ISCTE Business School
Instituto Universitário de Lisboa

ENERGY MANAGEMENT IN 4 AND 5 STAR HOTELS IN ALGARVE

Joana Pimentel Ferreira da Costa Mendes

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Orientador(a):
Prof. Doutora Sofia Santos, Prof. Auxiliar, ISCTE Business School, Departamento de Marketing, Operações e Gestão Geral

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"*Humanity already possesses the fundamental scientific, technical, and industrial know-how to solve the carbon and climate problem for the next half-century.*"

Pacala and Socolow (2004)

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Writing a dissertation is journey from the moment we face the blank paper and start to think about what we would like to develop. This journey has become the journey of my life and will interfere with whom I'll be as a professional.

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RESUMO

O turismo é o sector da economia mundial que tem registado um crescimento mais acelerado, de tal forma que a Organização Mundial do Turismo (WTO) prevê um crescimento médio anual mundial, entre 1995 e 2020, de 4,1%. Este crescimento económico deve contribuir para um desenvolvimento sustentável e, com tal, ser acompanhado por uma consciencialização ambiental de todos os stakeholders e por estratégias de mudança que apontem no sentido da preservação do meio ambiente, de modo a não comprometer os recursos naturais de gerações futuras.

A gestão da energia no turismo é o tema central da presente tese. O cenário escolhido foram os de hotéis 4 e 5 estrelas no Algarve, o destino turístico mais importante de Portugal. Os objectivos principais do estudