences innovation decisions (Hilman and Kaliappen, 2015). The age of hotels was measured in years of operation. The association between Hotel Age and Hotel Behavior was evaluated through Spearman's rho correlation since despite both being continuous variables, the assumptions of Pearson's correlation were not met. The variable Hotel Age, measured in number of years a hotel was operating, included outliers (15 based on boxplot) and did not follow approximately normal distribution. Additionally, no linear relationship was detected on visual observation of scatter plot. Spearman's rank-order correlation showed no statistically significant relationship between hotel age and hotel innovation behavior ($r_s = 0.03$, $p = 0.61$). Since some of the hotels in the sample were really old compared to the general population, in order to avoid the

impact of the outliers, the Spearman's correlation was re-run without the 15 units with 60 and above years of operation. Still, no significant association was found (r_s = 0.02, p = 0.77).

4.4.5. Hotel Personnel Training and Innovation Behavior

Hotel Personnel Training was also related to hotel Innovation Behavior. Hotels that offered training to all their employees (175 establishments) during the previous three years showed higher level of Innovation Behavior (M=4.18, SD=1.14) than the 116 hotels that offered training only to part of the employees (M=3.75, SD=1.11) and higher than the 35 establishments offering no training at all (M=3.04, SD=1.16) (Table 19).

Table 19. Hotel Personnel Training and Innovation Behavior

Type of training/ frequency	N	%	Innovation Behavior (Average)	Standard Deviation
Training during last 3 years				
No training	35	10.7	3.04	1.11
All Personnel received training	175	53.7	4.18	1.14
Part of Personnel received training	116	35.6	3.75	1.11
Total	326	100.0	3.90	1.18
Type of training				
Continuous training	144	44.2	4.31	1.03
Occasional training	175	53.7	3.59	1.18
No answer	7	2.1	3.27	1.59
Total	326	100.0	3.90	1.18

Spearman's rho correlation was calculated to assess the association between the ordinal variable Personnel Training (coded as: 0 - no training, 1 - part of personnel received training and 2 - all personnel received training) and continuous variable Innovation Behavior. A statistically significant (at the level .01) positive correlation was found between hotel Personnel Training and Innovation Behavior (r_s = .28, n = 326, p = .000).

The hotel managers were also asked about the way Personnel Training was organized in order to know if training of employees was continuous or occasional. Table 19 shows that 144 hotels that had a continuous training planned for their employees had a higher level of innovation activity (M=4.31, SD=1.03) than the 175 hotels with occasional training (M=3.59, SD= 1.18). Additionally, 7 hotels left this question unanswered (with innovation behavior M = 3.27, SD = 1.59). In order to carry out an independent samples t-test to compare Innovation Behavior in hotels with continuous and intermittent training, the necessary test assumptions were checked. The assumption of normal distribution of the dependent variable in both groups was not violated as assessed by Shapiro - Wilk test (p > 0.05). Scores of Innovation Behavior were statistically significantly different between hotels with continuous training plan (M = 4.31, SD = 1.03) and hotels with intermittent training (M = 3.59, SD = 1.18), t(316) = 5.77, p = .000, d = .65. Levene's test indicated unequal variances (F = 3.86, p = .05), so degrees of freedom were adjusted from 317 to 316.

Additionally, hotels were divided in 5 groups based on how many suggested human resources practices were included in their hotel HR strategy. The original question asked the managers to select all answers that were relevant, such as 1 - Ongoing training, 2 - Internal career possibilities, 3 - Reward system, 4 - Staff empowerment, 5 -None. For each hotel a total score was calculated by giving 1 point to each answer (except for "5- None"). Hotel HR Practices Score was compared to Innovation Behavior. Based on Table 20 we can see that the mean score of Innovation Behavior tended to rise with increase in the score of HR Practices.

Table 20. Frequency of Human Resources Practices and Innovation Behavior

HR Practices	N	%	Innovation Behavior	Standard Deviation
4 Practices	62	19.0	4.42	1.12
3 Practices	63	19.3	4.22	1.21
2 Practices	82	25.2	3.98	1.08
1 Practice	92	28.2	3.57	1.00
None	27	8.3	2.89	1.08
Total	326	100.0	3.90	1.18

Spearman's rho was calculated to assess the association between the ordinal variable Human Resource Practices and the continuous variable Innovation Behavior. A statistically significant (at the level .01) moderate positive correlation was found between hotel HR Practices and Innovation Behavior (r_s = .35, n = 326, p = .000).

4.5. INNOVATION ACTIVITY IN SMALL, MID-SIZED AND BIG PORTUGUESE HOTELS

With the aim to create a better understanding of innovation activity in the Portuguese hotel industry and to create a foundation for more in-depth future research and for practical knowledge. For the purpose of comparison, the hotel establishments were divided based on number of rooms into Small (up to 50 rooms), Midsize (between 51 - 150) and Big (more than 150 rooms). Half of the establishments, namely 165 hotels (52.1%) responding current questionnaire belonged to the group of Small establishments, followed by 107 Midsize hotels (32.8%) and 49 Big hotels (15.0%). Although the division between Small, Midsize and Big hotels is merely arbitrary, usually the hotels with up to 50 rooms are considered small.

When looking at the hotel establishments type (Table 21), then all three groups were dominated by Traditional Hotels. Small hotels comprised answers from 104 traditional hotels (61.2%), 15 rural hotels (8.8%), 9 holiday villas (*empreendimentos de turismo de habitação*; 5.3%) and 8 country houses in rural areas (*empreendimentos de turismo no espaço rural*; 4.7%), 7 country houses *(casas de campo*; 4.2%), 7 touristic holiday apartments (*apartamentos turísticos*; 4.1%), 6 establishments of rural tourism (*agro turismo*; 3.5%) and 6 aparthotels (3.5%) and 4 historic Inns (*pousada*; 2.4%). Additionally, there was 4 answers from small touristic holiday villages (*aldeamento turistico;* 2.4%). The responses of Midsize hotels came from 88 traditional hotels (82.2%), 11 aparthotels (10.3%), 3 Inns (*pousadas*; 2.8%), 3 touristic holiday apartments (*apartamentos turisticos*; 2.8%) and 2 touristic holiday villages (*aldeamento turistico;* 1.9%). The answers from the Big hotels were dominated by 38 traditional hotels (77.6%) and 8

107

aparthotels (16.3%) followed by 2 touristic holiday apartments (4.1%) and 1 holiday villa (*empreendimento de turismo de habitação*; 2%).

Table 21. Cross Tabulation of Hotel Size and Hotel Establishment Type

Hotel Type	Small	Midsize	Big
Hotel	104	88	38
Hoteis-Apartamento	6	11	8
Pousada	4	3	
Aldeamento Turistico	4	3	
Apartamento Turistico	7	2	2
Empreendimento de Turismo de Habitação	9		1
Empreendimento de Turismo no Espaço Rural - Casa de campo	8		
Agro Turismo	6		
Casa do Campo	7		
Hotel Rural	15		
Total	170	107	49

In order to have a better understanding of innovation activity and the factors impacting hotel innovation, in addition to hotel size, the other relevant innovation determinants (hotel stars, hotel chain belonging, personnel training) were observed. Based on Table 22 we can see that Big hotels were dominated by 4-star and 5-star hotels (respectively 59.2% and 22.4%), Midsize hotels were dominated by 4-star (58.9%) and 3-star (23.4%) hotels. The group of Small hotels was dominated by 3-star hotels (30.6%) and 4-star establishments (32.9%). Large majority of Small hotels, namely 146 units (85.9%) were independent hotels, and only 24 establishments (14.1%) belonged to a hotel chain or a larger group. Midsize hotels were divided between 46 independent establishments (43.0%) and 61 chain hotels (57.0%). Contrary to Small and Midsize hotels, the majority of Big hotels, namely 34 units (69.4%) belonged to hotel chain or bigger group, and only 15 units (30.6%) were independent hotels.

Table 22. Cross Tabulation of Hotel Size and Hotel Star Category

Hotel Size	*****	****	***	**	*	None	Total
Small Hotels	6	52	56	30	1	25	170
Midsize Hotels	8	63	25	8	1	2	107
Big Hotels	11	29	9				49
TOTAL	25	144	90	38	2	27	326

Since **personnel training** habits of a hotel proved to be also relevant to hotel innovation behavior, also this aspect was looked at in each hotel group. Among Small hotels, 30 establishments (17.6%) did not offer any training to its Personnel within the previous three years, whereas 88 establishments (51.8%) offered some training to all the Personnel and 52 units (30.6%) offered some training to part of the Personnel. Employee training was continuous in 88 Small units (51.8%) and intermittent in 52 Small establishments (30.6%), while 30 hotels (17.6%) left the question unanswered. Only 4.7 percent (5 units) of Midsize hotels did not provide any training within the three previous years, while all Personnel received some training in 59 establishments (55.1%) and part of the Personnel had training in 43 units (40.2%). Employee training was continuous in 59 Midsize hotels (55.1%) and intermittent in 43 Midsize establishments (40.2%), while 5 Midsize hotels (4.7%) left the question unanswered. All Big hotels offered within the previous three years training to its employees, respectively 28 establishments (57.1%) to all employees and 21 establishments (42.9%) to part of the employees. More than half of Big hotels (28 hotels, equal to 57.1%) carried out continuous training, while 21 Big hotels (42.9%) had intermittent training.

Although the previously conducted correlation analysis (see Chapter 5.4.1.) showed no significant relationship between hotel size and the level of innovativeness, for better understanding of the data, the average **level of Innovativeness** was calculated for each hotel group. The average score of innovativeness was for Small hotels M = 5.78 (SD = .998), for Midsize hotels M = 5.66 (SD = .97) and for Big hotels M = 5.76 (SD = .97).

Additionally, the mean score of **Innovation Behavior** was calculated for the Small, Midsize and Big hotels. Based on the Table 23, we can see that the Small hotels showed the lowest level of Innovation Behavior (M = 3.76, SD = 1.19) in current hotel sample. The level of Innovation Behavior was higher for hotels with 51 - 150 rooms (M = 4.03, SD = 1.20) and the highest for the Big hotels, with more than 150 rooms (M = 4.13, SD = 1.05).

Table 23. Hotel Innovation Behavior and Number of Rooms

Number of Rooms	N	%	Innovation Behavior (Mean)	Std. Deviation
≤ 50	170	52.1	3.76	1.19
51 - 150	107	32.8	4.03	1.20
> 150	49	15.0	4.13	1.05
Total	326	100.0	3.90	1.18

Additionally, a grand mean of degree of Innovativeness and Innovation Behavior was calculated for different types of hotel establishments with the objective to have a better overview of Portuguese hotel sector. The full table is presented in Appendix D. The bar chart of Figure 17 compares the level of innovativeness of all types of hotel establishments. Rural hotels (M = 5.93, SD = 1.01), holiday villas (*empreendimento de Turismo de habitação*; M = 5.92, SD = .98), hotels (M = 5.81, SD = .96) and rural tourism (*empreendimento de Turismo no espaço eural; M = 5.81, SD = .72*) were the four types with the highest degree of Innovativeness. Agro tourism (*agro turismo*) showed the lowest degree of Innovativeness (M = 5.08, SD = 1.74).
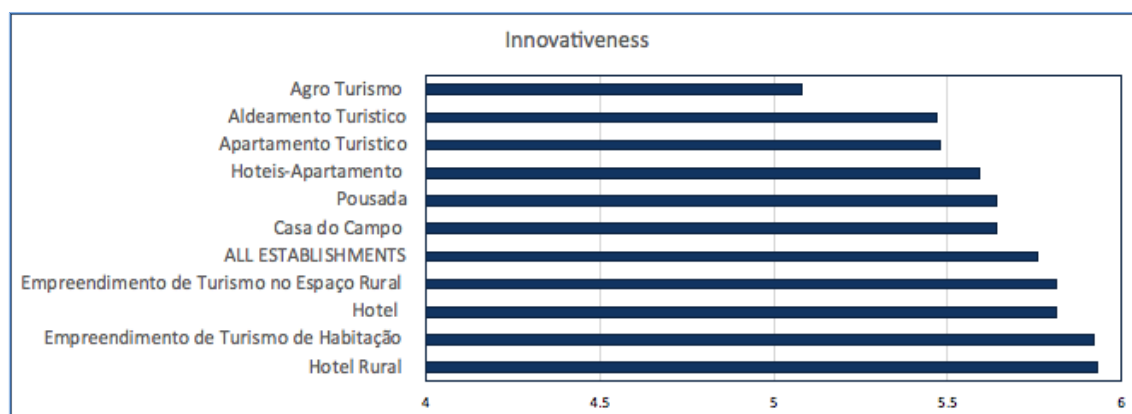
Figure 17. Hotel type and degree of Innovativeness

Additionally, bar chart in Figure 18 compares the level of innovation behavior of different types of hotel establishments. Holiday villas (*empreendimento de turismo de habitação*; M = 4.21, SD = 1.47), historic Inns (*Pousadas*; M = 4.19, SD = 1.19) and Hotels (M = 3.98, SD = 1.16) had the highest level of Innovation Behavior and

agro tourism (*agro turismo*; M = 3.36, SD = .95) and touristic holiday apartments (*apartamento turistico*; M = 3.16, SD = 1.23) had the lowest level of Innovation Behavior.
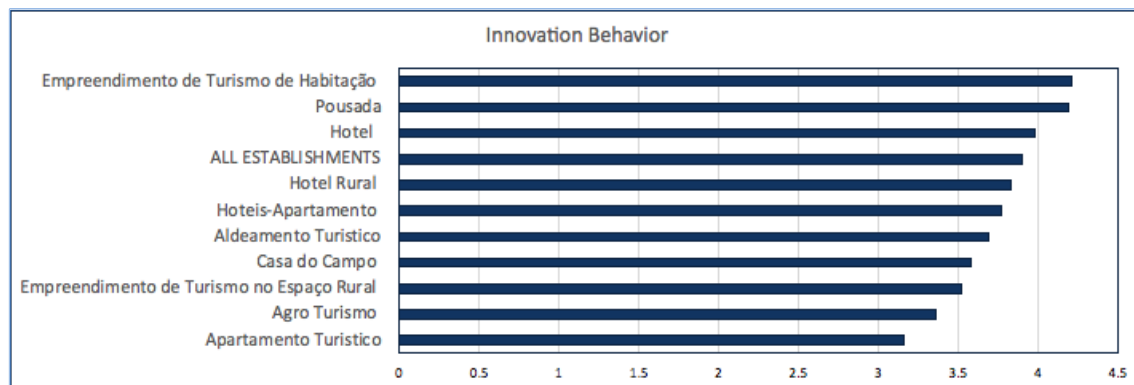
Figure 18. Hotel type and degree of Innovation Behavior

Hotel managers had to rate eleven different hotel areas regarding innovation activity of their hotel. As previously explained, hotels had to rate the innovation in these areas based on a 7 point scale (1 - no innovation, 2 - Slight changes to existing products/services, 3 - Slight changes to existing products/services, 4 - Substantial improvement of existing products/services, 5 - Substantial improvement and extension of existing products/services, 6 - Launch of products/services that are new to the hotel but already exist on the market, 7 - Launch of totally new products/services), resulting in calculating a grand mean score of Innovation Behavior for each hotel. Additionally, based on this scale it was possible to evaluate which areas are more popular for innovation in different types of hotels.

The Figure 19 gives a visual overview of different areas of innovation in Small, Midsize and Big Hotels. Additionally, a full table including hotel size groups, areas of innovation with means and standard deviation is included in Appendix E. The small hotels had the highest level of innovation behavior in "information and communication technology" (M = 4.27, SD = 1.49) and "marketing" (M = 4.25, SD = 1.75), followed by "maintenance and cleaning" (M = 4.05, SD = 1.51) and "wellness" (M = 4.04, SD = 1.60). Similarly to the Small hotels, also Midsize hotels had the highest level of innovation in "information and communication technology" (M = 4.54, SD = 1.51) and "marketing" (M = 4.53, SD = 1.68), followed by "quality

111

management" (M = 4.24, SD = 1.33). Big hotels showed highest innovation level in "gastronomy" (M = 4.76, SD = 1.39), followed by "information and communication technology" (M = 4.67, SD = 1.41) and "marketing" (M = 4.67, SD = 1.57). The area with least innovation was "animation and entertainment" in case of Small (M=3.02, SD = 1.80) and Midsize (M = 3.21, SD = 1.84) hotels, and "architecture and design" in case of Big hotels (M = 3.14, 1.76) For better understanding, the complete table is presented in Appendix E.
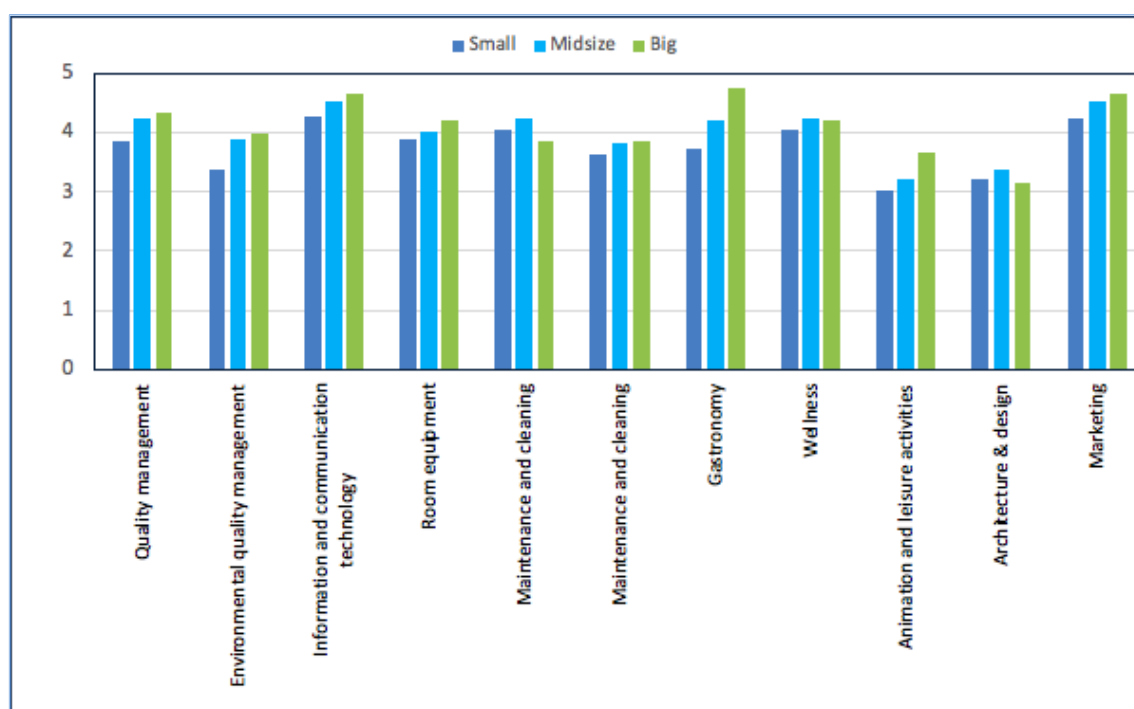
Figure 19. Innovation Behavior and areas of innovation in small, midsize and big hotels

The questionnaire presented to the respondents a list of objectives and obstacles related to innovation activity. The bar chart (Figure 20) is based on the following scale: 4 - high importance, 3 medium importance, 2 low importance and 1 factor not experienced. For the Small hotels, the highest rated **objectives fostering innovation activity** were "to improve quality" (M = 3.34, SD = .90), "to fulfil laws and regulations" (M = 3.26, S = .95), "differentiation from competitors" (M = 3.21, SD = .97) and "to reduce energy consumption" (M = 3.21, SD = .90). The least relevant objectives for Small hotels were related to reducing costs, namely "to reduce inputs buying" (M = 2.74, SD = .92) and "to reduce labour costs" (M = 2.83,

SD = .97). The Midsize hotels rated highest "to improve quality" (M = 3.47, SD = .72), "to reduce energy consumption" (M = 3.40, SD = .75), "to fulfil laws and regulations" (M = 3.32, SD = .77) and "to improve services flexibility" (M = 3.26, SD = .80). The least important objectives motivating innovation in Midsize hotels were related to "reducing labour costs" (M = 2.92, SD = .85) and "expanding the service" (M = 2.98, SD = .94). The Big hotels rated the highest objectives related to "improving quality "M = 3.61, SD = .70), "reducing energy consumption" (M = 3.51, SD = .68), "differentiation from competitors" (M = 3.37, SD = .83) and "improving services flexibility" (M = 3.35, SD = .78). The least relevant objectives fostering innovation in Big hotels were related to "reducing labour costs" (M = 3.00, SD = .79) and "reducing inputs buying" (M = 3.00, SD = .79). For better understanding, the full table was included in Appendix F.
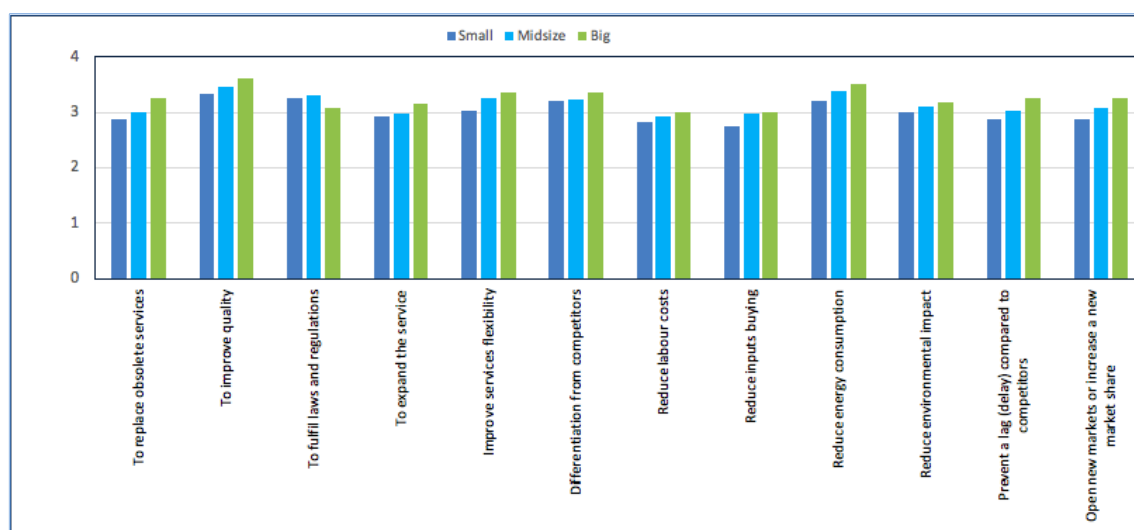
Figure 20. Objectives fostering innovation activity in small, midsize and big hotels

Besides gathering information regarding objectives fostering innovation activity in Portuguese hotels, the questionnaire also presented a list of **factors preventing innovation** or hampering innovation activity in hotels. The bar chart (Figure 21) is based on scale 4 - high importance, 3 medium importance, 2 low importance and 1 factor not experienced. The biggest obstacles or factors hampering innovation activities for Small hotels were **"high development cost"** (M = 2.75, SD = 1.06), **"laws and regulations"** (M = 2.67, SD = 1.02) and **"insufficient size"** (M = 2.60, SD =1.09). The least worrying obstacles were "insufficient institutions support" (M

= 2.28, SD = .96) and "easy imitation" (M = 2.25, SD = .95). Midsize hotels reported **"high development cost"** (M = 2.70, SD = 1.08), **"law and regulation"** (M = 2.51, SD = 1.01) and **"lack of qualified personnel"** (M = 2.44, SD = .95) as the obstacles with highest impact. "Easy imitation" (M = 2.08, SD = .93) was the least important obstacle for Midsize hotels. Big hotels reported **"high development cost"** (M = 2.96, SD = .93), **"lack of qualified personnel"** (M = 2.67, SD = .92) and **"law and regulation"** (M = 2.63, SD = 1.01) as the factors with highest impact on innovation. "Easy imitation" (M = 1.98, SD = .92) and "lack of Funding (M = 2.22, SD = 1.10) were the factors with least impact on Big hotels innovation activity. Full table included in Appendix G.
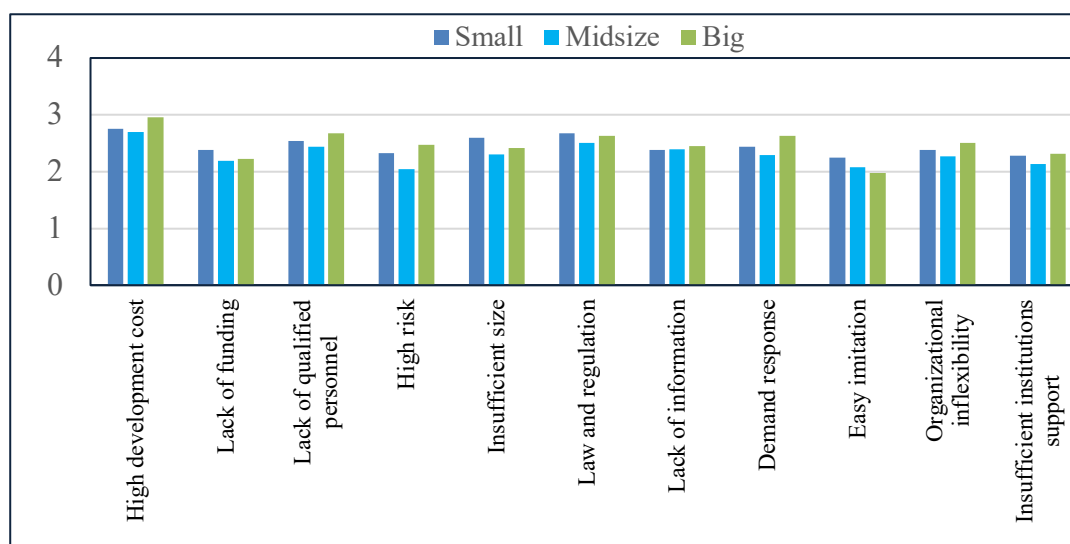
Figure 21. Objectives Fostering Innovation Activity in Small, Midsize and Big Hotels

4.6. HYPOTHESIS TESTING

4.6.1. Innovativeness and Innovation Behavior

Innovativeness measures an organization´s inclination towards innovative behavior, while innovation behavior is more a result-oriented measure (Leekpai and Jaroenwisan, 2013). Higher levels of innovativeness have been related to higher levels of innovation behavior in companies (Grissemann, Plank and Brunner-

Sperdin, 2013; Hurley and Hult, 1998). This thesis sought to confirm the existence of this relation also based on Portuguese hotels, thus proposing:

> Hypothesis 1: Innovativeness positively influences Innovation Behavior of hotels.

The values of Innovativeness were calculated based on the scale (Hurley and Hult, 1998) of managers´ opinions regarding innovation and new ideas in their hotel. Four items of original scale of 5 were considered for current analysis. Hotel Innovation Behavior was measured following the Grissemann, Plank and Brunner-Sperdin (2013) approach, asking hotels about any innovative changes implemented in 11 hotel-specific areas of work within previous three years. Although a Likert item is an ordinal variable, Likert scale is a score of Likert items, thus frequently treated as a continuous variable which is a common practice in current research field. In order to measure the relationship between innovation behavior and performance through parametric tests, the necessary **assumptions for linear relationship** were evaluated.

Firstly, a scatter plot was drawn to evaluate the **linearity of the relationship** between the independent variable Innovativeness (M = 5.76, SD = .97) and the dependent variable Innovation Behavior (M = 3.90, SD = 1.18). The scatter plot of the data (see Figure 22) showed an uphill pattern when moving from left to right-side, thus indicating an existence of possible weak positive linear relationship.
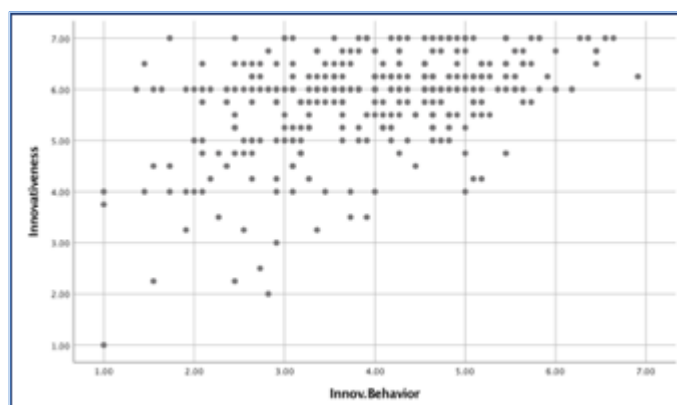
Figure 22. Scatterplot of Innovativeness and Innovation Behavior

There was no risk of autocorrelation since it was a cross-sectional study without any time sequence. Multicollinearity was also not a problem in simple linear regression with one independent variable. However, it was important to test the **normality** assumption. A histogram (Figure 23) and predicted probability plot (P-P Plot) of residuals (Figure 23) were obtained to evaluate the normal distribution of the residuals. The histogram showed the residuals have fairly normal distribution, following the bell curve. Additionally, the P-P Plot of standardized residuals showed data following the straight line, thus supporting the normal distribution assumption. The assumption of normality of residuals was also assessed by Shapiro-Wilk (S-W = .99, p = .27) test that did confirm existence of normal distribution of the residuals.
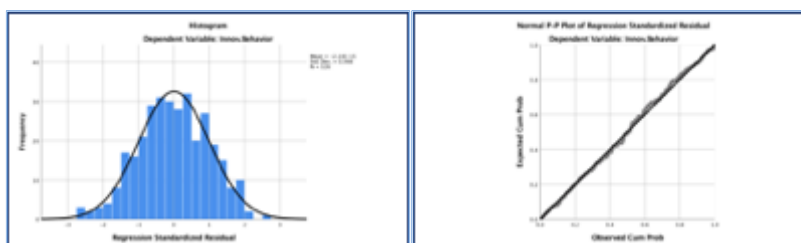
Figure 23. Histogram and normal P-Plot of regression standardized residuals of Innovativeness and Innovation Behavior

Additionally, the assumption of **homoscedasticity** was tested. Based on the scatterplot of standardized residuals (Figure 24) we can see the pattern not being fully random, thus requiring extra test to confirm homoscedasticity. The Breush-Pagan test with result 2.23 and p = 0.14, is above the critical threshold (0.05) thus assuming existence of homoscedasticity.
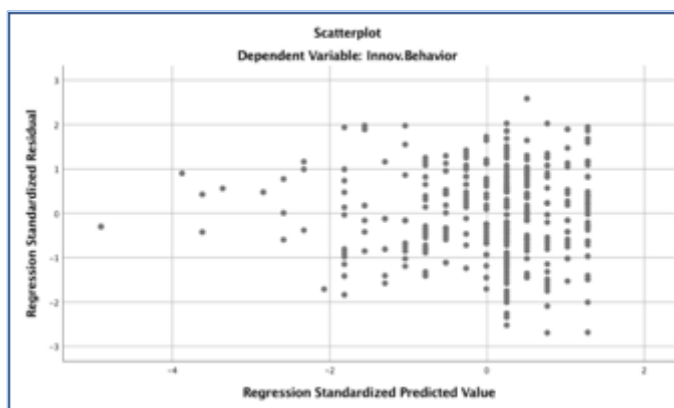
Figure 24. Scatter plot of regression standardized residuals (Innovativeness vs Innovation Behavior)

It was concluded that the data met linear regression assumptions, thus linear regression could be applied to evaluate the relationship between Innovativeness and Innovation Behavior. Also, Pearson correlation coefficient was calculated to evaluate the association between the two variables. Pearson correlation coefficient for Innovativeness and Innovation Behavior was .45, which was significant ($p <$ .001 for a two-tailed test), based on 326 complete observations.

Secondly, simple linear regression analysis was carried out to measure the impact of Innovativeness on Innovation Behavior (see Table 24 below for results). The value R^2 was 0.198 ($F(1/324)=80.13$, $p< 0.001$), meaning that innovativeness counted for 19.8% of the variation in innovation behavior of Portuguese hotels, and confirming the existence of a relationship between Innovativeness and Innovation Behavior (Hypothesis 1).

Table 24. Regression Model Summary

Model Summary (b)				
Model	R	R Square	Adjusted R Square	St. Error of the Estimate
1	0.445[a]	0.198	0.196	1.06006
a. Predictors: (Constant), Innovativeness				
b. Dependent variable: Innovation Behavior				

ANOVA was carried out to test if the model was significantly better for predicting outcome than using the means (see Table 25). The F-ratio 80.13 (p = .000) shows the model significantly improves our ability to predict the outcome variable compared to not fitting the model. Based on Coefficients Table (see table below) the regression equation could be presented as follows:

$$\text{Innovation Behavior} = .78 + (0.54 \times \text{Innovativeness})$$

Table 25. Regression Analysis ANOVA and Coefficients Table

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	90.043	1	90.043	80.129	.000b
Residual	364.087	324	1.124		
Total	454.129	325			

a. Dependent variable: Innovation Behavior
b. Predictors: (Constant), Innovativeness

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.777	.354		2.195	.029
	Innovativeness	.543	.061	.445	8.951	.000

a Dependent Variable: Innovation Behavior

4.6.1.1. Multiple Regression Analysis

Additionally, multiple regression analysis was carried out to measure the impact of Innovativeness together with the other relevant hotel innovation determinants. Multiple regression was applied with hierarchical blockwise entry, following the general rule of entering predictors known from previous research first into the model (Field, 2013). Based on theory, and previously found statistically significant positive associations between hotel Innovation Behavior and such innovation determinants like hotel star category, Hotel Size (based on number of rooms), Hotel Operating Mode (chain or independent) and Personnel Training, these variables were chosen as control variables to understand better the relationship between Innovativeness and Innovation Behavior.

In the first block of hierarchical regression, Hotel Star Category, Hotel Size, Hotel Chain and Hotel Personnel Training were inserted. Hotel Stars Category was coded

into 0 - low stars (1, 2, 3 stars and no-star hotels) and 1- high stars (4 and 5 star hotels). Hotel Size in number of rooms was coded into 2 categories (0 - up to 50 rooms, 1 - above 50 rooms). Hotel Chain variable was coded into two: 0 - independent hotels and 1 - hotels part of hotel chain or diversified business. Hotel Personnel Training was coded as follows: 0 - no training within last 3 years and 1 - training to all or part of Personnel within last 3 years.

Multiple linear regression was conducted, and the necessary assumptions were checked to have a valid result. Firstly, multicollinearity assumption was checked by using Tolerance and Variance Inflation Factor. Tests to see if the data met the assumption of collinearity (VIF values below 10) indicated that multicollinearity was not a concern (Hotel Chain, Tolerance = .74, VIF = 1.36; Personnel Training, Tolerance = .90, VIF = 1.11; Hotel Size, Tolerance = .71, VIF = 1.42; Hotel Stars, Tolerance = .81, VIF = 1.23; Innovativeness, Tolerance = .71, VIF = 1.42).

Secondly, the Model Summary table was analyzed to see the results of the two different models (Table 26). The adjusted R^2 for the first model, including only the previously known independent variables, such as Hotel Stars, Personnel Training, Hotel Chain and Hotel Size showed a positive weak relationship with value of .095. The second model, adding to the initial variables also Innovativeness, increased the adjusted R^2 value to .246. Hotel Size, Personnel Training, Hotel Chain and Hotel Stars accounted for 9.5% of change in hotel Innovation Behavior. Hotel Size, Personnel Training, Hotel Chain and Hotel Stars together with Innovativeness predict 24.6% of the change in hotel Innovation Behavior.

Table 26. Multiple Regression Analysis Model Summary

Model Summary (c)					
Model	R	R Square	Adjusted R Square	St. Error of the Estimate	Durbin-Watson
1	0.326[a]	0.106	0.095	1.12	
2	0.507[b]	0.258	0.246	1.03	1.994
a. Predictors: (Constant), Hotel Size, Personnel Training, Hotel Chain,					
b. Predictors: (Constant), Hotel Size, Personnel Training, Hotel Chain, Hotel Stars, Innovativeness					
c. Dependent Variable: Innovation Behavior					

Independence of observations was likely not in risk due to cross sectional nature of the study, without time sequences, however this was also confirmed by the Durbin-Watson statistic value 1.99. An ANOVA test (Table 27) confirmed that both models significantly improved the ability to predict outcome variable. For the initial model the F- ratio is 9.52 (p < .001) and for the second completed model F-ratio is 22.17, statistically significant (p < .001).

Table 27. Multiple regression ANOVA table

ANOVA [a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	48.16	4	12.04	9.52	0.000[b]
Residual	405.97	321	1.27		
Total	454.13	325			
2 Regression	116.95	5	23.39	22.20	0.000[c]
Residual	337.18	320	1.05		
Total	454.13	325			
a. Dependent variable: Innovation Behavior					
a. Predictors: (Constant), Hotel Size, Personnel Training, Hotel Chain, Hotel Stars					
a. Predictors: (Constant), Hotel Sizer, Personnel Training, Hotel Chain, Hotel Stars, Innovativeness					

Additionally, the model parameters were evaluated based on the table of Coefficients of the Regression Model. Based on the significance level of t-values, it was concluded that only Personnel Training (t(320) = 2.71, p = .007) and Innovativeness (t(320) = 8.08, p = .000) were making significant contribution to the model with p-values below .05. The predictors Hotel Size (t(320) = .34 p = .74), Hotel Chain (t(320) = 1.87, p = .06) and Hotel Stars (t(320) = 1.85, p = .07) had p values > .05 thus showing no significant contribution. It was decided to re-run the model with only 2 predictors.

Multiple regression with hierarchical blockwise entry was rerun with Personnel Training inserted in the first block, and Innovativeness inserted to the second block. When comparing the regression models (Table 28) it was concluded that while hotel Personnel Training accounted for 6.1% of change in Innovation Behavior, then together with Innovativeness, the model accounted for 22.2% of change.

Table 28. Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	St. Error of the Estimate	Durbin-Watson
Model Summary [c]					
1	.253[a]	.064	.061	1.15	
2	.476[b]	.227	.222	1.04	1.972
a. Predictors: (Constant), Personnel Training,					
b. Predictors: (Constant), Personnel Training, Innovativeness					
c. Dependent Variable: Innovation Behavior					

ANOVA test (Table 29) confirmed that both models significantly improved the ability to predict outcome variable. For the initial model the F- ratio is 22.20, p < .001 and for the second completed model F-ratio is 47.44 and also highly statistically significant (p < .001). Additionally, the model parameters were evaluated based on the coefficients of regression model. Based on the significance level of t-values, it was concluded that both predictors Personnel Training (t(323) = 3.47, p = .001) and Innovativeness (t(323) = 8.25, p = .000) showed significant t-values with p < .05 thus both making a significant contribution to the model. Based on VIF values well below 10 and tolerance values (Personnel Training VIF = 1.04, tolerance value .96 and Innovativeness VIF = 1.04, tolerance value .96) it was also concluded that no collinearity existed in the data.

Table 29. Multiple Regression ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
ANOVA [a]					
1 Regression	29.12	1	29.13	22.20	0.000[b]
Residual	425.01	324	1.31		
Total	454.13	325			
2 Regression	103.10	2	51.55	47.44	0.000[c]
Residual	351.03	323	1.09		
Total	454.13	325			
a. Dependent variable: Innovation Behavior					
a. Predictors: (Constant), Personnel Training					
a. Predictors: (Constant), Personnel Training, Innovativeness					

Like previously stated, there was no risk of autocorrelation since it was a cross-sectional study without any time sequence (also confirmed by Durbin-Watson statistic value 2.0). The normality of residuals was evaluated based on histogram and P-P plot of residuals (Figure 25) which both showed normal distribution. The histogram was symmetrical and approximately bell shaped. The P-P plot of current model showed mild deviations from the diagonal line, but since the dots were almost along the line, normality could be assumed. Additionally, Shapiro-Wilk test (S-W = .99, p = .13, thus p > .5) confirmed the normal distribution of residual. The initial visual observation of scatter plot enabled to conclude existence of homoscedasticity. The Breush-Pagan test with result 2.77 and p = 0.25 has the p value above the critical threshold (0.05) thus confirming the existence of homoscedasticity.
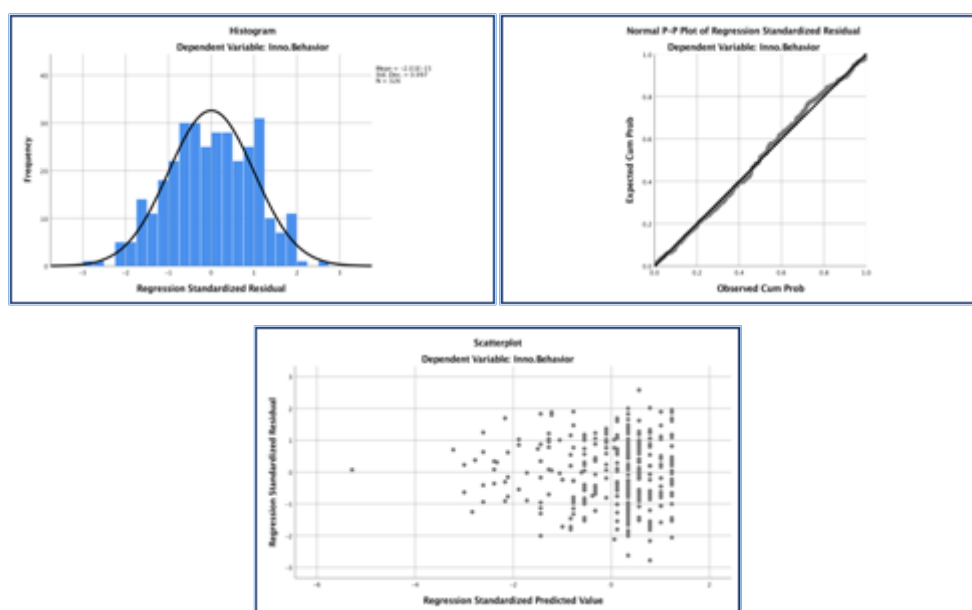
Figure 25. Histogram, P-P Plot of residuals and scatter plot of multiple regression analysis

Based on regression analysis, regarding the first hypothesis of the thesis, it can be said that a positive relationship exists between hotel Innovativeness and Innovation Behavior. Additionally, multiple regression analysis with innovativeness and other relevant hotel innovation determinants such as hotel size, hotel chain belonging, hotel stars and personnel training was conducted, suggesting that personnel training

was the most relevant hotel innovation determinant co-impacting innovation behavior together with innovativeness.

4.6.2. Innovation Behavior and Performance

Higher levels of performance can be achieved through competitive advantage based on greater innovation capacity (Hult et al., 2004). The assumption of an existing positive relationship between innovation behavior and hotel´s performance has been supported by several scholars, whereas performance has been in these studies measured in various ways, including increase in occupancy rate (Orfila-Sintes et al. 2005; Orfila-Sintes and Mattsson, 2009; Pivčević and Petrić, 2011); profit goal achievement, sales goal achievement and ROI (Tajeddini, 2010), customer satisfaction and reputation (Grissemann, Plank and Brunner-Sperdin, 2013). Based on previous literature, the following was proposed:

Hypothesis 2: Innovation Behavior positively influences hotel performance.

Innovation Behavior and Performance were both measured through a Likert scale, which items were summed to obtain a mean score for each hotel. Innovation Behavior scale contained 11 innovation areas that were rated based on 7-point Likert-scale. Performance was measured through a scale of 8 items, with 7-point Likert scale answers. The Performance scale was divided between Financial Performance (4 items) and Nonfinancial Performance (4 items). In order to test the hypothesis through regression analysis Innovation Behavior and Performance, being summed scores of Likert items, were treated as continuous variables. Before conducting regression analyses, the necessary **assumptions for linear relationship** were evaluated. Firstly, a scatter plot was drawn to evaluate the **linearity of the relationship** between the independent variable - Innovation Behavior and the dependent variable - Performance. The scatter plot (see Figure 26) showed an uphill pattern when moving from left to right-side, thus suggesting possible existence of a positive relationship between these two variables.
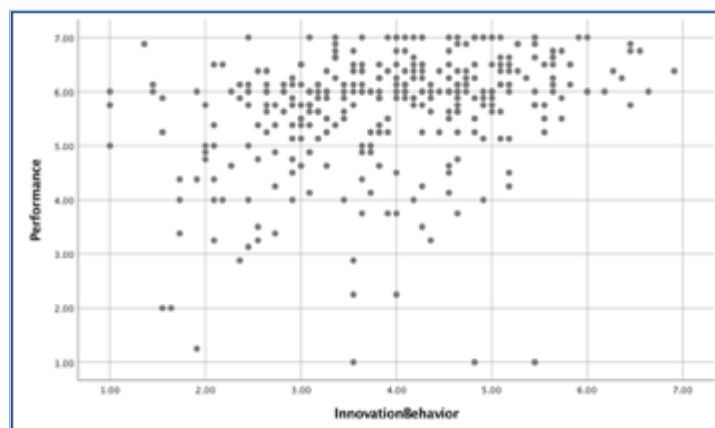
Figure 26. Scatterplot of Innovation Behavior and Performance

Secondly, normality and homoscedasticity of residuals were evaluated based on Histogram, P-P plot and Scatter plot (presented in Appendix I). Since visual observation was not conclusive, normality tests and homoscedasticity test were conducted. The normality tests Shapiro - Wilk (S-W = 0.86, p = .000), confirmed non-normal distribution of standardized residuals. The Breush-Pagan test with result 8.07 and p = 0.005, was below the critical threshold (p < 0.05) thus heteroskedasticity was assumed. Additionally, the 14 outliers previously detected through box plot (see Chapter 5.2.4), were removed and the regression assumptions were re-tested. Removing outliers did not change the outcome of normality and homoscedasticity test.

In order to be able to test also the second hypothesis through regression analysis, the variable Performance was transformed. Log transformation and square root transformation were not suitable for the data; therefore, the two-step approach was conducted following Templeton (2011). According to Templeton (2011) the Two-Step approach can improve kurtosis, skewness and overall normality in many situations. In the first step, the original variable is transformed toward uniformity by calculating the percentile (or fractional) rank of each score and in the second step the uniform probabilities are transformed to normal using the inverse normal distribution function (Templeton, 2011).

The two-step approach was applied to the dependent variable Performance, which had originally a skewness of -1.75 (SE = 0.14) and kurtosis of 3.93 (SE = 0.27) and

non-normal distribution (see Chapter 5.2.4). After applying the two-step transformation, the skewness was -.08 (SE = .14) and kurtosis was - .38 (SE = .27). Based on visual observation of histogram (see Appendix I) improved normality of Performance variable was confirmed and the regression analysis was rerun and the assumptions of regression analysis were re-tested.

After carrying out linear regression analysis in SPSS, the **normality** assumption was tested, thus a histogram and predicted probability plot (P-P Plot) of residuals (Figure 27) were obtained to evaluate the normal distribution of the residuals. The histogram showed that the residuals had a fairly normal distribution, following the bell curve. Additionally, the P-P Plot of standardized residuals showed data following a straight line, thus supporting the normal distribution assumption. The assumption of normality of residuals was also assessed by Shapiro-Wilk (S-W = .996, p = .63) test that confirmed the normal distribution of the residuals.
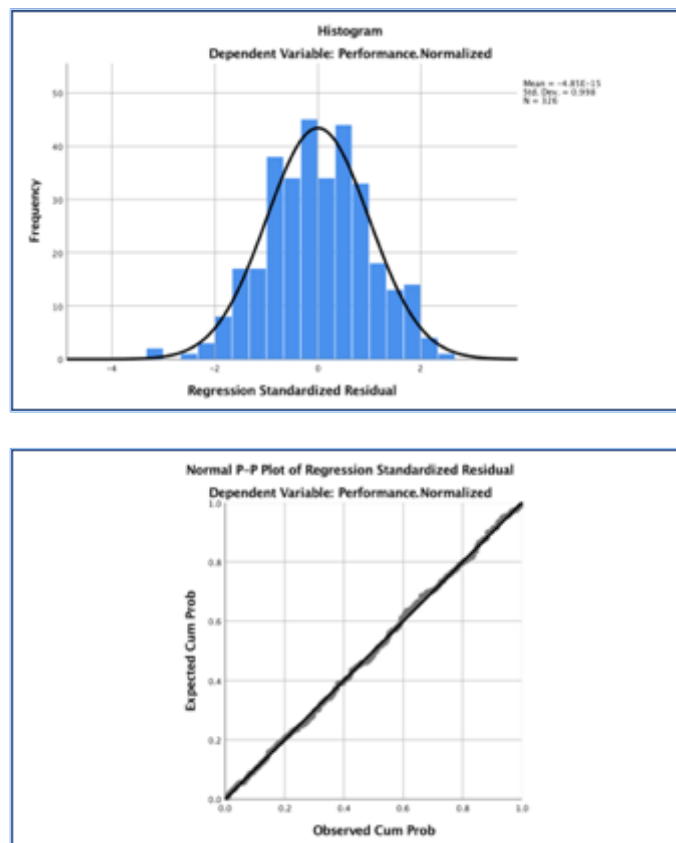
Figure 27. Histogram and normal P-Plot of regression standardized residuals of Innovation Behavior and Performance

Additionally, the assumption of **homoscedasticity** was tested. Based on the scatter plot of standardized residuals (Figure 28) it was noticed the pattern not being fully random, thus requiring extra test to confirm homoscedasticity. The Breush-Pagan test with result .000 and p = 0.99, was above the critical threshold (0.05) thus confirming existence of homoscedasticity. Autocorrelation was not a concern since it was a cross-sectional study without any time sequence and also multicollinearity was also not a problem since the linear regression had only one independent variable.
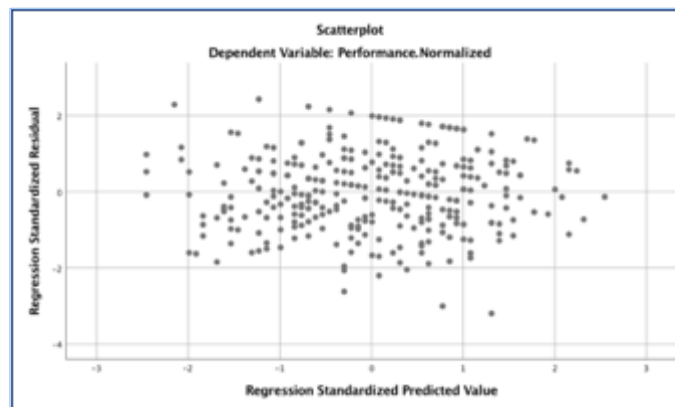
Figure 28. Scatter plot of regression standardized residuals (Innovation Behavior and Performance)

Based on previously conducted tests, it was concluded that the data does not violate the assumptions of linear regression, thus linear regression can be applied to evaluate the relationship between Innovation Behavior and normalized Performance. Firstly, Pearson correlation coefficient was calculated to evaluate the association between the two variables. Pearson correlation coefficient for Innovation Behavior and normalized Performance was .34, which was significant ($p < .001$ for a two-tailed test), based on 326 complete observations.

Secondly, simple linear regression analysis was carried out to measure the impact of Innovation Behavior on Performance (see Table 30 below for results). The value R^2 was 0.113 ($F(1/324) = 41.41$, $p < 0.001$), meaning that Innovation Behavior accounted for 11.3% of the variation in normalized unit of Performance. Based on empirical evidence it was found that the level of hotel Innovation Behavior positively influenced the Performance of hotels (Hypothesis 2).

Table 30. Regression Model Summary

Model	R	R Square	Adjusted R Square	St. Error of the Estimate
1	0.337[a]	0.113	0.111	1.003
a. Predictors: (Constant), Innovation Behavior				
b. Dependent variable: Performance_Normalized				

ANOVA was carried out to test if the model was significantly better for predicting outcome than using the means (see Table 31). The F-ratio 41.41 (p = .000) showed that the model significantly improved our ability to predict the outcome variable. Based on Coefficients Table (see table below) the regression equation could be presented as follows:

Performance (normalized unit) = 4.50 + (0.30 x Innovation Behavior)

Table 31. Regression ANOVA and Coefficients Table

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	41.65	1	41.65	41.41	0.000[b]
Residual	325.89	324	1.01		
Total	367.54	325			
a. Dependent variable: Performance_Transformed b. Predictors: (Constant), Innovation Behavior					

Coefficients (a)						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.499	.192		23.442	.000
	InnovationBehavior	.303	.047	.337	6.435	.000
a Dependent Variable: Performance.Transformed						

4.6.2.1. Financial and Nonfinancial Performance

Additionally, the two-step transformation was conducted separately for Financial Performance and for Non-Financial Performance with objective to evaluate the impact of Innovation Behavior on different aspects of Performance. The

assumptions of regression analysis were tested, and simple regression analysis was conducted. As earlier explained, autocorrelation and multicollinearity were not relevant concerns also in these two regression models. Normality assumption was confirmed by visual observation of histogram (Appendix J) and Shapiro-Wilk test (S-W = .99, SD = .055). Based on visual observations of the scatter plot of regression residuals (Appendix I) and the Breush-Pagan test with result .02 and p = 0.88 (p above the critical threshold of 0.05) the assumption of homoscedasticity was also confirmed.

Before regression analysis, also Pearson correlation was conducted to evaluate the association between Innovation Behavior and Financial Performance. A statistically significant positive moderate correlation was found (Pearson´s r = .25, p = .000). The value R^2 was 0.064 (F(1/324) = 22.33, p< 0.001), meaning that Innovation Behavior accounted for 6.4% of the variation in normalized unit of Financial Performance (see Table 32)

Table 32. Regression Model Summary

Model[b]	R	R Square	Adjusted R Square	St. Error of the Estimate
1	0.254[a]	0.064	0.062	1.25
a. Predictors: (Constant), Innovation Behavior b. Dependent variable: Financial.Performance_Transformed				

ANOVA was carried out to test if the model was significantly better for predicting outcome than using the means (see Table 33). The F-ratio 22.33 (p = .000) showed the model significantly improved our ability to predict the outcome variable. Based on Coefficients Table (see Table 33 below) the regression equation could be presented as follows:

Financial Performance (normalized unit) = 4.36 + (0.28 x Innovation Behavior)

Table 33. ANOVA and Regression Coefficients

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	35.050	1	35.050	22.330	.000b
Residual	508.560	324	1.570		
Total	543.611	325			

a. Dependent variable: Financial.Performance.Transformed
b. Predictors: (Constant), Innovation Behavior

Coefficients (a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.361	.240		18.192	.000
InnovationBehavior	.278	.059	2.54	4.725	.000

a Dependent Variable: Financial.Performance.Transformed

Similarly to Financial Performance, also the assumptions of regression analysis were tested and simple regression analysis was conducted to assess the relationship between Innovation Behavior and Nonfinancial Performance. As previously explained, autocorrelation and multicollinearity were also not relevant concerns in this regression model. Normality assumption was met by visual observation of histogram (Appendix J) and Shapiro-Wilk test (S-W = .99, p = .06). Based on scatter plot of regression residuals (Appendix J) and the Breush-Pagan test with result .60 and p = 0.44 (thus p above the critical threshold of 0.05) also the assumption of homoscedasticity was confirmed.

Firstly, Pearson correlation was run to evaluate the association between Innovation Behavior and Nonfinancial Performance. A statistically significant positive correlation was found (Pearson´s r = .36 p = .000). As shown in model summary (Table 34), the regression analysis R^2 value was 0.131 (F(1/324) = 48.93, p< 0.001), meaning that Innovation Behavior accounted for 13.1% of the variation in normalized unit of Nonfinancial Performance.

Table 34. Regression Model Summary

Model[b]	R	R Square	Adjusted R Square	St. Error of the Estimate
1	0.362[a]	0.131	0.129	.9244

a. Predictors: (Constant), Innovation Behavior b. Dependent variable: Nonfinancial.Performance Transformed

ANOVA was carried out to test if the model was significantly better for predicting outcome than using the means (see Table 35). The F-ratio 38.77 (p = .000) showed the model significantly improved our ability to predict the outcome variable. Based on Coefficients Table (see Table 35 below) the regression equation could be presented as follows:

Nonfinancial Performance (normalized unit) = 4.71 + (0.3 x Innovation Behavior)

Table 35. ANOVA and Regression Coefficients

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	41.811	1	41.811	48.932	.000[b]
Residual	276.846	324	.854		
Total	318.657	325			

a. Dependent variable: Nonfinancial.Performance.Transformed
b. Predictors: (Constant), Innovation Behavior

Coefficients (a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.714	.177		26.646	.000
InnovationBehavior	.303	.043	.362	6.995	.000

a Dependent Variable: Financial.Performance.Transformed

Additionally, multiple regression analysis was carried out to evaluate the possible impact of hotel specific characteristics (Hotel Size, Hotel Chain, Hotel Stars) and level of Innovativeness on the relation between Innovation Behavior and Performance. Multiple regression was applied with hierarchical blockwise entry. In the first block of hierarchical regression, Hotel Star Category, Hotel Size, Hotel Chain and level of Innovativeness were inserted. Hotel Stars Category was coded into 0 - low stars (1-, 2-, 3- stars and no-star hotels) and 1- high stars (4- and 5-star hotels). Hotel Size in number of rooms was coded into 2 categories (0 - up to 50 rooms, 1 - above 50 rooms). Hotel Chain variable was coded into two: 0 - independent hotels and 1 - hotels part of hotel chain or diversified business. Hotel Innovativeness was inserted as continuous variable.

4.6.2.2. Multiple Regression Analysis

Multiple linear regression was conducted, and the necessary assumptions were checked to guarantee a valid result. Firstly, multicollinearity assumption was checked by using Tolerance and Variance Inflation Factor. Tests to see if the data met the assumption of collinearity (VIF values below 10) indicated that multicollinearity was not a concern (Hotel Chain, Tolerance = .72, VIF = 1.39; Hotel Size, Tolerance = .71, VIF = 1.41; Hotel Stars, Tolerance = .81, VIF = 1.24; Innovativeness, Tolerance = .79, VIF = 1.32) and Innovation Behavior, Tolerance = .76, VIF = 1.32). Independence of observations was likely not in risk due to cross sectional study without time sequence (confirmed also by Durbin-Watson statistic value 2.16). ANOVA test confirmed that both models significantly improved the ability to predict outcome variable. For the initial model the F- ratio is 18.08 (p < .001) and for the second completed model F-ratio is 16.57, statistically significant (p < .001).

Additionally, the model parameters were evaluated based on the table of Coefficients of the Regression Model. Based on the significance level of t-values, it was concluded that only Innovativeness ($t(320) = 4.88$, p = .000) and Innovation Behavior ($t(320) = 2.96$, p = .003) were making significant contribution to the model with p values below .05. The predictors Hotel Size ($t(320) = 1.16$, p = .25), Hotel Chain ($t(320) = 1.89$, p = .06) and Hotel Stars ($t(320) = 1.27$, p = .20) had p levels > .05 thus showing no significant contribution. It was decided to re-run the model with only 2 predictors.

Multiple regression with hierarchical blockwise entry was rerun with Innovativeness inserted in the first block, and Innovation Behavior inserted to the second block. The results of regression analysis (Table 33) showed that while hotel Innovativeness accounted for 13.1% of change in normalized unit of Performance, then together with Innovativeness, the model accounts for 16.9% of change.

Table 36. Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	St. Error of the Estimate	Durbin-Watson
1	.362[a]	.131	.128	.99	
2	.412[b]	.169	.164	.97	2.11
a. Predictors: (Constant), Innovativeness					
b. Predictors: (Constant), Innovativeness, Innovation Behavior					
c. Dependent Variable: Performance_Transformed					

ANOVA test confirmed that both models significantly improved the ability to predict outcome variable. For the initial model the F- ratio is 48.82, p < .001 and for the second completed model F-ratio is 32.93 and also highly statistically significant (p < .001). Additionally, the model parameters were evaluated based on the coefficients of regression model. Based on the significance level of t-values, it was concluded that both predictors Innovation Behavior (t(323) = 3.87, p = .000) and Innovativeness (t(323) = 4.67, p = .000) showed significant t- values with p < .05 thus both making a significant contribution to the model. Based on VIF values well below 10 and Tolerance (Innovation Behavior Tolerance .80, VIF = 1.25 and Innovativeness Tolerance .80, VIF = 1.25) it was also concluded that no collinearity existed in the data.

Independence of observations was not considered as an issue due to cross sectional nature of the study without time sequence (also confirmed by Durbin-Watson statistic value 2.11). The normality of residuals was evaluated based on histogram and P-P plot of residuals (Figure 29) which both showed normal distribution. The histogram was symmetrical and approximately bell shaped. The P-P plot of current model showed mild deviations from the diagonal line, but since the dots were almost along the line it indicated normality. Additionally, Shapiro-Wilk test was conducted, with results (S-W = .996, p = .48) confirming the normal distribution of residual as p > .05. The initial visual observation of scatter plot was inconclusive regarding existence of homoscedasticity. The Breush-Pagan test with result 2.03 and p = .36 has the p value above the critical threshold (0.05) thus confirming the existence of homoscedasticity.
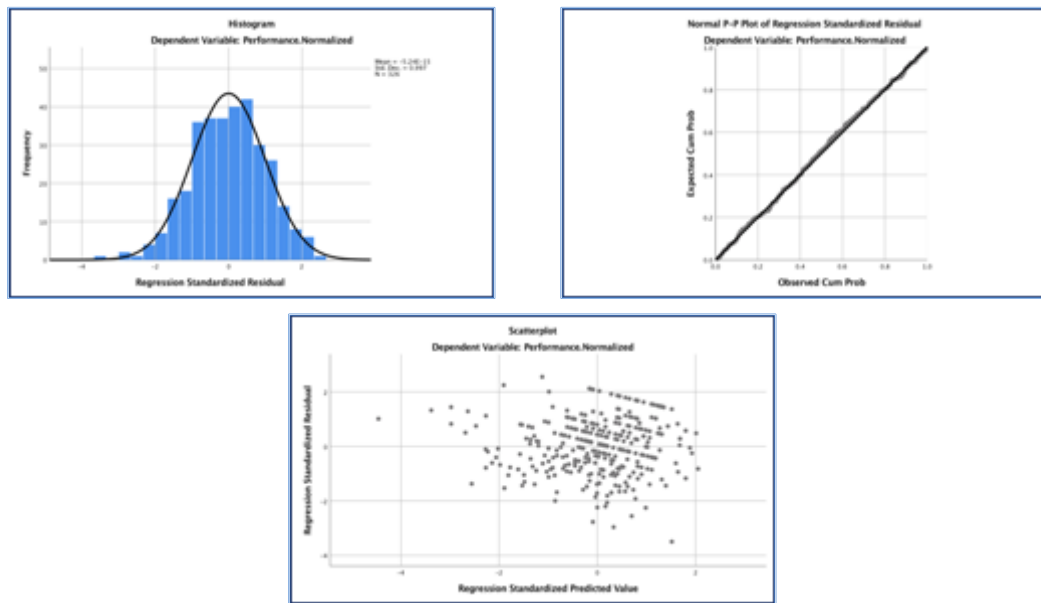
Figure 29. Histogram, P-P Plot of residuals and scatter plot of multiple regression analysis

4.7. SUMMARY

The Data Analysis chapter provided a comprehensive overview of demographic and organizational characteristics of current hotel sample. The descriptive statistics provided through frequency analysis a thorough overview of data. Correlation and t-tests were conducted to assess associations between different variables and to compare groups. The reliability and validity of scales was evaluated through Cronbach´s α, Construct Reliability and Average Variance Extracted. The two main hypotheses were tested through regression analysis.

Based on frequency analysis, which included measures of central tendencies, measures of dispersion and percentile values, a proper understanding of the data and the characteristics of the sample were built. To sum up some most important aspects, it was concluded that majority of hotels in current sample were Independent Hotels (67%), majority belonged to Portuguese owners (87%) and most of the establishments were managed by the owner company (82%). Current sample was dominated by smaller units, namely 51% of establishments had up to 100 beds.

More than half (52%) of respondents were from 4- and 5-star establishments. Also, among others, aspects like hotel facilities, customers, employment and training were discussed. Following CIS (Community Innovation Survey), the hotels were additionally asked to rate objectives fostering and factors hampering innovation activities and provide information regarding innovation cooperation.

The three main constructs - Innovativeness, Innovation Behavior and Performance - were discussed. A grand mean score of Innovation Behavior was calculated based on hotels evaluating the intensity (on scale from 1 to 7, while 1 = no innovation and 7 = launch of totally new products/services) of innovation activities in 11 hotel-related areas. Innovativeness and Performance were measured through previously validated scales. Reliability and validity of scales was successfully tested. Additionally, the relationship between innovation determinants (such as hotel size, hotel age, hotel star category, hotel mode of business operation and personnel training) and Innovation Behavior was studied through correlation analysis or by applying t-test or one-way ANOVA to compare groups when suitable. A positive association was found between Innovation Behavior and the following determinants: hotel size, hotel category, hotel chain belonging and personnel training.

Before hypothesis testing, current sample was divided into Small (up to 50 rooms) Midsize (51-150 rooms) and Big (more than 150 rooms) hotels with objective to analyze and understand better the peculiarities, characteristics and innovation activity in different sized Portuguese hotels. Although Hotel Size had a positive relation with the level of Hotel Innovation Behavior, no big differences were noticed in innovation activity between Small, Midsize and Big hotels.

The Data Analysis chapter ended with Hypothesis testing. The first hypothesis "Innovativeness of hotels has a positive effect on Innovation Behavior of hotels" was confirmed through regression analysis (R^2 was 0.198 ($F(1/324)=80.13$, $p< 0.001$)). Also the second hypothesis "Innovation Behavior of hotels has a positive effect on hotel performance" was confirmed through regression analysis (R^2 was 0.113 ($F(1/324) = 41.41$, $p < 0.001$)). Additionally, it was found that Personnel

Training was the most relevant hotel innovation determinant impacting the effect the level of Innovativeness has on hotel Innovation Behavior. It was also confirmed that Innovativeness impacted the effect Innovation Behavior has on hotel Performance. Additionally, it was found that Innovation Behavior had a bigger impact on hotel Nonfinancial Performance than on Financial Performance.

V. DISCUSSION AND CONCLUSION

5.1. INTRODUCTION

The main goal of the thesis was to study innovation activity of hotels based on empirical evidence from Portuguese hotel industry. The research aimed to investigate what were the main determinants of innovation activity and what type of innovation was common in Portuguese hotels. Additionally, the objective of current thesis was to measure the degree of innovativeness and innovation behavior and assess the impact of innovativeness on innovation behavior and the impact of innovation behavior on performance.

The research combined different theoretical approaches (Grissemann, Plank and Brunner-Sperdin, 2013; Grissemann, Pikkemaat and Weger, 2013; Orfila-Sintes et al.2005, Orfila-Sintes and Mattsson, 2009) with empirical evidence from Portuguese hotel industry. A total of 326 questionnaire answers were obtained, resulting in a comprehensive overview of Portuguese hotel industry.

Current chapter will firstly present the main findings of current thesis and thereafter each research question will be discussed. The findings and discussion section will be followed by theoretical and managerial implications. Before the final conclusion, also the main limitations and suggestions for future research are discussed.

The main findings were the following:

1. Hotel innovation determinants: bigger hotels, hotels belonging to a chain, hotels with higher star category and hotels with more personnel training had a higher level of Innovation Behavior thus Hotel Size, Star Category, Hotel Chain and Personnel Training were considered as relevant hotel innovation antecedents.

2. Nearly all the hotels carried out innovation activity within the previous three years, however the overall level of innovation behavior was moderate (M = 3,90 of 7.00, SD = 1.18), dominated by incremental innovations. The three dominating areas of innovation were Communication Technology (M=4.42, SD=1.49), Marketing (M=4.40, SD=1.70) and Wellness (M=4.13, SD=1.63), followed closely by Maintenance and Cleaning (M=4.09, SD=1.44).

3. The level of innovativeness of Portuguese hotels was high (M = 5.76 of 7.00, SD = 0.97). The level of Innovativeness had a statistically significant positive impact on innovation behavior (R^2 was 0.198, $F(1/324)=80.13$, $p < 0.001$). Hotel Innovativeness level together with Personnel Training accounted for bigger variation in hotel Innovation Behavior.

4. The level of Innovation Behavior impacted hotel performance (R^2 was 0.113, $F(1/324) = 41.41$, $p < 0.001$). Hotel Innovation Behavior together with Innovativeness accounted for bigger variance in hotel Performance. Innovation Behavior had a stronger impact on hotel Nonfinancial Performance than on Financial Performance.

5.2. FINDINGS AND DISCUSSION

As previously stated, the main objective of current thesis was to investigate innovation activity of hotels and to add empirical evidence to the literature on innovation based on empirical evidence from Portuguese hotel industry. The objective of this thesis was met by seeking answers to the following questions:

1) What are the determinants of innovation activity in hotel industry?

2) What types and areas of innovation are common in Portuguese hotels?

3) What is the level of innovation behavior in Portuguese hotels?

4) What is the level of innovativeness of Portuguese hotels, and how does the level of innovativeness influence innovation behavior?

5) How does innovation behavior influence hotel´s performance?

Additionally, current paper also aimed to compare the innovation activity of small, midsize and big hotels, attempting to provide a groundwork for benchmarking of innovation activities for Portuguese tourist establishments. The following section of Findings and Discussion is structured based on the aforementioned research questions.

5.2.1. What are the Determinants of Innovation Activity in Hotel Industry?

In order for innovation to flourish in a company, it is important to have favorable conditions and an environment of openness. Some of the conditions are related to the physical characteristics and qualities (e.g. size, star category), others can be created within the hotel. The antecedents of successful innovations in hotels have previously been studied by measuring the relationships between innovation activity and innovation determinants by different researchers (e.g. Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, Pikkemaat and Peters, 2005; Pikkemaat and Weiermar, 2005, Grisseman, Pikkemaat and Weger, 2013). The objective of current thesis was also to evaluate the relation of innovation determinants and innovation activity in Portuguese hotels. Since current thesis is the first larger scale innovation research in the context of Portuguese hotels, the innovation determinants selected based on literature review were the most basic hotel characteristics such as hotel size, hotel star category, hotel management/ownership mode (independent versus chain), and additionally, due to high importance of human resources in service sector, also personnel training was chosen. Hotel age was also evaluated in the context of hotel innovation behavior.

Hotel Star Category has been previously related to hotel innovation activity, showing evidence of higher category hotels being bigger innovators (Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009; Orfila-Sintes and Mattson, 2014 Pikkemaat and Peters, 2005; Pikkemaat and Weiermar, 2007). Based on empirical evidence it was found that also Portuguese hotels with higher star category tended to show higher innovation activity. Hotels with higher star category usually have to correspond to specific technical requirements, they also tend to be bigger and often

part of hotel chains, which all brings along access to resources, knowledge and benefiting from economies of scales that can promote innovative activities. Hotel star category is often related to size due to bigger organizational complexities (Orfila-Sintes et al., 2005), thus also size is often related to higher innovation activity.

Hotel Size, the most widely examined hotel characteristic in context of hotel innovation determinants showed in case of Portuguese hotels a weak but significant positive relationship. The relation between hotel size in number of employees had a bit stronger association with Innovation Behavior than the size in number of rooms or number of beds (maximum capacity). The stronger association of number of employees could possibly be explained also by the idea that a higher number of employees means bigger human resource and human potential in the house to generate and execute new ideas and improvements. Although a significant positive relation was found between hotel size in number of rooms and innovation behavior, when dividing the hotels in 3 size groups no big differences in the mean scores of each group were noticed. The areas of innovation, the obstacles and objectives related to innovation were very similar to all groups.

Although majority of previous researchers have found hotel size to be significantly related to innovation behavior (e.g. Grissemann, Plank and Brunner-Sperdin, 2013, Orfila-Sintes 2005, Orfila-Sintes and Mattson, 2014 and 2009, Pikkemaat and Peters, 2005; Pikkemaat and Weiermar 2007; Tajeddini 2010), then Pivčević and Praničević (2012) did not find based on Croatian hotels evidence to support this claim. Also, Tajeddini (2010) did not find a significant relation between hotel size (in number of employees) and hotel innovation. Although a significant positive relation was found between hotel size and innovation behavior, due to no big differences in innovation activity between small, midsize and big Portuguese hotels, the conclusion regarding size as a determinant of innovation is not complete or conclusive. The possible increasing insignificance of size in context of hotel innovation activity could also partly be explained due to the fact that Internet has made external communication and IT solutions more reachable and affordable to smaller players (Mattsson and Orfila-Sintes, 2014). Beyond doubt bigger hotel size

means easier accesses to richer resources, but at the same time it could also be a source of inflexibility. It is not easy or cheap to change something big. Also, during the last 10 years the Internet has empowered and influenced greatly small businesses, by providing affordable online solutions (from marketing to software) and enabling direct real-time communication with customers. Also, no significant relation was found between hotel size and innovativeness in this thesis, confirming the similar finding of Tajeddini (2010) who suggested that larger size hotels are less willing to innovate than small and medium hotels.

Additionally, hotel **Chain and Governance** were evaluated from innovation aspect. The empirical data of this thesis showed in accordance with Orfila-Sintes (2005) evidence of Independent hotels (63% of respondents) innovating less compared to hotels being part of hotel chains or diversified business groups. Such tendency is very likely due to the fact that hotels being part of bigger groups can benefit from economies of scale, availability of resources and knowledge transfer among units (Orfila-Sintes et al., 2005). Similarly to Orfila-Sintes et al. (2005), current research found also hotels managed by owners having slightly lower average level of innovation behavior compared to units not managed by the owner However, the differences in the level of innovation behavior between different management arrangements (e.g. management contract, rental contract, francize) were not significant. Although Orfila-Sintes et al (2005, 2009) found hotels with management contract to be more innovative than hotels managed by owners, this finding was not fully supported in this thesis. Possibly, the Spanish hotels are bigger, therefore the differences between hotels managed by owners or not are bigger. Based on empirical data it can be concluded that Portuguese hotel industry is full of smaller units, independent units, while dominantly more than 80% of units are managed by the owner.

In addition to these aforementioned hotel base characteristics, **hotel age** was also evaluated in context of hotel innovation. Although there was no previous significant evidence of hotel age significantly impacting hotel innovation, it has been included as a control variable in some of the studies (e.g. Tajeddini 2010). Based on empirical evidence from Portuguese hotels no significant relationship was found

between hotel innovation behavior and hotel age measured in years of operating. Although one could think that hotels with more experience would need to innovate more to maintain in competition or leverage their accumulated knowledge, and new hotels would rely on their fresh look and novelty for some time, this is not the reality. Change of owners, change of management, restructuring and refurbishing are all frequent happenings in the world of hotel industry, thus the age becomes less relevant. The turbulent ever-changing business environment impacted by laws and regulations, unforeseen natural and societal happenings, and always changing customer preferences. Hotels despite their age have to always be ready to change and improve.

While hotel size, hotel star category, hotel chain belonging or management arrangement are characteristics difficult to change, there are other innovation antecedents fully influenceable. Most of these antecedents are related to human resources - to practices and attitudes of personnel and management. Not only is the service delivery made of human interaction between the employee and the customer, but also it is the employee that can improve that interaction and learn from that interaction. And learning through experience has a great power - it can be the source of generating new ideas and new solutions. However, in order to be able to make sure that the employees have the full capacity not only to deliver an excellent service, but also to be available to contribute with improvements and ideas, an ongoing training is necessary. A positive relationship between hotel **Personnel Training** and innovation behavior was found. Hotels with training to all or part of their employees tended to show higher levels of innovation behavior. Additionally, it was found that hotels having ongoing training plan instead of intermittent trainings showed higher levels of innovation behavior. It was also found that hotels applying higher number of the human resources practices such as: 1 - Ongoing training, 2 - Internal career possibilities, 3 - Reward system and 4 - Staff empowerment showed higher levels of innovation behavior. The findings related to the importance of personnel training are partly supporting the findings of Orfila-Sintes et al. 2005 and Orfila-Sintes and Mattsson (2009), who found a positive relation between human capital skills (including also training) and innovation and with Grissemann, Pikkemaat and Weger (2013) who incorporated

employee training inside their construct of employee engagement that showed positive influence on innovation behavior.

In order to be able to have a thorough overview and understanding of innovation in Portuguese hotels, it was necessary to look at the most primary hotel characteristics as antecedents of innovation activity. It was important to understand, if similarly to previous studies, hotel size, star category and belonging to hotel chain would somehow contribute or foster innovation activity in hotels. Based on empirical research it was concluded that despite the relationship not being very strong, the three innovation determinants were related to higher level of innovation behavior in Portuguese hotels. Additionally, the results demonstrated relation between hotel personnel training and innovation behavior. It was concluded that hotels with ongoing personnel training habit showed higher levels of innovation behavior. Interestingly, when comparing the association, then personnel training had the strongest association with hotel innovation. Based on the results obtained, it was concluded that besides the basic hotel characteristics as innovation antecedents, it is very important to look deeper into more complex constructs in context of innovation antecedents. Although the results of current thesis are in accordance with several previous works, the fact that the associations with hotel size, star category and chain are relatively weak may be signaling time of changes in how the market and businesses work. Even a small independent hotel establishment without any star category could despite its characteristics be able to foster innovation activity when focusing on its personnel. Besides studying the determinants of innovation activity in hotel, current thesis also aimed to understand better the common types and areas of innovation in hotels.

5.2.2. What Type of Innovation is Common in Portuguese Hotels?

Although there are many different elaborate models and ways of defining innovation types, we chose to look at incremental and radical innovations based on hotel specific areas of innovation. It was considered to be a good starting point to

provide a comprehensive overview of the most relevant areas of innovation as well as of the nature of innovation itself

Based on empirical evidence it was concluded that innovation activity in Portuguese hotels was **dominated by incremental innovations**, a result consistent with previous hotel innovation research (e.g. found in a Portuguese case study by Bruno António Martins Pinho, 2012) and with more general conclusion that incremental innovations are the most common ones in service industries (Chan et al., 1998). Incremental innovation (including answers about changes/improvements and extension of existing products/services) was reported by 40.4%, followed by small improvements/changes (27.8% of answers), while only 19.8 answers indicated radical innovation including "launch of products/services that were new to the hotel but already existed in the market" (13.4% of answers) and "launch of totally new products/services" (by 6.4% of answers.)

Based on hotel managers evaluating the degree of innovation of eleven different hotel-specific areas (quality management, environmental quality management, information and communication technology, room equipment, maintenance, and cleaning, security systems, gastronomy, wellness, animation and leisure activities, architecture and design, and marketing) it was possible to understand better the nature and pattern of innovation activity in Portuguese hotels. The most important areas of innovation were "information and communication technology", followed by "marketing innovation. Both areas of innovation are coherent with the innovation trends of recent years in hotel industry in general. Also, Grissemann, Plank and Brunner-Sperdin (2013) found the same two innovation areas to be dominating in case of Austrian hotels. The third strongest area regarding innovation in Portuguese hotels was the "wellness", another growing world trend. This result is completely contradicting the results of Grissemann, Plank and Brunner-Sperdin, based on which Austrian hotels innovated the least in the area of "wellness". Not only can this big difference be explained by different nature of tourist destinations (comparing Alpine hotels and Portugal), but also due to the time difference of two research papers as the wellness trend in hotel industry is quite recent. Innovation in "wellness" in Portuguese hotels was closely followed by innovation in

"maintenance and cleaning" and "gastronomy". High importance of incremental changes in "maintenances and cleaning" could be explained by guests directly feeling and benefitting from these improvements in their service consumption, which then impacts the perceived service quality (Orfila-Sintes et al. 2005).

Many hotels also reported launching totally new products and services in their hotels, whereas the two equally leading areas of new launches were "gastronomy" and "marketing", followed by "wellness" innovations. This finding is in accordance with the recent market trends. Firstly, marketing has been changing a lot and the new tools (e.g. social media, internet campaigns etc.) have become more accessible to all kinds of establishments. Secondly, the last years have been dominated by search for wellbeing and experiences, thus investments in wellness and gastronomy are not surprising.

The two areas with smaller number of totally new launches were "security systems" and "environmental quality management", explainable by an availability of wide range of external offer of products and services. The two areas of innovation that came up the most as areas without innovation were "architecture and design" (26.7% of hotels) and "animation and leisure" (26% of hotels). These two areas were also the two areas with less innovation in general, whilst "animation and leisure" was the least innovative area. Also, Grissemann, Plank and Brunner-Sperdin (2013) found these two areas of innovation among the last ones, although in case of Alpine hotels, "architecture and design" was lower (before "wellness", the last one on the list).

5.2.3. What is the Level of Innovation Behavior in Portuguese Hotels?

Although it has been common to measure innovation in companies based on R&D investments and patents registered, this method is not so suitable for service sector and even less for hotel industry in general. Simply because hotels usually do not have R&D departments or patents pending. Alternatively, researchers tend to count the number of innovations or measure the degree of innovation activity. Here we

chose to measure the level of innovation behavior by asking hotel managers to rate the aforementioned areas of innovation on a 7-point scale (while 1 meant "no innovation" and 7 meant "launch of totally new products/services") following the approach of Grissemann, Plank and Brunner-Sperdin (2013).

Based on empirical research it was concluded that nearly all the hotels carried out some level of innovation. Only 3 hotels of 326 establishments reported lack of innovation within the previous three years, meaning that 99% of hotels did carry out at least some sort of innovating activities in the eleven hotel-related innovation areas. The innovators rate was high compared to the results obtained in previous studies (e.g. 86,10% of innovators in case of Balearic Islands hotels according to Orfila-Sintes (2005)). Portuguese hotels showed a high level of innovativeness (5.76 out of 7, SD = 0.89) and "moderate" level of innovation behavior (3.90 out of 7.00, SD = 1.18). The average level of innovation behavior of Portuguese hotels (M=3.90) can be considered "moderate" with strong focus on improvements, substantial improvements and extending of existing products and services. The level of innovation behavior of Portuguese hotels (3.90 out of 7) was slightly lower but still comparable with the results of Croatian hotels (3.31 out of 5) and more directly with Austrian hotels (4.40 and 4.46 out of 7, respectively in high star and low star hotels) due to similar measurement. The samples of both, Portuguese and Austrian hotels, had similar composition of low and high-star hotels, therefore no obvious explanation for the difference in results can be given. Similarly, to Austrian hotels (based on Grissemann, Plank and Brunner-Sperdin, 2013; Pikkemaat and Weiermar, 2007) also in Portuguese hotels the area with most innovation was "Information and Communication Technology".

5.2.4. What is the Level of Innovativeness of Portuguese Hotels, and How Does the Level of Innovativeness Influence Innovation Behavior?

Besides looking at different innovation determinants, the areas of innovation and innovation behavior itself, the aim of this work was also to assess the level of Innovativeness and its impact on innovation activity. Management attitudes and

openness towards changes and novelty could be considered part of the fundamental foundation for innovation. Based on empirical evidence it was concluded that Portuguese hotel managers showed a high level of Innovativeness (aggregated score $M = 5.76$, $SD = .97$; on 7-point Likert scale). The respondents strongly agreed that management was actively seeking for new ideas, innovation based on research results and in general was readily accepted by the management and innovation was encouraged in the company.

Higher levels of innovativeness have previously been related to higher level of innovation behavior (Grissemann, Plank and Brunner-Sperdin, 2013; Hurley and Hult, 1998). We also sought to evaluate this relationship based on Portuguese hotels. Based on empirical evidence, it was concluded that innovativeness does contribute to increase in hotel innovation behavior in case of Portuguese hotels. Additionally, all innovation determinants included in the research were added to innovativeness in the model to evaluate their possible influence on the relation between innovativeness and innovation behavior. Out of the four innovation antecedents (hotel size, star category, chain belonging and personnel training), only personnel training had together with innovativeness a significant impact on innovation behavior. The finding of personnel training having impact on innovation behavior is in line with previous findings in hotel innovation context. Grissemann, Pikkemaat and Weger (2013) found a positive relation between hotel "employee engagement" (personnel training was part of the construct) and innovation in service-area and IT-area in Alpine hotels. Also, Nieves et al., (2014) found a positive impact of human capital on organizational and product innovations in Spanish hotels. Training core customer-employees for multiple skills were found to be significant predictors for innovation also in Chinese hotels by Chang, Gong and Shum (2011).

From the results obtained it was learnt that despite what kind of basic characteristics (e.g. size, star category) the hotel has, it is possible to create from within favorable conditions for innovation. One of the most important preconditions for innovation is the management attitude of openness to changes and tendency to encourage employees to be creative and to propose solutions of improvement. When joining

to the innovative attitudes also continuous personnel training, an increase in innovation activity is guaranteed. Increasing the input of knowledge simply opens eyes and doors to improvement. The literature has shown that innovation activity can rise from exchanging and combining existing knowledge and that companies encouraging the improvement of knowledge of employees are better equipped to innovate and respond to changing environments (Nieves et al, 2014).

Although, the Innovation Behavior showed a "moderate" level, it is important to remember the context of this "indicator", namely that hotels were rating "if and what kind" of innovation (e.g. slight changes to existing products/services, launch of totally new products etc.) in different innovation areas they had executed the previous three years. The fact that 99% of hotels had carried out some sort of innovation and that the level of innovativeness of hotels was high suggests that Portuguese hotels are quite innovative.

5.2.5. How Does Innovation Behavior Influence Hotel´s Performance?

The main objective of a hotel business similarly to any other company is profit. Innovation is commonly linked to improving competitiveness and performance of companies. Is it also true for hotels?

Hotel performance can for example be measured either through increase of occupancy rate, reputation or financial aspect. This thesis aimed to find out if innovation activity impacts hotel performance, more precisely if increase in innovation activity brings along improved performance. Based on empirical evidence from Portuguese hotels it was concluded that innovation did impact hotel performance in a positive way. In case of an increase in the level of innovation behavior, also the level of performance increased a bit. This result was in accordance with previous findings (e.g. Grissemann, Plank and Brunner-Sperdin, 2013; Martínez-López and Vargas-Sánchez, 2013; Orfila-Sintes et al. 2005; Orfila-Sintes and Mattsson, 2009; Mattsson and Orfila-Sintes, 2014). Additionally, it was found that Innovation Behavior together with Innovativeness had a stronger impact

on performance than alone. Innovativeness has previously been positively related to performance (Tajeddini 2010, Grissemann, Plank and Brunner-Sperdin, 2013).

It is interesting to note that innovation activity had a bigger impact on nonfinancial performance (customer retention and customer reputation) than on financial performance. It is likely that the relation between hotel innovations and hotel performance does not have such strong link due to time delay. The costs of investments have often a short-term and direct impact on profits (Orfila-Sintes, Mattsson, 2014) and it takes time when investments pay off financially. Since improvements are rapidly noticed and recognized by the customers, it is not surprising to see stronger relation between hotel innovation and hotel reputation. Hotel reputation itself can contribution to the financial results. This line of thought is in accordance with the results obtained by Campo et al., (2014) who found hotel´s tendency to innovate to contribute directly and positively instead of short-term performance to long-term performance, but also to marketing performance. In practical terms these findings might suggest that when investing into innovation, it might not be possible to see in short term big impact on financial performance, but rather than that, innovation might firstly impact nonfinancial performance that can later translate into financial gains.

5.2.6. Innovation Activity in Small, Midsize and Big Hotels in Portugal

The hotel sample was divided in three groups based on number of rooms: Small (up to 50 rooms), Midsize (51-150 rooms) and Big (more than 150 rooms) in order to understand better the nature and characteristics of current sample in context of innovation activity. The division was made based on size, since hotel size has been so far one of the hotel characteristics most frequently related to hotel innovation activity.

The average score of **innovation behavior** was the highest in Big hotels and the lowest in Small hotels. The average score of **innovativeness** was the highest in Big hotels, followed by Small hotels, while leaving the Midsize hotels with the lowest

level. No big differences were found in innovativeness or innovation behavior between the groups. However, a slightly stronger association occurred between hotel size measured in number of employees and innovation activity.

The most popular areas of innovation for all three hotel groups were "information and communication technology" and "marketing". The third most important area of innovation was "Maintenance and cleaning" for small hotels, "quality management" for Midsize hotels and "gastronomy" for Big Hotels. However, the third most important area for the full hotel sample was "wellness". The fact that all three size groups chose "information and communication technology" and "marketing" as the most important areas of innovation within the previous years does not only confirm that these areas correspond to the global trends of changes and development, but it also shows that these new changes have turned information and communication technology and marketing more affordable and available also to small businesses.

When hotels were asked about the importance of different objectives boosting innovation activities within the previous three years, then the responses from Small, Midsize and Big hotels were very similar. The most important objective contributing to carrying out innovation activities was for all hotels "to improve quality". Also reducing energy costs was seen by all hotels as a strong motivator for innovation. Reducing labor costs and reducing inputs buying were the least important objectives helping to boost innovation. High development cost was the most relevant factor hampering innovation for all hotel groups. Additionally "law and regulation" and "lack of qualified labor" were reported as the most influential by all hotel groups and "easy imitation" was seen as the least worrying factor by all.

Based on aforementioned findings it is concluded that the **pattern of objectives and obstacles for innovation activities** in hotels is quite homogeneous. The high concern for improving quality is understandable in a very competitive business environment with high concern and emphasis on maintaining good customer reputation that is through Internet real time available to anybody from all around

the world. The importance of reducing energy consumption for hotels is not only explainable through the need to control and reduce costs but also with the ongoing global trend towards sustainable lifestyle and sustainable business organizations participating in environmentally friendly or green practices.

High development cost can certainly be the biggest factor impeding innovation since resources are limited and each investment needs a justification and return on investment is not always clear in the moment of innovation decision. Additionally, as previously noted, hotels highlighted "law and regulation" and "lack of qualified labor" as important factors impeding innovation activities. Hotels are undoubtedly subject to several rules and regulations that can restrict hotel establishments freedom and its competitivity as well as requiring resources that could be used elsewhere. Hotel "insufficient size" (more for Small and Midsize), "demand response" and curiously also "lack of information" were considered more impactful factors than the least important "easy imitation", "insufficient institutions support", "high risk" and "lack of funding". Unless "lack of information" refers to the unforeseen circumstances impacting tourism (e.g. terrorism, weather conditions and natural disasters, labor strikes of the infrastructures), it is curious to imagine it as an obstacle in nowadays world where the Internet (information regarding market and competition, and industry-specific knowhow) and Property Management Systems (statistics, history of previous happenings etc.) provide you with a lot of relevant information and solution.

However, it is also possible that "lack of information" goes together with "lack of qualified labor" that has been considered a real issue in tourism in general. The seasonality and low salary level are partly to blame. Although the educational offer for tourism and hotel industry has due to tourism boom in Portugal improved over the recent years, maybe looking at ways how to improve the skills and knowledge of existing labor is also a good alternative to improve the qualification. The training practices of hotels did have a relation with hotel size, aligned with the results of Orfila-Sintes et al, (2005) who found bigger hotels updating human capital skills and capabilities more than smaller hotels. Bigger Portuguese hotels offered training

to most of the staff and ongoingly, whereas Small hotels had the biggest number of establishments without any personnel training within the previous three years.

Based on empirical evidence it was concluded that hotel size has a significant positive but a weak relationship with hotel innovation. Bigger hotels showed slightly higher level of innovation behavior than the smaller hotels, but no big differences existed in other aspects related to innovation (e.g. popular innovation areas, obstacles and objectives of innovation etc.). Additionally, no significant difference was found between hotel innovativeness and hotel size, thus meaning that hotels can be really innovative despite their size. Only hotel personnel training practices tended to be different in Small, Midsize and Big hotels, suggesting higher level of commitment to personnel training in Big hotels.

5.3. THEORETICAL IMPLICATIONS

The thesis made an important contribution to the body of literature on hotel innovation. It was also the first large-scale innovation study carried out in the context of Portuguese hotels thus providing country-specific information and basis for cross-country comparison regarding hotel innovation.

Firstly, the hotel-specific hotel innovation antecedents, such as hotel size, hotel star category, governance and chain structure and employee training were related to hotel innovation behavior. A positive relation was found between hotel size and hotel innovation behavior, thus supporting the findings of previous studies (e.g. Orfila-Sintes and Mattsson, 2009, Pikkemaat and Peters, 2005; Orfila-Sintes et al., 2005, Orfila-Sintes and Mattsson, 2009; Jacob and Groizard, 2007; Pikkemaat, 2008, Martinez-Ros and Orfila-Sintes, 2009).

The empirical data also confirmed a positive association between hotel innovation behavior and hotel star category and innovation behavior and chain belonging. Similarly to Orfila-Sintest al (2005), Pikkemaat and Peters (2005) and Pikkemaat and Weiermar (2007), hotels with higher star category showed tendency for higher

level of innovation behavior. Additionally, hotels belonging to hotel chain showed higher level of innovation than independent units, supporting the previous finding of Orfila-Sintes et al. (2005). Contrary to Orfila-Sintes et al. (2005) no significant differences were found in innovation behavior when comparing hotels managed by owners with hotels managed through management-, rental- or franchising contract. Additionally, hotels that offered during previous years personnel training to part or all of the employees showed higher level of innovation behavior, in line with previous findings by Orfila-Sintes et al. (2005), Orfila-Sintes and Mattsson (2009), and Mattsson and Orfila-Sintes (2014).

Secondly, the thesis also contributed to the theory following the Grissemann, Plank and Brunner-Sperdin (2013) approach of splitting Innovation into two different constructs - Innovativeness and Innovation Behavior, which enabled to measure the construct of innovation "on attitudinal and behavioral level". Additionally, the previously used measurement scales of hotel innovativeness and hotel innovation behavior were re-validated based on Portuguese context. Innovativeness was measured through a 5-item scale, following Tajeddini (2010) adaption of the scale from Hurley and Hult (1998), resulting based on internal consistency in 4-item scale. Innovation Behavior was measured based on 11 innovation areas following the Grissemann, Plank and Brunner-Sperdin (2013) approach, compiled by Grissemann, Plank and Brunner-Sperdin (2013) based on previous studies of Orfila-Sintes et al. (2005) and Pikkemaat and Peters, (2005). Based on empirical data, results comparable to that of Grissemann, Plank and Brunner-Sperdin (2013) were obtained.

Thirdly, based on empirical evidence, the findings confirmed that hotel innovativeness impacts positively hotel innovation behavior and hotel innovation behavior impacts positively hotel performance. These results support the previous findings confirming relationship between innovativeness and hotel innovation behavior (Grissemann, Plank and Brunner-Sperdin, 2013) and between innovation activity and performance (e.g. Grissemann, Plank and Brunner-Sperdin, 2013; Martínez-López and Vargas-Sánchez, 2013; Orfila-Sintes et al. 2005; Orfila-Sintes and Mattsson, 2009; Mattsson and Orfila-Sintes, 2014). An interesting finding was

that Personnel training was the only innovation antecedent increasing the impact of Innovativeness on Innovation Behavior. The positive relation between Personnel training and innovation has already previously been to some extent also found in hotel context (e.g. Grissemann, Pikkemaat and Weger, 2013; Nieves et al., 2014; Chang, Gong and Shum, 2011).

Fourth, current thesis contributes to hotel innovation literature by providing empirical evidence from Portuguese hotel sector, thus enabling some basis for cross-country comparisons. It is generally suggested that innovation activity of hotels is country and context specific (Pivčević and Praničević, 2012) and differences in innovativeness in tourism between different countries and destinations might be explained by social factors such as training and professionalism, organization and local policies rather than by supplier determination or technological systems (Sundbo and Orfila-Sintes, 2006). Although different approaches and measurement of innovation in hotels do limit the comparison of results, nevertheless it is valuable to learn about and learn from innovation activity in different contexts

So far, the hotel innovation research has been dominated by empirical evidence from Spanish hotels (e.g. Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009; Martínez-Ros and Orfila-Sintes, 2009; Martinez-Lopez, 2013) and Austrian hotels (Pikkemaat and Peters, 2005; Pikkemaat and Weiermair, 2007; Pikkemaat, 2008; Grissemann, Plank and Brunner-Sperdin, 2013). However, some hotel innovation studies have already been conducted based on empirical evidence from elsewhere, for example from Asian hotels (Chan et al., 1998; Leekpai and Jeroenwisan, 2013; Lu and Tseng, 2010; Hilman and Kalippen, 2015), from Croatia (Pivčević and Petrić, 2011), from Norway (Sandvik et al., 2014). This thesis makes an important contribution by providing some basic understanding and overview of innovation activity in Portuguese hotels.

Previous studies have aimed to measure innovation activity either through determining innovators and non-innovators (Orfila-Sintes et a. 2005), by calculating number of innovations or by calculating a mean score of innovations

(e.g. Grissemann, Plank and Brunner-Sperdin. 2013; Pivčević and Praničević, 2012). When following the division between innovators and non-innovators, Portuguese hotels were largely innovators. Only 3 out of 326 hotels (.9%) reported no innovation activity in the 11 hotel-specific areas of innovation, while all the others reported some sort of innovation activity in at least one of the areas of innovation. The innovators rate was high compared to the results obtained in previous studies (e.g. 86,10% of innovators in case of Balearic Islands hotels according to Orfila-Sintes (2005)). Portuguese hotels showed a high level of "innovativeness" (management attitude) and a "moderate" level of "innovation behavior" (the extent to which innovations are implemented). Due to using the same measurement approach of Grissemann, Plank and Brunner-Sperdin (2013), a direct comparison of innovation behavior was possible for Portuguese hotels with Austrian hotels. Portuguese hotels showed a bit lower level of innovation behavior compared to Austrian hotels, but similarly to Austrian hotels also in Portugal the two leading areas of innovation were "Information and Communication Technology" and "Marketing". Information and communication technology has found support as important area of hotel innovation also in previous studies (e.g. Pikkemaat and Peters, 2005; Pikemaat and Weiermar, 2007). The empirical evidence from Portuguese hotels also demonstrated dominance of incremental innovations, opposed to radical innovations, a finding also aligned with previous studies (Kessler, Pachucki, Stummer, Mair and Binder (2015).

Finally, this thesis gave its contribution also more specifically to the existing literature about innovation in Portuguese hotels. As formerly stated, no such large-scale study has been previously conducted in Portugal, therefore the findings of current thesis complement existing knowledge and provide a basis for future studies with more specific scope and areas of interest in hotel innovation context.

5.4. MANAGERIAL IMPLICATIONS

The results of this thesis can be valuable source of information also for hotel managers and other professionals from the industry. Firstly, it is proved that nearly all Portuguese hotels carry out some sort of innovation, dominated by incremental

improvements and, regardless the size of a hotel, Portuguese hotel managers tend to have a highly innovative attitude. It was also confirmed that hotels with higher level of innovativeness had higher level of innovation behavior and hotels with better personnel training practices demonstrated also higher level of innovation behavior. Thus, it is important for all hotels to **foster an ambient of learning, openness to changes and proneness to solution seeking** among all employees. It is also important to mention here that hotel employees are one of the most important resources of a hotel business, therefore **continuous training to staff is the key to success**. Recruiting high quality labor of course is strategic part of crucial human resource management, but hotels should by no means underestimate training of existing employees. Solid employee training routines can help to reduce the impact of lack of qualified labor, can keep the actual employees more motivated and promotes gradual knowledge building and incremental changes within the hotel

Secondly, based on empirical evidence hotels with higher level of innovation activity showed higher level of performance. An interesting finding of this thesis, in accordance with previous research, showed that the relation of innovation behavior was stronger with hotel nonfinancial performance than with financial performance. It is common knowledge that hotel performance has more than one important aspect. The financial part is undoubtedly the most important part for any business, however it is equally important not to underestimate the impact of nonfinancial performance (including customer reputation and retention) in hotels. Although some of the innovations can have a direct impact on financial aspect of a hotel, simply by improving the efficiency and reducing costs, it is concluded that innovations often impact firstly the customer experience and hotel reputation, which thereafter can impact the financial results. With improved conditions and increased "perceived" value for the clients, hotels might be able either to sell more nights and services or to sell with higher rates. When carrying out investments into innovation, it is important for hotels to carry out **proper cost-benefit analyses, have sufficient economic resources, and also patience** to wait for the results over time.

The results of current thesis do demonstrate the high competitivity of Portuguese hotel sector and the need for innovation. Although the association between innovation behavior and performance was not very strong, we can say that due to increasing competition, the objective of innovation is not necessarily enormous financial improvement, but instead the necessity to stay competitive, maintaining one´s price level and reputation. Additionally, we can say, that in hotel industry the emphasis is not on breakthrough innovations, but instead on gradual improvements in different areas. **It is smart to carry out small incremental innovations that do not require big investment and impact the customer perceived service quality fast.**

Having high quality innovative hotels is an advantage for a country and a strong selling point, especially when tourism is significant economic force. Openness to innovation will also be beneficial in the near future for hotels to seek new sustainable solutions to protect the environment and to face the challenges created by mass tourism.

5.5. MAIN LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

It is important to acknowledge that his thesis was subject to a number of limitations. Firstly, together with the tourism boom, following the slower period around 2009-2012, also Portuguese hotel industry has seen great changes over the last years with new emerging players, change of ownership of hotels, upgrades and renovations. The questionnaire of current thesis was filled in between December 2015 and December 2016, referring back to three previous years. Some extra time-delay was added by the duration of this research project. Possibly in today´s environment of increasing competition and availability of resources the reality of innovation activity in hotels is different. Secondly, the database of Portuguese hotels, dating back to November 2014, showed signs of deactualization already throughout the data collection phase. Some of the responding hotels were in the middle of change process, possibly resulting in limited and consistent knowledge of the happenings of previous three years.

Thirdly, obtaining more objective data and taking extra measures to reduce the risk of common method bias would be recommended. This research was based on hotel managers opinions and judgement. It is important to add that 17% of questionnaire respondents did not identify themselves as the owner or the general manager of the hotel, but instead represented different positions (e.g. front sales manager, sustainability manager, finance director etc.) that could possibly result in less accurate answers due to lack of knowledge about the topic. It would be beneficial to use other sources of information for some of the key measures, for example, more objective data regarding performance would improve the accuracy of results and conclusions. However, such information is not easy to obtain. Additionally, qualitative methods such as interviews, case-studies could be applied to improve more in-depth understanding of innovative attitudes and innovation activity in hotels.

Forth, measuring the impact of innovation activity on performance would benefit from longitudinal study. It is not possible to evaluate correctly the financial impact of each investment immediately or short term. Current study asked information regarding innovation activity and performance occurring within the previous three years, resulting in underestimating the real impact. Due to these and other limitation associated with subjective measures, the findings of current work should be interpreted with caution.

For the future, it would be of interest to repeat a similar study with some additional improvements due to changes in Portuguese hotel industry. The selection of data sources could be diversified, joining more objective financial data to the management opinions. Also, more in-depth research into innovation activity (e.g. exploring CIS innovation typology, evaluating impact of more specific factors impacting innovation like "customer orientation", "human capital" etc) and application of different models of measurement of innovation activity in Portuguese hotels would be interesting. Additionally, more qualitative approach could be developed through interviews and case studies. An equally valuable future development could be carrying out longitudinal study, especially if the main interest would be measuring the impact of innovation activity on hotel performance. Since

investments take time to show results, it is valuable to measure these results in adequate time span.

Based on this thesis, the main suggestion for future research regarding hotel innovation in general is to develop further the understanding of human resources in the context of hotel innovation. Human resources quality and development as innovation determinants continue to be relevant since contrary to some hotel specific determinants (like hotel size, hotel stars, being part of chain) all hotels can impact it. Also, more studies regarding innovation impact on performance and different forms of performance are welcomed to provide better understanding of the full cycle of innovation. Additionally, more country and destination specific hotel innovation studies are welcomed in order to provide basis for more cross-country comparisons. Especially important would be to carry out studies in different locations replicating the measurement of innovation activity of previous research with objective to produce comparable results.

5.6. CONCLUSION

Over the last years tourism has been growing in the world and in Europe, but also in Portugal. Tourism has become increasingly an important part of Portuguese economy, resulting in 2017 in 18% of total export and 7.8% of Portuguese GDP (compared to 6.8 in 2016), while creating 7% of all the jobs in 2017 (Turismo de Portugal, 2018c). According to the Travel and Tourism Competitiveness Index, Portugal reached the high place nº 14 in 2017 (World Economic Forum, 2018). Nevertheless, ever growing success in tourism is not to be taken for granted! The world is a competitive place and full of attractive tourist destinations. In order to maintain and improve the competitiveness it is crucial to be innovative and develop the destinations and related infrastructures in a sustainable way. Hotel establishments are undoubtedly the central part of tourism industry and supply; therefore, innovativeness of hotels is vital for competitiveness of a tourist destination.

Innovation and Performance in Hotel Industry

While acknowledging the utmost importance of innovation in hotels, current thesis set out to study innovation activity in hotel industry. The research combined different theoretical approaches (Grissemann, Plank and Brunner-Sperdin., 2013; Grissemann, Pikkemaat and Weger, 2013; Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009) with empirical evidence from Portuguese hotel industry. A total of 326 questionnaire answers from Portuguese hotels were obtained.

Firstly, this thesis aimed to analyze the importance of different innovation determinants, innovation types and areas of innovation practiced in Portuguese hotels. Secondly, since innovation was in current thesis split between attitudinal level "innovativeness" and behavioral level "innovation behavior" (following Grissemann, Plank and Brunner-Sperdin, 2013), current thesis also aimed to measure separately these two concepts. Third goal of current dissertation was to find out if innovativeness influenced positively innovation behavior, and if innovation behavior had a positive influence on hotel performance. Fourth, this thesis also aimed to give an overview of innovation activity in small, midsize and big Portuguese hotels. The goals of current theses were achieved by responding the five research questions:

1) What are the determinants of innovation activity in hotel industry?
2) What types and areas of innovation are common in Portuguese hotels?
3) What is the level of innovation behavior in Portuguese hotels?
4) What is the level of innovativeness of Portuguese hotels, and how does the level of innovativeness influence innovation behavior?
5) How does innovation behavior influence hotel´s performance?

The answers to all the previously mentioned research questions were found by joining theory, empirical data from 326 questionnaires and statistical analysis. Since current thesis was the first larger scale innovation study in context of Portuguese hotels, the innovation determinants selected based on literature review were the most basic hotel characteristics such as hotel size, hotel star category, hotel management/ownership mode and personnel training. In accordance with previous research a significant positive relationship was found between hotel innovation

behavior and innovation antecedents such as hotel size, hotel chain belonging, hotels stars (Orfila-Sintes et al., 2005; Pikkemaat and Peters, 2005; Pikkemaat and Weiermair, 2007) and personnel training (Grissemann, Pikkemaat and Weger, 2013).

Nearly all Portuguese hotels (99%) had carried out some kind of innovation activity at least in one of the 11 hotel-specific innovation areas. The leading areas of innovations were "information and communication technology", "marketing" and "wellness", followed by "maintenance and cleaning" and "gastronomy". Overall Portuguese hotels showed a moderate level of innovation behavior, with tendency to improve and extend existing products and services. The dominance of incremental innovations, compared to radical innovations in hotels has been found before (e.g. Martins Pinho, 2012). An interesting find was also the high level of innovativeness in Portuguese hotels. Hotel managers dominantly agreed that innovation was encouraged and readily accepted in their hotels.

The two main hypothesis of current thesis were successfully confirmed. Based on evidence from Portuguese hotel industry, it was concluded that innovativeness does influence positively hotel innovation behavior and hotel innovation behavior does influence hotel performance. Additionally, it was found that innovativeness, together with personnel training had an increased impact on hotel innovation behavior. At the same time, innovation behavior together with innovativeness could explain bigger variance in hotel performance than innovation behavior alone.

With aim to create some benchmark about innovation activity in different sized hotels, the hotel sample was split into Small (up to 50 rooms), Midsize (51-150 rooms) and Big (above 150 rooms) hotels. Although the level of innovation behavior was positively related to hotel size, and small differences did exist in the level of innovation behavior between the three groups, it is curious to note that no other big differences, besides personnel training practices, were found. Firstly, level of innovativeness had no significant relation to hotel size, thus no pattern occurred for small, midsize and big hotels. All hotel groups rated "information technology and communication" and "marketing" as the leading areas of innovation.

"Improving quality" and "reducing energy costs" were the two most important objectives helping to boost innovation activities in all hotels, while "high development cost" "lack of information" and "lack of qualified labor" were reported as the most influential by all hotel groups. It was interesting to find "easy imitation" as the least worrying issue for all hotels. An important find was related to personnel training, which did have a relation with hotel size. Bigger hotels offered training to most of the staff and ongoingly, whereas Small hotels had the biggest number of establishments showing no personnel training within the previous three years.

Based on current research and its findings in alignment with previous research, it was concluded that an important contribution to the body of literature on hotel innovation was made in general and in Portugal. Being the first large-scale innovation study carried out in the context of Portuguese hotels, also country-specific information was provided, creating basis for cross-country comparison regarding hotel innovation. Based on current thesis, the main suggestion for future research regarding hotel innovation is to develop further the understanding of personnel training and human capital in general in the context of hotel innovation. Human resources quality and development as innovation determinant continues to be relevant since contrary to some hotel specific determinants (like hotel size, hotel stars, being part of chain) all hotels can impact it. Also, further studies regarding the impact of hotel innovation on hotel financial and nonfinancial performance are encouraged. Additionally, more country or destination specific hotel innovation studies are welcomed in order to provide basis for more cross-country comparisons. Especially important would be studies replicating the measurement of innovation activity of previous research with objective to produce comparable results.

The results of current thesis could be valuable source of information for hotel managers and other professionals from the industry. Besides a proper overview regarding the level of innovation and innovation tendencies in Portuguese hotel industry, it is possible to draw some useful conclusions for practical application. The most important finding in practical terms is the relevance of innovativeness and personnel training for innovation activity. Since most hotels are not likely able to

influence innovation antecedents like hotel size, hotel stars or being independent or belonging into a hotel chain, not all hope is lost! Innovative attitude and personnel training and other human resources practices are fully under the influence of each hotel. In order to increase innovation activity, it is important to encourage innovative attitude and openness within hotels and develop ongoing personnel training and empowerment practices. Another managerial implication of current thesis is related to innovation and hotel performance. Although current thesis did find hotel innovation behavior impacting hotel performance, the relation was not very strong. Curiously, a stronger relation was found between hotel innovation behavior and nonfinancial performance. In practical terms these findings might suggest that when investing into innovation, it might not be possible to see in short term big impact on financial performance, but rather than that, innovation might firstly impact nonfinancial performance that can later translate into financial gains.

Besides theoretical and managerial implications and suggestions for future, it is also important to remind the reader the limitations of current research due to which the findings of current study should be interpreted with caution. Firstly, it is important to remember that the questionnaire is referring back the years around 2012-2015 that could differ from the ongoing years of strong tourism boom. Secondly, the answers of current thesis are based on managers opinion and collected from one source only creating a risk of common method bias. Thirdly, studying the relation between hotel innovation and performance could possibly benefit from a longitudinal study and include more objective information regarding performance.

Based on analysis of empirical evidence of current thesis it was concluded that innovation is an important part of hotel industry. Innovation is not only relevant for hotels due to increasing competition in hotel industry but also because of the rapidly changing technologies and ongoing changes in the society. Search for authentic and local experiences, search for mental and physical wellbeing, higher awareness of sustainable business practices, demand for high-tech in-room solutions are just few of the ongoing trends. And all this in the context of real-time feedback through social media and online reviews. Innovative mindset simply has to be part of every hotel today in order to keep being successful!

REFERENCES

AHP (2018), Dicionário Técnico de Hotelaria, Portuguese Hotel Association, Retrieved on 12.12.2018 from https://www.hoteis-portugal.pt/docs/content/k XpI4K0B2To4eMugibQlEjtEEPxKsKsS.pdf

Alexy, O., and Dahlander, L. (2014). Managing Open Innovation. *The Oxford Handbook of Innovation Management*, 442–461.

Alves, S. (2013). Innovation in Mature Markets: A View from Hotel Industry. *Journal of Tourism*, *14*(1), 45–62.

Armstrong, J.S. and T.S. Overton, Estimating nonresponse bias in mail surveys, *Journal of Marketing Research,* 14 (3), 396–402.

Arrow, K. J. (1962), The economic implications of learning by doing, The review of economic studies, Oxford University Press, 155 – 173.

Baker, J. B. (2007). Beyond Schumpeter Vs. Arrow: How Antitrust Fosters Innovation. *Antitrust Law Journal*, *74*(3), 575–602.

Baumol, W. J. (1967), Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis. *The American Economic Review*, 57(3), 415–26.

Burns, T. and G. M. Stalke (1961), The Management of Innovation, University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership:

Camilio Fernandes, J. C. (2012), Empreendedorismo e Atitude Inovadora nas Empresas Estudos de caso aplicados à hotelaria. Master Thesis. Instituto Politécnico de Setúbal. Escola Superior de Ciências Empresariais

Campo, S., A. M. Díaz and M. J. Yagüe, (2014), Hotel innovation and performance in times of crisis. *International Journal of Contemporary Hospitality Management*, *26*(8), 1292–1311.

Carifio, J and R. J. Perla (2007), Ten Common Misunderstandings, Misconceptions, Persistent Myths and Urban Legends about Likert Scales and Likert Response Formats and their Antidotes*, Journal of Social Sciences*, 3(3),106-116.

Carvalho, L., and T. Costa (2011), Tourism innovation – a literature review complemented by case study research, *International Conference on Tourism and Management Studies*, *I*, 23–33.

Carvalho, L. M. C. and S. Sarkar (2014), Market structures, strategy and innovation in tourism sector, *International Journal of Culture, Tourism and Hospitality Research*, *8*(2), 153–172.

Chan, A., F. M. Go and R. Pine (1998), Service Innovation in Hong Kong: Attitudes and Practice, *The Service Industries Journal*, *18*(2), 112–124.

Chang, S., Y. Gong and C. Shum, 2011. Promoting innovation in hospitality companies through human resource management practices. *International Journal of Hospitality Management,* 30 (5), 812–818.

Chen, J.-S., Hung Tai Tsou, and a. Y.-H. Huang (2009), Service Delivery Innovation: Antecedents and Impact on Firm Performance. *Journal of Service Research*, *12*(1), 36–55.

CIS (2012), *The Community Innovation Survey 2012*, *EUROSTAT*.

Coombs, R. and I. Miles (2000). Innovation, Measurement and Services: The New Problematique. *Economics of Science, Technology and Innovation*, *18*(Chapter 5), 85–103.

Crevani, L., H. Palm and A. Schilling (2011), Innovation management in service firms: A research agenda. *Service Business*, *5*(2), 177–193.

Damanpour, F. (1991). Organizational Innovation: a Meta-Analysis of Effects of Determinants and Moderators. *Academy of Management Journal*, *34*(3), 555–590.

De Jong, J. P. J., A. Bruins, W. Dolfsma and J. Meijaard (2003), Innovation in Service Firms Explored: What, how and Why?, EIM Strategic Study B200205, Zoetermeer: EIM.

Dodgson, M., D. M. Gann and N. Phillips (2013), Perspectives on Innovation Management, *The Oxford Handbook of Innovation Management*, 3–25. Retrieved on 20.05.2018 from http://doi.org/10.1093/oxfordhb/9780199 694945.013.037

ECC-NET (2009), Classification of Hotel Establishments Within the EU, European Consumers Centers Network / European Commission. Retrieved on 17.11.2017 from https://ec.europa.eu/

Enz, C. A., and J. S. Harrison (2008), Chapter 9: Innovation and Entrepreneurship in the Hospitality Industry. *The SAGE Handbook of Hospitality Management*, Sage UK, 213–227.

Eurostat, Innovation statistics (2015), Retrieved 27.05.2015, from http://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Innovation_st atisticsandoldid=215875

Evangelista, R. (2000), Sectoral Patterns of Technological Change in Services, *Economics of Innovation and New Technology*, *9* (3), 183–222.

Field, A. (2013), Discovering Statistics Using IBM SPSS Statistics, 4th Edition. SAGE Publications Ltd, 952.

Fernandes, J. C. C. (2012), *Empreendedorismo e Atitude Inovadora nas Empresas*

- *Estudos de caso aplicados à hotelaria.* Master Thesis, Polytechnic Institute of Setúbal.

Fornell, C. and D. F. Larcker (1981), Evaluating structural equation models with unobservable variables and measurement error, *Journal of Marketing Research*, 18, 39-50.

Gallouj, F. (1998), Innovating in reverse: services and the reverse product cycle, *European Journal of Innovation Management,* Emerald, 1 (3), 123 - 138.

Gallouj, F., and M. Savona (2008), Innovation in services: a review of the debate and a research agenda, *Journal of Evolutionary Economics*, *September*(online), 1–28.

Gallouj, F., and P. Windrum (2009), Services and services innovation, *Journal of Evolutionary Economics*, 19(2), 141–148.

Ghasemi, A. & S. Zahediasl (2012), Normality Tests for Statistical Analysis: A Guide for Non-Statisticians, *International journal of endocrinology and metabolism*, 10. 486-489.

Gomes da Silva, I. (2013), Estudo de segmento de mercado da indústria hoteleira: Fatores de diferenciação e inovação. Master Thesis. Universidade do Minho, Escola de Economia e Gestão.

Grissemann, U., B. Pikkemaat and C. Weger, (2013). Antecedents of innovation activities in tourism: An empirical investigation of the Alpine hospitality industry. *Tourism*, *61*(1), 7–27.

Grissemann, U., A. Plank and A. Brunner-Sperdin (2013), Enhancing business performance of hotels: The role of innovation and customer orientation, *International Journal of Hospitality Management*, 33, 347–356.

Guisado-González, M., M. Guisado-Tato and Á. Sandoval-Pérez (2011), Technological determinants of innovation performance in Spanish hospitality companies: an analysis of the coexistence of innovation strategies. *The Service Industries Journal*, 1–14.

Hall, C. M. (2009), Innovation and tourism policy in Australia and New Zealand: never the twain shall meet? *Journal of Policy Research in Tourism, Leisure and Events*, *1*(1), 2–18.

Hall, C. M., and A. M. Williams (2008). *Tourism and innovation. Tourism and Innovation*. London: Routledge.

Henderson, R. M., and K. B. Clark (1990), Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms. *Administrative Science Quarterly*, *35*(1), 9. http://doi.org/10.2307/2393549

Hilman, H. and N. Kaliappen (2015), Innovation strategies and performance: are

they truly linked?", *World Journal of Entrepreneurship, Management and Sustainable Development*, 11(1), 48-63.

Hjalager, A. M. (2002), Repairing innovation defectiveness in tourism, *Tourism Management*, *23*(5), 465–474.

Hjalager, A. M. (2010), A Review of Innovation Research in Tourism. *Tourism Management*, *31*(1), 1–12.

Howells, J., B. Tether, F. Gallouj, F. Djellal, C. Gallouj, K. Blind, J. Edler, C. Hipp and F. Montobbio (2004), Innovation in Services: Issues at Stake, Research Report. European Commission.

Hult, G. T. M., R. F. Hurley and G. A. Knight (2004), Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, 33(5), 429–438.

Hurley, R., and T. M. Hult (1998), Innovation, Market Orientation, and Organizational Learning: An Integration and Empirical Examination, *Journal of Marketing*, 62(3), 42-54.

Jacob, M., and J. L. Groizard (2007), Technology transfer and multinationals: The case of Balearic hotel chains' investments in two developing economies, *Tourism Management*, *28*(4), 976–992.

Jogaratnam, G. and E. C.-Y Tse (2006), Entrepreneurial orientation and the structuring of organizations: Performance evidence from the Asian hotel industry, *International Journal of Contemporary Hospitality Management*, *18*(6), 454–468.

Jones, P. (1996), Managing hospitality innovation, *Cornell Hotel and Restaurant Administration Quarterly*, 37(5), 86–95.

Kastelle, T. and J. Steen (2014), Networks of Innovation, in *The Oxford Handbook of Innovation Management*, Oxford, Oxford University Press, 102-120.

National innovation systems: why they are important, and how they might be measured and compared

Pavitt, K and P. Patel (1994), National innovation systems: why they are important, and how they might be measured and compared; *Economics of innovation and new technology*, 3 (1), 77-95

Kessler, A., C. Pachucki, K. Stummer, M. Mair and P. Binder (2015), Types of organizational innovativeness and success in Austrian hotels, *International Journal of Contemporary Hospitality Management*, 27(7),1707-1727.

Leekpai, P. and K. Jaroenwisan (2013), Organizational Innovativeness: The Empirical Study of Hotel Business in Southern Thailand, *International Journal of Business and Social Science*, *4*(3), 166–170.

Lu, I-Y. and C-J. Tseng (2010): A study of the service innovation activities of

tourist hotels in Taiwan, *International Journal of Organizational Innovation*, 3(1),156-172.

Martínez-Ros, E. and F. Orfila-Sintes (2009), Innovation Activity in the Hotel Industry, *Technovation*, 29, 632-641.

Martínez-López, A. M. and A. Vargas-Sánchez (2013), The Strategic Management Process and the Innovative Capacity of the Spanish Hotel Industry, *Journal of Hospitality Marketing and Management*, 22(6), 596–618.

Martins Pinho, B. A. (2012). *Comportamentos em hotelaria face à inovação*. Master Thesis. The University of Aveiro.

Mattson, J. and F. Orfila-Sintes (2014), Hotel Innovation and Its Effect on Business Performance, *International Journal of Tourism Research,* 16 (4), 388–398.

Mei, X. Y., C. Arcodia and L. Ruhanen (2012), Towards tourism innovation: A critical review of public polices at the national level, *Tourism Management Perspectives*, 4, 92–105.

Meneses, O. A. M., and A. A. C. Teixeira (2011), The innovative behaviour of tourism firms. *Economics and Management Research Projects: An International Journal*, *1*(1), 25–35.

Miles, I. (2008), Patterns of innovation in service industries, *IBM Systems Journal*, 47(1), 115–128.

Mills, P. K. and N. Margulies (1980), Toward a Core Typology of Service Organizations, *Academy of Management Review*, 5(2), 255–266.

Monteiro, I. and F. Sousa (2008), A liderança inovadora na hotelaria algarvia, *Revista Portuguesa E Brasileira de Gestão*, 7(2), 68–78.

Nelson, R. R. and S. G. Winter (1982), *An Evolutionary Theory of Economic Change,* Cambridge, MA: Belknap Press of Harvard University Press

Neves Ferraz, I. and de Melo Santos, N. (2016). The relationship between service innovation and performance: a bibliometric analysis and research agenda proposal. *RAI Revista de Administração E Inovação*, *13*(4), 251–260.

Nieves, J., A. Quintana and J. Osorio (2014), Knowledge-based resources and innovation in the hotel industry, *International Journal of Hospitality Management*, *38*, 65–73.

Nieves, J and M. Segarra-Ciprés (2015), Management innovation in the hotel industry, *Tourism Management*, 46, 51-58.

Nybakk, E. and E. Hansen (2008), Entrepreneurial attitude, innovation and performance among Norwegian nature-based tourism enterprises, *Forest Policy and Economics*, 10(7–8), 473–479.

OECD (2005a), Oslo Manual (3rd Edition). Paris, OECD Publication Services.

OECD (2005b), Oslo Manual Guidelines for Collecting and Interpreting Innovation Data (3rd Edition). OECD Publishing.

OECD (2017), The Rise of Services in the Global Economy, *Services Trade Policies and the Global Economy*, Paris, OECD Publishing, 11-32.

Oke, A. (2007), Innovation types and innovation management practices in service companies, *International Journal of Operations and Production Management*, *27*(6).

Orfila-Sintes, F., R. Crespí-Cladera and E. Martínez-Ros (2005), Innovation activity in the hotel industry: Evidence from Balearic Islands, *Tourism Management*, *26*(6), 851–865.

Orfila-Sintes, F. and J. Mattsson (2009), Innovation behavior in the hotel industry, *Omega*, *37*(2), 380–394.

Ottenbacher, M. and J. Gnoth (2005), How to Develop Successful Hospitality Innovation, *Cornell Hotel and Restaurant Administration Quarterly*, *46* (2), 205–222.

Ozaki, R., and M. Dodgson (2014), The Literature on Innovation Adaption and Consumption - The Case for Their Synthesis. *The Oxford Handbook of Innovation Management*, 274–289.

Pikkemaat, B (2008), Innovation in small and medium-sized tourism enterprises in Tyrol, Austria. *The International Journal of Entrepreneurship and Innovation*. 9. 187-197.

Pikkemaat, B., and M. Peters (2005), Towards the Mesurement of Innovation - A Pilot Study in the Small and Medium Sized Hotel Industry, *Journal of Quality Assurance in Hospitality and Tourism*, *6*(3–4), 89–112.

Pikkemaat, B. and K. Weiermair (2007), Innovation through Cooperation in Destinations: First Results of an Empirical Study in Austria. *Anatolia*, *18* (1).

Pikkemaat, Birgit (2008), Innovation in small and medium-sized tourism enterprises in Tyrol, Austria, *The International Journal of Entrepreneurship and Innovation*, 9.

Pivčević, S. and L. Petrić (2011), Empirical Evidence on Innovation Activity in Tourism – The Hotel Sector Perspective, The Business Review, Cambridge, 17 (1), 142-148

Pivčević, S. and D. G. Praničević (2012), Innovation Activity in the Hotel Sector – the Case of Croatia, *Economic Research - Ekonomska Istraživanja*, 25, 337-363.

Podsakoff, P. M., S. B. MacKenzie, J. Y. Lee and N. P. Podsakoff (2003), Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies, *Journal of Applied Psychology*, 88, 879-903.

Raosoft.com (2014), Sample Size Calculator, Retrieved on 15th of January 2017 from http://www.raosoft.com/samplesize.html

Razali, N. M. and Y. B, Wah (2011), Power Comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling Tests. *Journal of Statistical Modeling and Anlytics*, 2, 21-33.

Rodríguez, I., A.M. Williams and C.M. Hall (2014), Annals of Tourism Research Tourism Innovation Policy: Implementation and outcomes, *49*, 76–93.

Rosenbusch, N., J. Brinckmann and A. Bausch (2011), Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, *26*(4), 441–457.

Salter, A., and O. Alexy (2013), The Nature of Innovation. *The Oxford Handbook of Innovation Management*. Retrieved on 20.11.2017 from DOI: 10.1093/oxfordhb/9780199694945.013.034

Sandvik, I. L., D. F. Duhan and K. Sandvik (2014), Innovativeness and Profitability: An Empirical Investigation in the Norwegian Hotel Industry. *Cornell Hospitality Quarterly*, *55*(2), 165–185.

Slater, S. F. and J. C. Narver (1995), Market orientation and the learning organization, *Journal of Marketing*, 59(3), 63–74.

Souitaris, V. (2003), Determinants of Technological Innovation: Current Research Trends and Future Prospects, The International Handbook on Innovation, 7(07), 513–528.

Stegerean, R. and A. Petre (2013), Managerial Approaches to Innovation and Hotel Performance, Proceedings of the 7th International Management Conference, 7-8 November 2013, Bucharest, Romania.

Sundbo, J. (1997), Management of Innovation in Services. *The Service Industries Journal*, 17(3), 432–455.

Sundbo, J., F. Orfila-Sintes and F. Sørensen (2007), The innovative behaviour of tourism firms - Comparative studies of Denmark and Spain. *Research Policy*, *36*(1), 88–106.

Tajeddini, K. (2009), The impact of learning orientation on NSD and hotel performance: Evidence from the hotel industry in Iran, *Education, Business and Society: Contemporary Middle Eastern Issues*, 2(4), 262-275.

Tajeddini, K. (2010), Effect of customer orientation and entrepreneurial orientation on innovativeness: Evidence from the hotel industry in Switzerland. *Tourism Management*, *31*(2), 221–231.

Tejada, P. and P. Moreno (2013), Patterns of innovation in tourism. Small and Medium-size Enterprises, *The Service Industries Journal*, *33(7–8), 749*–758.

Thompson, V. A. (1965), Bureaucracy and Innovation. *Administrative Science*

Quarterly, 10(1), 1–20. Retrieved on 20.05.18 from http://doi.org/10.2307/2391646

Tidd, J. and J. Bessant (2009), Managing innovation: integrating technological, market and organizational change (Forth Edition). Chichester: John Wiley.

Trott, P. (2012), Innovation Management and New Product Development (Fifth Edition). Pearson Education.

Tseng, C.-Y., H.-Y. Kuo and S.-S. Chou (2008), Configuration of innovation and performance in the service industry: evidence from the Taiwanese hotel industry, *The Service Industries Journal*, *28*(7), 1015–1028.

Turismo de Portugal, IP (2014). Consulta ao registo-Empreendimentos Turísticos. Retrieved from https://rnt.turismodeportugal.pt/rnt/consultaaoregisto.aspx on 14.11.2014

Turismo de Portugal, IP (2018a). Consulta ao registo - Empreendimentos Turísticos. Retrieved from https://rnt.turismodeportugal.pt/RNET/Registos. ConsultaRegisto.aspx?Origem=CP&MostraFiltro=True on 15.12.2018

Turismo de Portugal, IP (2018b). Consulta ao registo - Alojamento Local. Retrieved https://rnt.turismodeportugal.pt/RNAL/ConsultaRegisto.aspx?Origem=CP& FiltroVisivel=True on 16.12.2018.

Turismo de Portugal, IP (2018c), Turismo em Portugal / 2017, Retrieved from http://business.turismodeportugal.pt/pt/Conhecer/Apresentacao/Desempenho _Turistico/Paginas/default.aspx on 16.12.2018

UNWTO (2018), UNWTO Tourism Highlights 2018 Edition, Retrieved from https://www.e-unwto.org/doi/pdf/10.18111/9789284419876 on 25.11.2018

Van der Panne, G., C. van Beers, C. and A. Kleinknecht (2003), Success and Failure of Innovation: A Literature Review. *International Journal of Innovation Management*, *7*(3), 309–338.

Von Zedtwitz, M., S. Friesike and O. Gassmann (2014), Managing R&D and New Product Development, The Oxford Handbook of Innovation Management, Oxford: OUP, 530–547.

World Travel and Tourism Council. (2018). *Country Analysis*. Retrieved from https://www.wttc.org/economic-impact/country-analysis/

Zaltman, G., R. Duncan J. Holbeck, J. (1973), Innovation and Organizations. John Wiley, New York, 45-68.

APPENDICES

Appendix A. Questionnaire in English

Innovation Activity in Hotels
1. 1. Introduction

This questionnaire is part of the research project and thesis carried out by ISCTE-IUL doctoral student Cleelia Uudam Costa to obtain the degree of PhD in Management. The doctoral thesis is supervised by Professor António da Silva Robalo and by Assistant Professor Renato Pereira from the ISCTE Department of Marketing, Operations and Management.

The objective of current questionnaire is to collect information regarding innovation activity in Portuguese hotel sector.

No personal data will be disclosed during this academic work as well as full confidentiality of respondents will be guaranteed. The final thesis presents at all times only aggregated results.

It takes about 10 minutes to fill in the questionnaire. The answers are saved automatically and can be edited/completed later in case the same electronic device (PC/gadget) and the same browser are used.

Thank you in advance for your participation.

Best regards,

Cleelia Uudam Costa

Innovation Activity in Hotels
2. Hotel Establishment

* 1. Hotel Information

Name (optional)	
City / Town	
ZIP / Postal Code	

* 2. Star category (if exists)

○ 5

○ 4

○ 3

○ 2

○ 1

○ Not Applicable

* 3. Number of rooms / Maximum capacity

Number of rooms	
Maximum capacity (people)	

4. Opening year

* 5. Restructuring / Rebuilding / Change of Category

Year	
Which change	
Not Applicable	

* 6. Number of Employees

* 7. How many months is the hotel open yearly?

* 8. Hotel establishment type (*Portuguese classification)

◯ Hotel

◯ Hoteis-Apartamento

◯ Pousadas

◯ Aldeamento Turistico

◯ Apartamento Turístico

◯ Empreendimento de Turismo de Habitação

◯ Empreendimento de Turismo no Espaço Rural - Casa de campo

◯ Agro Turismo

◯ Casa de Campo

◯ Hotel Rural

Innovation Activity in Hotels

3. Further information about the hotel establishment

* 9. Hotel establishment operates in the market as

◯ An independent unit

◯ In a hotel chain (only accommodation)

◯ In a diversified or integrated business group

* 10. In case of hotel chain, marketing activities are carried out

◯ In the hotel

◯ Centrally

◯ Not Applicable

* 11. In case of hotel chain, reservations are handled

◯ In the hotel

◯ Centrally

◯ Not Applicable

* 12. Hotel is owned by

○ Sole proprietor

○ A company

○ Group of companies

* 13. The hotel owner is

☐ Portuguese

☐ Foreigner

Origin

[   ]

* 14. Hotel owner runs the business

○ YES

○ NO

* 15. In case the hotel owner does not run the business, the hotel is run through

○ Managment Contract

○ Rental Contract

○ Francising Contract

○ Other (specify)

○ Not Applicable

Since (year)...

[   ]

Innovation Activity in Hotels

4. Hotel Facilities, Services & Hotel Guests

* 16. Hotel Establishment offers the following accommodation and board options (choose all that apply):

☐ Only accommodation

☐ Accommodation and breakfast

☐ Half Board (accommodation, breakfast and dinner)

☐ Full Board (accommodation, breakfast, lunch and dinner)

* 17. The following facilities are available in the hotel establishment (choose all that apply):

☐ Swimming pool

☐ Spa

☐ Gym

☐ Business Centre

☐ Restaurant

☐ Bar

☐ Disabled access

☐ Children´s playground/area

☐ Internal laundry facilities (for hotel laundry)

☐ Private parking

☐ None above

Comment:

[   ]

* 18. Hotel establishment offers besides accommodation and meals the following services (choose all that apply):

☐ Room amenities

☐ In-room minibar

☐ 24h Front Desk

☐ Full wireless internet coverage

☐ Free wireless internet access in full house

☐ Free wireless internet access in common areas

☐ Internal laundry service (for guest laundry)

☐ Airport pick-up (internal service)

Comment:

[   ]

* 19. The most frequent hotel guests are (please mark the order of importance, while 1 means the most frequent and 5 means the less frequent):

	1	2	3	4	5
Families	○	○	○	○	○
Couples	○	○	○	○	○
Solo travellers	○	○	○	○	○
Business travellers	○	○	○	○	○
Groups	○	○	○	○	○
Other (specify below)	○	○	○	○	○

Other (specify)

[   ]

* 20. Please show the TOP 5 nationalities of your guests during the last three years. (Whereas 1 indicates the most frequent and 5 indicates the least frequent)

	1	2	3	4	5
United Kingdom	○	○	○	○	○
Spain	○	○	○	○	○
France	○	○	○	○	○
Germany	○	○	○	○	○
Brasil	○	○	○	○	○
Holand	○	○	○	○	○
Scandinavia	○	○	○	○	○
United States	○	○	○	○	○
Italy	○	○	○	○	○
Ireland	○	○	○	○	○
Angola	○	○	○	○	○
Portugal	○	○	○	○	○
Other (specify below)	○	○	○	○	○

Other

[   ]

* 21. Please define the order of importance of channels of receiving reservations for your hotel (whereas 1 is the most important and 5 is the less important).

	1	2	3	4	5
Hotel Website	○	○	○	○	○
Traditional travel agents	○	○	○	○	○
Online travel agents (OTA e.g. Booking.com)	○	○	○	○	○
Social media networks/websites (e.g. Facebook)	○	○	○	○	○
Direct contact via e-mail/phone/at front desk	○	○	○	○	○
Other (specify below)	○	○	○	○	○

Other (specify)

[   ]

Innovation Activity in Hotels

5. Hotel Personnel

* 22. Hotel personnel is employed with.. (%)
(The sum of all answers has to equal 100%)

Permanent contract [   ]

Term contract [   ]

Recibos verdes [   ]

Traineeship [   ]

* 23. What is the average length of employment in your hotel? (Years)

[   ]

* 24. What is the educational background of your hotel staff (%)? (The sum of answers has to be equal to 100%)

Bachelor´s degree or higher [   ]

Secondary or Professional education [   ]

Primary education or less [   ]

* 25. The staff members have received training during the last 3 years (excluding the initial training for the job):

○ NO

○ YES, all the staff

○ YES, part of the staff

* 26. The staff training is

○ Ongoing (planned)

○ Intermittent (occurring occasionally)

* 27. Hotel human resources policy includes (choose all that apply):

☐ Ongoing training

☐ Internal career possibilities

☐ Reward system

☐ Staff empowerment

☐ None

☐ Outro (specify)

[   ]

Innovation Activity in Hotels

6. Innovation Activity

A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems. A process innovation is the implementation of a new or significantly improved production process, distribution method, or supporting activity.
•   Product innovations (new or improved) must benew to your enterprise, but they do not need to be new to your market. Process innovations must be new to your enterprise, but they do not need to be new to your market.
•   Product/process innovations could have been originally developedby your enterprise or by other enterprises or institutions.
(CIS 2012 – The Community Innovation Survey 2012)

* 28. What is the highest degree of innovation, which was made in the hotel during the last three years? Please remember to mark an answer for each row.

	No innovation	Slight changes to existing products/services	Some improvement of existing products/services	Substantial improvement of existing products/services	Substantial improvement and extension of existing products/services	Launch of products/services that are new to the hotel but already exist on the market	Launch of totally new products/services
Quality management	○	○	○	○	○	○	○
Environmental quality management	○	○	○	○	○	○	○
Information and communication technology	○	○	○	○	○	○	○
Room equipment	○	○	○	○	○	○	○
Maintenance and cleaning	○	○	○	○	○	○	○
Security systems	○	○	○	○	○	○	○
Gastronomy	○	○	○	○	○	○	○
Wellness	○	○	○	○	○	○	○
Animation and leisure activities	○	○	○	○	○	○	○
Architecture & design	○	○	○	○	○	○	○
Marketing	○	○	○	○	○	○	○

* 29. Please read the following statements and decide to which degree you agree or disagree.

	Totally disagree	Disagree	Slightly disagree	Nor agree nor disagree	Slightly agree	Agree	Totally agree
1. Management actively seeks innovative ideas.	○	○	○	○	○	○	○
2. Innovation, based on research results, is readily accepted in our organisation.	○	○	○	○	○	○	○
3. Innovation is readily accepted by management.	○	○	○	○	○	○	○
4. People are penalised for new ideas that do not work.	○	○	○	○	○	○	○
5. Innovation in our organisation is encouraged.	○	○	○	○	○	○	○

* 30. During the three years, how important were the following factors in preventing your hotel from innovating or in hampering your innovation activities?

	High	Medium	Low	Factor not experienced
High development cost	○	○	○	○
Lack of funding	○	○	○	○
Lack of qualified personnel	○	○	○	○
High risk	○	○	○	○
Insufficient size	○	○	○	○
Law and regulation	○	○	○	○
Lack of information	○	○	○	○
Demand response	○	○	○	○
Easy imitation	○	○	○	○
Organisational inflexibility	○	○	○	○
Insufficient institutions support	○	○	○	○
Other (specify below)	○	○	○	○

Other

[   ]

* 32. Please identify information sources that during the last 3 years provided information or contribution to the completion of innovation projects in your hotel. (Choose all that apply)

☐ Internal sources (management & staff in your hotel or in your hotel group)

☐ Market sources (suppliers, competitors, customers, private consultants)

☐ Institutional sources (higher education institutions, government or public research institutes)

☐ Other sources (industry fairs, scientific publications, professional and industry associations)

☐ Outro (specify)

[   ]

* 31. How important were each of the following objectives for your activities to develop innovations during the last three years? If your hotel had several projects for product and process innovations, make an overall evaluation.

	High	Medium	Low	Not relevant
To replace obsolete services	○	○	○	○
To improve quality	○	○	○	○
To fulfil laws and regulations	○	○	○	○
To expand the service	○	○	○	○
Improve services flexibility	○	○	○	○
Differentiation from competitors	○	○	○	○
Reduce labour costs	○	○	○	○
Reduce inputs buying	○	○	○	○
Reduce energy consumption	○	○	○	○
Reduce environmental impact	○	○	○	○
Prevent a lag (delay) compared to competitors	○	○	○	○
Open new markets or increase a new market share	○	○	○	○
Other (specify below)	○	○	○	○

Other

[   ]

* 32. Please identify information sources that during the last 3 years provided information or contribution to the completion of innovation projects in your hotel. (Choose all that apply)

☐ Internal sources (management & staff in your hotel or in your hotel group)

☐ Market sources (suppliers, competitors, customers, private consultants)

☐ Institutional sources (higher education institutions, government or public research institutes)

☐ Other sources (industry fairs, scientific publications, professional and industry associations)

☐ Outro (specify)

[   ]

* 33. During the last three years, did your hotel establishment co-operate on any of your innovation activities with other enterprises or institutions? Innovation co-operation is active participation with other enterprises or non-commercial institutions on innovation activities. Both partners do not need to commercially benefit. (Exclude pure contracting out of work with no active co-operation.)

- ○ YES
- ○ NO

* 34. Please indicate the type of innovation co-operation partner (more than one option possible)

- ☐ Other entrerprises within your enterprise group
- ☐ Suppliers of equipment, materials, components or software
- ☐ Clients or customers
- ☐ Competitors or other enterprises in your sector
- ☐ Consultants, commercial labs, or private R&D institutes
- ☐ Universities or other higher education institutions
- ☐ Government or public research institutes
- ☐ Not applicable

* 35. Who developed the innovation projects in your hotel? (*Include independent enterprises plus other parts of your enterprise group such as subsidiaries, sister enterprises, head office, etc. Institutions include universities, research institutes, non-profits, etc.) Tick all that applies.

- ☐ Your enterprise by itself
- ☐ Your enterprise together with other enterprises or institutions*
- ☐ Your enterprise by adapting or modifying goods/services/processes originally developed by other enterprises or institutions*
- ☐ Other enterprises or institutions*

* 36. Please read the following statements and decide to which extent you agree or disagree. Take into consideration the time period of the last three years.

	Totally disagree	Disagree	Slightly disagree	Nor agree nor disagree	Slightly agree	Agree	Totally agree
1. We have been profitable	○	○	○	○	○	○	○
2. We have achieved profit objectives	○	○	○	○	○	○	○
3. We have achieved sales objectives	○	○	○	○	○	○	○
4. We have achieved market share objectives	○	○	○	○	○	○	○
5. We have improved the loyalty of existing customers	○	○	○	○	○	○	○
6. We have attracted a significant number of new customers	○	○	○	○	○	○	○
7. We have had a well perceived image	○	○	○	○	○	○	○
8. We have had a good reputation	○	○	○	○	○	○	○

Innovation Activity in Hotels

7. Information about respondent

* 37. The questionnaire was responded by hotel

☐ Owner

☐ Manager

☐ Outro (especifique)

[_____]

* 38. The respondent is

○ Man

○ Woman

* 39. The age of respondent

[_____]

* 40. The education level of the respondent

    ◯ Bachelor´s degree or higher

    ◯ Secondary education (traditional or professional education)

    ◯ Primary education or less

* 41. Years of Experience

In current hotel establishment	
In hotel industry in general	

Thank you very much for completing the questionnaire!

Best regards,

Cleelia Uudam Costa
PhD in Management, specialisation in Strategy and Entrepreneurship.
ISCTE – Instituto Universitário de Lisboa

Appendix B. Questionnaire in Portuguese

---

1. Introdução ao questionário

O presente questionário é parte integrante do projeto de investigação realizado no âmbito da Tese para a obtenção do grau de Doutoramento em Gestão no ISCTE-IUL pela Doutoranda Cleelia Uudam Costa. Este trabalho está a ser conduzido sob a orientação científica do Professor Catedrático António da Silva Robalo e do Professor Auxiliar Convidado Renato Pereira, do Departamento de Marketing, Operações e Gestão Geral do ISCTE-IUL.

Este questionário tem por objetivo recolher informação sobre a atividade de inovação nos estabelecimentos hoteleiros em Portugal.

Neste trabalho académico não serão em lugar algum revelados dados individuais e será assegurada a confidencialidade das respostas. Apenas resultados agregados poderão constar da tese final.

O questionário demora cerca de 10 minutos. O questionário é guardado automaticamente e pode ser editado ou completado posteriormente, caso utilize sempre o mesmo aparelho electrónico (PC/gadget) e o mesmo browser.

Agradeço desde já a sua participação.

Com os meus melhores cumprimentos,

Cleelia Uudam Costa

---

2. Estabelecimento hoteleiro

---

* 1. Nome e Localização do Hotel

Nome do Hotel (opcional)

Cidade/Município

Código Postal

* 2. Classificação do hotel (estrelas, caso exista)

- ○ 5
- ○ 4
- ○ 3
- ○ 2
- ○ 1
- ○ Não aplicável

* 3. Número de quartos / capacidade máxima (hóspedes)

Número de quartos	
Capacidade máxima (hóspedes)	

* 4. Ano de abertura

* 5. Reestruturação/ Reconstrução/ Modificação de Classificação

Ano	
Tipo de alteração	
Não aplicável	

* 6. Número de funcionários

* 7. Durante quantos meses o hotel se encontra aberto anualmente?

- ○ Empreendimento de Turismo de Habitação
- ○ Empreendimento de Turismo no Espaço Rural - Casa de campo
- ○ Agro Turismo
- ○ Casa de Campo
- ○ Hotel Rural

* 8. Tipo de estabelecimento hoteleiro:

○ Hotel

○ Hoteis-Apartamento

○ Pousadas

○ Aldeamento Turistico

○ Apartamento Turístico

○ Empreendimento de Turismo de Habitação

○ Empreendimento de Turismo no Espaço Rural - Casa de campo

○ Agro Turismo

○ Casa de Campo

○ Hotel Rural

3. Outras informações acerca do estabelecimento hoteleiro

* 9. Estabelecimento hoteleiro opera no mercado como:

○ Unidade independente

○ Cadeia de Hotéis

○ Num grupo de negócios diversificado ou integrado

* 10. No caso de cadeias hoteleiras, as atividades de marketing são levadas a cabo:

○ No hotel

○ Centralmente (sede)

○ Não aplicável

* 11. No caso de cadeias hoteleiras, as reservas são realizadas:

○ No hotel

○ Centralmente (sede)

○ Não aplicável

* 12. O hotel pertence a

○ Pessoa singular (unipessoal)

○ Empresa

○ Grupo de empresas

* 13. A nacionalidade do proprietário/a do hotel é

☐ Portuguêsa

☐ Estrangeira

Origem

[   ]

* 14. O proprietário/a do hotel gere o negócio

○ SIM

○ NÃO

* 15. Caso o proprietário/a do hotel não efetue a gestão do negócio, o hotel é gerido através de

○ Contrato de gestão

○ Contrato de aluguer

○ Contrato de franquia

○ Outro (especifique)

○ Não aplicável

Desde (ano)...

[   ]

4. Instalações, serviços e hóspedes

* 16. O estabelecimento hoteleiro oferece as seguintes opções de alojamento e alimentação: (Escolha todas as que se aplicam)

☐ Somente alojamento

☐ Alojamento e pequeno-almoço

☐ Meia pensão (alojamento, pequeno almoço e jantar)

☐ Pensão completa (alojamento, pequeno almoço, almoço e jantar)

* 17. As seguintes instalações estão disponíveis no estabelecimento hoteleiro:
(Escolha todas as que se aplicam)

☐ Piscina

☐ Spa

☐ Ginásio

☐ Centro de negócios

☐ Restaurante

☐ Bar

☐ Acesso para deficientes motores

☐ Área/Parque para crianças

☐ Instalações para lavandaria interna (lavandaria do hotel)

☐ Parque privativo

☐ Nenhuma das acima mencionadas

Comentário

[   ]

* 18. O estabelecimento hoteleiro oferece, além de alojamento e alimentação, os seguintes serviços:
(Escolha todas as que se aplicam)

☐ Amenities nos quartos

☐ Mini Bar no quarto

☐ Receção 24h

☐ Cobertura de internet sem fios em todo o hotel

☐ Acesso gratuito à internet sem fios, em todo o hotel

☐ Acesso gratuito à internet sem fios, nas áreas comuns

☐ Serviço de lavandaria interna (para lavandaria à disposição dos hóspedes)

☐ Serviço de transporte de/para o aeroporto ou outros locais (serviço prestado pela unidade hoteleira)

Comentário

[   ]

* 19. Os hóspedes mais frequentes são: (Assinale por ordem de importância, em que 1 significa mais frequente e 5 menos frequente)

	1	2	3	4	5
Famílias (com criança/s)	○	○	○	○	○
Casais	○	○	○	○	○
Turistas individuais	○	○	○	○	○
Viajantes de negócios	○	○	○	○	○
Grupos	○	○	○	○	○
Outro (especificar no campo abaixo)	○	○	○	○	○

Outro (especifique)

[   ]

* 20. Por favor, assinale o TOP 5 das nacionalidades dos seus hóspedes, nos últimos 3 anos. (1 indica a mais frequente e 5 a menos frequente)

	1	2	3	4	5
Reino Unido	○	○	○	○	○
Espanha	○	○	○	○	○
França	○	○	○	○	○
Alemanha	○	○	○	○	○
Brasil	○	○	○	○	○
Holanda	○	○	○	○	○
Escandinávia	○	○	○	○	○
Estados Unidos da América	○	○	○	○	○
Itália	○	○	○	○	○
Irlanda	○	○	○	○	○
Angola	○	○	○	○	○
Portugal	○	○	○	○	○
Outra (especificar no campo abaixo)	○	○	○	○	○

Outra

[   ]

* 21. Por favor defina a ordem de importância dos canais através dos quais recebe as suas reservas (Considerando 1 o mais importante e 5 o menos importante)

	1	2	3	4	5
Website do hotel	○	○	○	○	○
Agências de viagens tradicionais	○	○	○	○	○
Agências de viagens online (OTA, ex Booking.com)	○	○	○	○	○
Redes sociais (ex: Facebook)	○	○	○	○	○
Contacto direto via e-mail/telefone/receção	○	○	○	○	○
Outro	○	○	○	○	○

Outro (especifique)

[   ]

5. Funcionários do hotel

* 22. Funcionários do hotel são contratados com.. (%)
(O somatório de todas as opções escolhidas nesta questão deverá ser 100)

Contrato sem termo	[ ]
Contrato a termo	[ ]
Recibos verdes	[ ]
Estágio	[ ]
Outro (e.g. Outsourcing)	[ ]

* 23. Qual é o tempo médio de permanência dos colaboradores do seu hotel? (Anos)

[   ]

* 24. Qual é o nível de habilitações dos funcionários do hotel? (%) (O somatório de todas as opções escolhidas deverá ser 100%)?

Licenciatura ou superior	[ ]
Ensino Secundário (Via Tradicional ou Profissional)	[ ]
Ensino Primário ou inferior	[ ]

* 25. Os funcionários receberam formação nos últimos 3 anos (excluindo a formação inicial para a sua posição)

○ Não

○ Sim, todos os funcionários

○ Sim, parte dos funcionários

26. A formação dos funcionários é:

○ Contínua (planeada)

○ Intermitente (ocorre ocasionalmente)

* 27. A política de recursos humanos do hotel inclui:
(Escolha todas as que se aplicam)

☐ Formação contínua

☐ Possibilidades de progressão interna

☐ Sistema de recompensa

☐ Autonomia e responsabilidade dada aos funcionários

☐ Nenhum

☐ Outro (Especifique)

[ ]

6. Atividade de inovação

Inovação de produto corresponde à introdução no mercado de um bem ou serviço novo ou significativamente melhorado no que diz respeito às suas capacidades ou potencialidades iniciais, facilidade de utilização, componentes ou subsistemas. Inovação de processo corresponde à implementação pela empresa de um processo de produção, de um método de distribuição ou de uma atividade de apoio aos seus bens ou serviços, novos ou significativamente melhorados.
- A introdução de um produto novo ou significativamente melhorado não necessita de ser novidade no setor de atividade ou no mercado, mas deverá ser novidade em relação aos bens e/ou serviços já comercializados pela empresa. A implementação de um processo novo ou significativamente melhorado não necessita de ser novidade para o seu mercado, mas deverá sê-lo para a empresa.
- Não é relevante se a inovação foi originalmente desenvolvida pela empresa, pode ter sido desenvolvida originalmente por outras empresas ou instituições. (CIS 2012 - Inquérito Comunitário à Inovação 2012)

* 28. Qual o maior grau de inovação realizado no hotel, nos últimos 3 anos? Por favor lembre-se de marcar uma opção para cada linha.

	Não houve inovação	Pequenas mudanças em produtos/serviços existentes	Algum melhoramento em produtos/serviços existentes	Melhoramento substancial em produtos/serviços existentes	Melhoramento substancial e extensão de produtos/serviços existentes	Lançamento de produtos/serviços novos para o hotel, mas existentes no mercado	Lançamento de produtos/serviços totalmente novos
Gestão da qualidade	○	○	○	○	○	○	○
Gestão da qualidade ambiental	○	○	○	○	○	○	○
Tecnologias de informação e comunicação	○	○	○	○	○	○	○
Equipamentos dos quartos	○	○	○	○	○	○	○
Manutenção e limpeza	○	○	○	○	○	○	○
Sistemas de segurança	○	○	○	○	○	○	○
Gastronomia	○	○	○	○	○	○	○
Bem-estar	○	○	○	○	○	○	○
Atividades de animação e lazer	○	○	○	○	○	○	○
Arquitetura e design	○	○	○	○	○	○	○
Marketing	○	○	○	○	○	○	○

* 29. Por favor leia as seguintes afirmações e decida até que ponto concorda ou discorda das mesmas.

	Discordo totalmente	Discordo	Discordo um pouco	Não concordo nem discordo	Concordo um pouco	Concordo	Concordo totalmente
1. A gestão procura ativamente novas ideias	○	○	○	○	○	○	○
2. Inovação, baseada em resultados obtidos através de pesquisas, é prontamente aceite na nossa organização	○	○	○	○	○	○	○
3. Inovação é prontamente aceite pela gestão	○	○	○	○	○	○	○
4. Os colaboradores são penalizados pelas novas ideias que não resultam	○	○	○	○	○	○	○
5. A inovação é encorajada na nossa organização	○	○	○	○	○	○	○

* 30. Durante os últimos três anos, qual foi o impacto (negativo) dos seguintes fatores relativamente à capacidade de inovação? (Por favor, assinale uma opção para cada linha.)

	Alto	Médio	Baixo	Fator não avaliado
Custos de desenvolvimento	○	○	○	○
Acesso a financiamento	○	○	○	○
Acesso a pessoal qualificado	○	○	○	○
Nível de Risco incorrido	○	○	○	○
Dimensão/Escala do hotel	○	○	○	○
Leis e regulamentação	○	○	○	○
Acesso a informação especializada	○	○	○	○
Identificação de oportunidades de negócio	○	○	○	○
Grau de imitabilidade	○	○	○	○
Flexibilidade organizacional	○	○	○	○
Suporte institucional	○	○	○	○

Outro

[   ]

194

* 31. Durante os últimos três anos, qual foi a importância dos seguintes objectivos para as actividades de inovação? Caso o seu estabelecimento tenha tido vários projetos de inovação de produtos e processos, faça uma avaliação geral (Por favor, marque uma opção por cada linha)

	Alto	Médio	Baixo	Não é relevante
Substituir serviços desactualizados	○	○	○	○
Melhorar a qualidade	○	○	○	○
Cumprir leis e regulamentação	○	○	○	○
Expandir o serviço	○	○	○	○
Melhorar a flexibilidade dos serviços	○	○	○	○
Diferenciação face à concorrência	○	○	○	○
Redução de custos laborais	○	○	○	○
Redução de compras	○	○	○	○
Redução do consumo de energia	○	○	○	○
Redução do impacto ambiental	○	○	○	○
Evitar um atraso competitivo	○	○	○	○
Abrir novos mercados ou aumentar a quota de mercado	○	○	○	○

Outro

[   ]

* 32. Por favor identifique as fontes de informação que, durante os três anos, providenciaram informação ou contribuíram para a realização de projetos de inovação no seu hotel. (Escolha todas as que se aplicam.)

☐ Fontes internas (administração e funcionários do hotel ou do grupo hoteleiro)

☐ Fontes do mercado (fornecedores, concorrentes, clientes, consultores privados)

☐ Fontes institucionais (Instituições de educação superior, governo ou Instituições de investigação públicas)

☐ Outras Fontes (Feiras da indústria, publicações científicas, associações profissionais ou da indústria)

☐ Outro (especifique)

[   ]

* 33. Durante os últimos três anos, o seu estabelecimento hoteleiro colaborou com outras empresas ou instituições, nas suas atividades de inovação?
[Cooperação para a inovação é a participação ativa em projetos de inovação com outras empresas ou instituições. A cooperação não implica que ambos os parceiros retirem benefícios comerciais. A simples contratação ao exterior, sem qualquer participação ativa da empresa, não é considerada cooperação.]

○ Sim

○ Não

* 34. Por favor, indique o tipo de parceiro de inovação cooperativa (é possível mais do que uma opção)

☐ Outras empresas do mesmo grupo

☐ Fornecedores de equipamentos, serviços, matérias, componentes ou software

☐ Clientes

☐ Concorrentes ou outras empresas do mesmo setor de atividade

☐ Consultores, laboratórios comerciais ou instituições privadas de pesquisa e desenvolvimento

☐ Universidades ou outras instituições de ensino superior

☐ Governo ou instituições públicas de pesquisa

☐ Não aplicável

* 35. Quem desenvolveu os projetos de inovação no seu estabelecimento hoteleiro? (Inclui empresas independentes, e outras parte do seu grupo empresarial, tais como, subsidiários, empresas irmãs, sede, etc. Instituições incluem universidades, instituições de pesquisa, organizações sem fins lucrativos, etc). Assinale todas as que se aplicam.
[Inclua outras empresas ou empresas pertencentes ao grupo (tais como subsidiárias, empresas irmãs ou sede social, etc.) Instituições inclui Universidades, institutos de investigação, Instituições Privadas Sem Fins Lucrativos (IPSFL) etc.]*

☐ A empresa

☐ A sua empresa em conjunto com outras empresas ou instituições*

☐ A sua empresa ao adaptar ou modificar bens/serviços/processos originalmente desenvolvidos por outras empresas ou instituições*

☐ Outras empresas ou instituições*

* 36. Por favor leia as seguintes informações e decida até que ponto concorda ou discorda. Tenha em consideração o período de 3 anos.

	Discordo totalmente	Discordo	Discordo um pouco	Não concordo nem discordo	Concordo um pouco	Concordo	Concordo totalmente
1. Temos sido rentáveis	○	○	○	○	○	○	○
2. Temos atingido objetivos de lucro	○	○	○	○	○	○	○
3. Temos atingido objetivos de vendas	○	○	○	○	○	○	○
4. Temos atingido objetivos de quota de mercado	○	○	○	○	○	○	○
5. Temos melhorado na fidelização de clientes	○	○	○	○	○	○	○
6. Temos atraído um número significante de novos clientes	○	○	○	○	○	○	○
7. Temos mantido uma boa imagem da marca	○	○	○	○	○	○	○
8. Temos mantido uma boa reputação	○	○	○	○	○	○	○

7. Informação sobre o inquirido

* 37. O questionário foi respondido por:

☐ Proprietário

☐ Director do hotel

☐ Outro

Outro (especifique)

[   ]

* 38. O inquirido é:

○ Homem

○ Mulher

* 39. Idade do inquirido

[   ]

* 40. Nível de habilitações do inquirido:

○ Licenciatura ou superior

○ Ensino Secundário (Via Tradicional ou Profissional)

○ Ensino Primário ou inferior

* 41. Anos de experiência:

No estabelecimento hoteleiro atual [   ]

Na indústria hoteleira, em geral [   ]

Obrigada por responder ao inquérito!

Com os melhores cumprimentos,

Cleelia Uudam Costa
Programa Doutoral em Gestão com especialização em Estratégia e Desenvolvimento Empresarial
ISCTE – Instituto Universitário de Lisboa

Appendix C. Email Template

E-mail Inviting Hotel Managers to Respond the Questionnaire (in Portuguese)

Caro(a) Director(a) do ……………………………,

Gostaria de pedir a sua colaboração no meu projeto de investigação.

No âmbito do Doutoramento em Gestão (pela ISCTE - IUL), desenvolvo de momento uma Tese de Doutoramento cujo tema se enquadra no mercado dos estabelecimentos hoteleiros em Portugal.

A minha tese está a ser conduzida sob a orientação científica do Professor Catedrático António da Silva Robalo e do Professor Auxiliar Convidado Renato Pereira, do Departamento de Marketing, Operações e Gestão Geral do ISCTE-IUL. Este projeto de investigação tem como objetivo a criação de uma base para benchmarking da atividade de inovação existente no sector hoteleiro em Portugal. Acredito que esta tese terá uma grande importância, visto nunca se ter conduzido um estudo sobre o assunto em questão com esta dimensão no sector hoteleiro português. Já foram realizados estudos similares noutros países demonstrando o padrão das atividades de inovação nos hotéis e ligação com a melhoria de resultados.

O questionário tem como fim a recolha de informação sobre a atividade de inovação nos estabelecimentos hoteleiros em Portugal. O questionário demora cerca de 10-15 minutos e baseia-se maioritariamente na opinião dos managers, não pedindo informações detalhadas. Em nenhum momento, durante este trabalho académico, serão divulgados dados individuais. As respostas fornecidas ao questionário serão de caráter confidencial, sendo apenas apresentados nesta Tese final resultados agregados. Como forma de agradecimento pela sua participação, ser-lhe-á enviado um relatório com as conclusões gerais do presente estudo.

Pretende-se que o questionário disponibilizado na hiperligação abaixo seja respondido por o/a director(a) do hotel: https://pt.surveymonkey.com/r/hotelinnovation_ISCTE_X
Como forma de agradecimento pela sua participação, ser-lhe-á enviado um relatório com as conclusões gerais do presente estudo.

Caso tenha alguma dúvida, por favor não hesite em contatar-me.
Agradeço desde já a sua participação.
Com os melhores cumprimentos,
Cleelia Uudam Costa
Programa Doutoral em Gestão com especialização em Estratégia e Desenvolvimento Empresarial
ISCTE – Instituto Universitário de Lisboa

Appendix D. Hotel Types, Innovativeness and Innovation Behavior

Degree of Innovativeness

Hotel Type	N	%	Mean	Std. Deviation
Hotel	230	70.6	5.81	.96
Hoteis-Apartamento (Apart-Hotel)	25	7.7	5.59	.88
Pousada	7	2.1	5.64	.67
Aldeamento Turistico (Tourist Village/Resort)	9	2.8	5.47	1.10
Apartamento Turistico (Tourist Apartments)	10	3.1	5.48	1.15
Empreendimento de Turismo de Habitação (Manor House Tourism)	9	2.8	5.92	.98
Empreendimento de Turismo no Espaço Rural (Rural Tourism)	8	2.5	5.81	.72
Agro Turismo (Agritourism)	6	1.8	5.08	1.74
Casa do Campo (Country House)	7	2.1	5.64	.86
Hotel Rural (Rural Hotel)	15	4.6	5.93	1.01
Total	326	100.0	5.76	.97

Degree of Innovation Behavior

Hotel Type	N	%	Mean	Std. Deviation
Hotel	230	70.6	3.98	1.16
Hoteis-Apartamento (Apart-Hotel)	25	7.7	3.77	1.11
Pousada	7	2.1	4.19	1.09
Aldeamento Turistico (Tourist Village/Resort)	9	2.8	3.69	1.15
Apartamento Turistico (Tourist Apartments)	10	3.1	3.16	1.23
Empreendimento de Turismo de Habitação (Manor House Tourism)	9	2.8	4.21	1.47
Empreendimento de Turismo no Espaço Rural (Rural Tourism)	8	2.5	3.52	1.06
Agro Turismo (Agritourism)	6	1.8	3.36	.95
Casa do Campo (Country House)	7	2.1	3.58	1.36
Hotel Rural (Rural Hotel)	15	4.6	3.83	1.44
Total	326	100.0	3.90	1.18

Appendix E. Eleven Innovation Areas in Small, Midsize and Big Hotels

Small Hotels

Areas of Innovation	N	Minimum	Maximum	Mean	Std. Deviation
Quality management	170	1.00	7.00	3.86	1.54
Environmental quality management	170	1.00	7.00	3.37	1.60
Information and communication technology	170	1.00	7.00	4.27	1.49
Room equipment	170	1.00	7.00	3.89	1.67
Maintenance and cleaning	170	1.00	7.00	4.05	1.51
Security systems	170	1.00	7.00	3.64	1.70
Gastronomy	170	1.00	7.00	3.73	1.94
Wellness	170	1.00	7.00	4.04	1.60
Animation and leisure activities	170	1.00	7.00	3.02	1.80
Architecture & design	170	1.00	7.00	3.22	1.94
Marketing	170	1.00	7.00	4.25	1.75

Midsized Hotels

Areas of Innovation	N	Minimum	Maximum	Mean	Std. Deviation
Quality management	107	1.00	7.00	4.23	1.71
Environmental quality management	107	1.00	7.00	3.89	1.68
Information and communication technology	107	1.00	7.00	4.54	1.51
Room equipment	107	1.00	7.00	4.01	1.51
Maintenance and cleaning	107	1.00	7.00	4.24	1.33
Security systems	107	1.00	7.00	3.83	1.59
Gastronomy	107	1.00	7.00	4.22	1.85
Wellness	107	1.00	7.00	4.23	1.71
Animation and leisure activities	107	1.00	7.00	3.21	1.84
Architecture & design	107	1.00	7.00	3.37	2.02
Marketing	107	1.00	7.00	4.53	1.68

Big Hotels

Areas of Innovation	N	Minimum	Maximum	Mean	Std. Deviation
Quality management	49	1.00	7.00	4.35	1.42
Environmental quality management	49	1.00	7.00	4.00	1.63
Information and communication technology	49	1.00	7.00	4.67	1.41
Room equipment	49	1.00	7.00	4.22	1.64
Maintenance and cleaning	49	1.00	7.00	3.86	1.37
Security systems	49	1.00	7.00	3.86	1.62
Gastronomy	49	1.00	7.00	4.76	1.39
Wellness	49	1.00	7.00	4.22	1.54
Animation and leisure activities	49	1.00	7.00	3.65	1.65
Architecture & design	49	1.00	7.00	3.14	1.76
Marketing	49	1.00	7.00	4.67	1.57

Appendix F. Objectives Fostering Innovation in Small, Midsize and Big Hotels

Small Hotels

Objectives Fostering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
To replace obsolete services	170	1.00	4.00	2.87	1.04
To improve quality	170	1.00	4.00	3.34	.90
To fulfil laws and regulations	170	1.00	4.00	3.26	.95
To expand the service	170	1.00	4.00	2.92	.96
Improve services flexibility	170	1.00	4.00	3.03	.93
Differentiation from competitors	170	1.00	4.00	3.21	.97
Reduce labour costs	170	1.00	4.00	2.83	.97
Reduce inputs buying	170	1.00	4.00	2.74	.92
Reduce energy consumption	170	1.00	4.00	3.21	.90
Reduce environmental impact	170	1.00	4.00	3.01	.95
Prevent a lag (delay) compared to competitors	170	1.00	4.00	2.89	1.01
Open new markets or increase a new market share	170	1.00	4.00	2.88	1.10

Midsized Hotels

Objectives Fostering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
To replace obsolete services	107	1.00	4.00	3.00	1.01
To improve quality	107	1.00	4.00	3.47	.72
To fulfil laws and regulations	107	1.00	4.00	3.32	.77
To expand the service	107	1.00	4.00	2.98	.94
Improve services flexibility	107	1.00	4.00	3.26	.80
Differentiation from competitors	107	1.00	4.00	3.23	.84
Reduce labour costs	107	1.00	4.00	2.92	.85
Reduce inputs buying	107	1.00	4.00	2.99	.77
Reduce energy consumption	107	1.00	4.00	3.40	.75
Reduce environmental impact	107	1.00	4.00	3.11	.91
Prevent a lag (delay) compared to competitors	107	1.00	4.00	3.03	.97
Open new markets or increase a new market share	107	1.00	4.00	3.08	.89

Big Hotels

Objectives Fostering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
To replace obsolete services	49	1.00	4.00	3.25	.88
To improve quality	49	1.00	4.00	3.61	.70
To fulfil laws and regulations	49	1.00	4.00	3.08	.89
To expand the service	49	1.00	4.00	3.16	.77
Improve services flexibility	49	1.00	4.00	3.35	.78
Differentiation from competitors	49	1.00	4.00	3.37	.83
Reduce labour costs	49	1.00	4.00	3.00	.79
Reduce inputs buying	49	1.00	4.00	3.00	.79
Reduce energy consumption	49	1.00	4.00	3.51	.68
Reduce environmental impact	49	1.00	4.00	3.18	.78
Prevent a lag (delay) compared to competitors	49	1.00	4.00	3.27	.64
Open new markets or increase a new market share	49	1.00	4.00	3.27	.78

Appendix G. Factors Preventing Innovation in Small, Midsize and Big Hotels

Small Hotels

Factors Preventing/Hampering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
High development cost	170	1.00	4.00	2.75	1.06
Lack of funding	170	1.00	4.00	2.38	1.18
Lack of qualified personnel	170	1.00	4.00	2.54	1.03
High risk	170	1.00	4.00	2.32	.98
Insufficient size	170	1.00	4.00	2.60	1.09
Law and regulation	170	1.00	4.00	2.67	1.02
Lack of information	170	1.00	4.00	2.38	.88
Demand response	170	1.00	4.00	2.44	.90
Easy imitation	170	1.00	4.00	2.25	.95
Organizational inflexibility	170	1.00	4.00	2.38	.88
Insufficient institutions support	165	1.00	4.00	2.28	.96

Midsized Hotels

Factors Preventing/Hampering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
High development cost	107	1.00	4.00	2.70	1.08
Lack of funding	107	1.00	4.00	2.19	1.13
Lack of qualified personnel	107	1.00	4.00	2.44	.95
High risk	107	1.00	4.00	2.04	.89
Insufficient size	107	1.00	4.00	2.30	.89
Law and regulation	107	1.00	4.00	2.51	1.01
Lack of information	107	1.00	4.00	2.39	.92
Demand response	107	1.00	4.00	2.29	.84
Easy imitation	107	1.00	4.00	2.08	.93
Organizational inflexibility	107	1.00	4.00	2.27	.86
Insufficient institutions support	107	1.00	4.00	2.13	.86

Big Hotels

Factors Preventing/Hampering Innovation	N	Minimum	Maximum	Mean	Std. Deviation
High development cost	49	1.00	4.00	2.96	.93
Lack of funding	49	1.00	4.00	2.22	1.10
Lack of qualified personnel	49	1.00	4.00	2.67	.92
High risk	49	1.00	4.00	2.47	.98
Insufficient size	49	1.00	4.00	2.41	1.00
Law and regulation	49	1.00	4.00	2.63	1.01
Lack of information	49	1.00	4.00	2.45	.94
Demand response	49	1.00	4.00	2.63	.93
Easy imitation	49	1.00	4.00	1.98	.92
Organizational inflexibility	49	1.00	4.00	2.51	.89
Insufficient institutions support	49	1.00	4.00	2.31	.89

Appendix H. Histogram, P-P Plot and Scatter plot of the Regression Standardized residuals

(Independent Variable: Innovation Behavior, Dependent Variable: Performance)
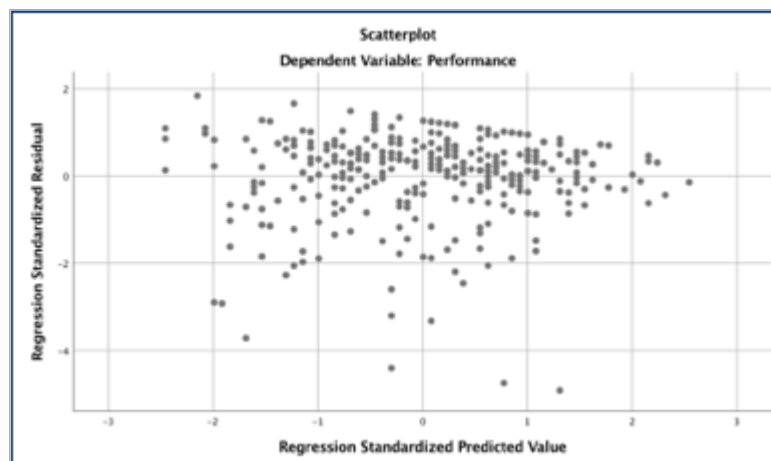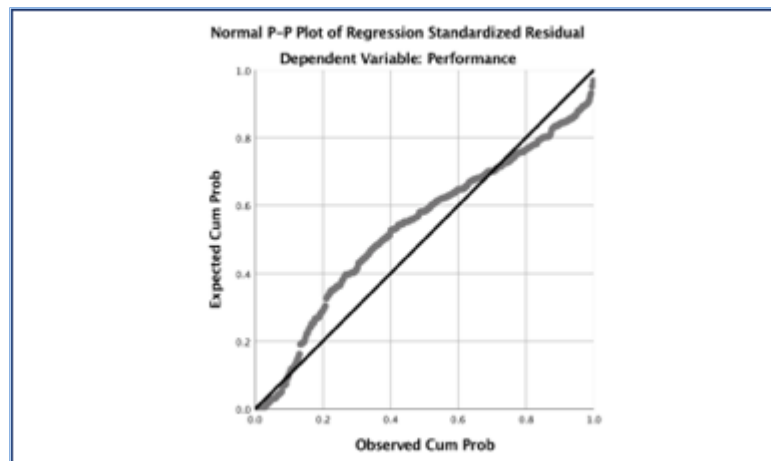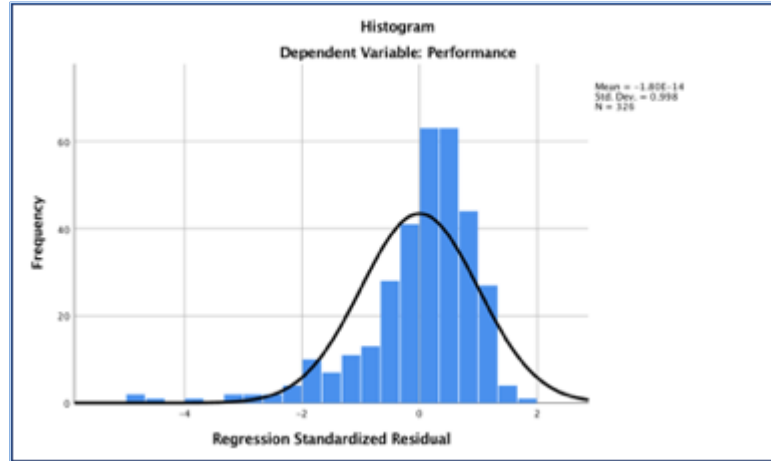
Appendix I. Histogram of Performance Before and After Two-Step Transformation
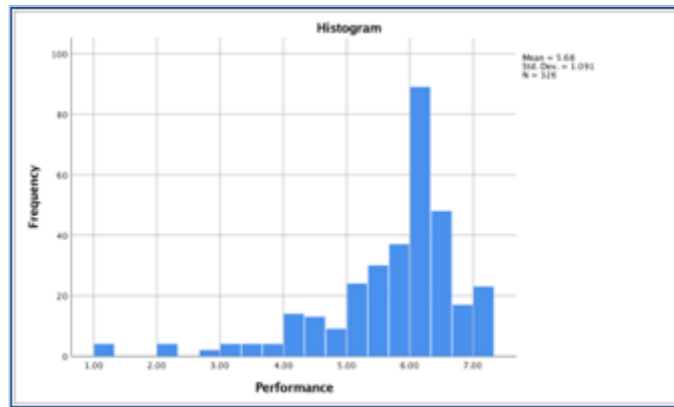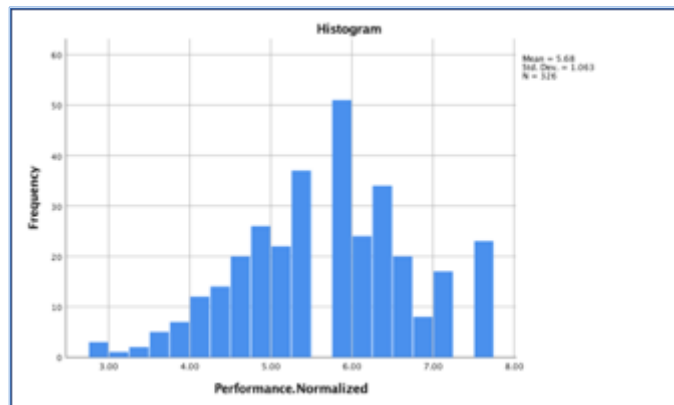

Figure a) Histogram before two-step transformation

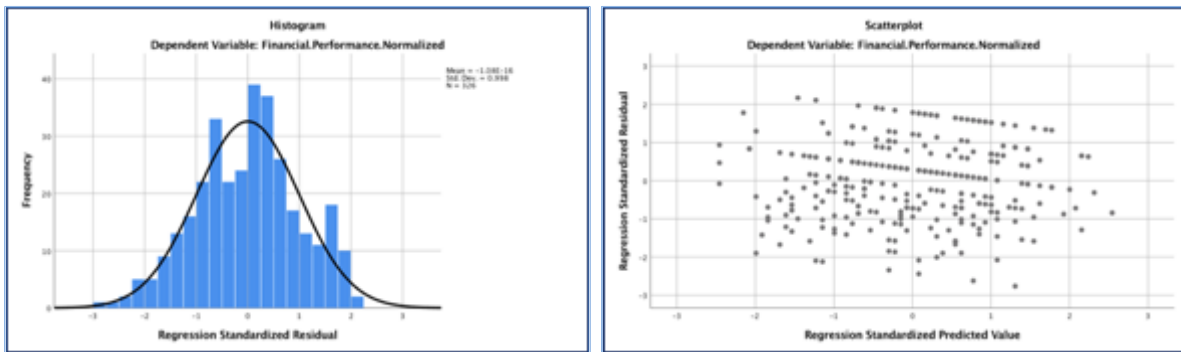Figure b) Histogram after two-step transformation

Appendix J. Histogram and Scatter Plot of Regression Standardized Residuals

(a) Independent Variable: Innovation Behavior, Dependent Variable: Transformed Financial Performance);

(b) Independent Variable: Innovation Behavior, Dependent Variable: Transformed Nonfinancial Performance)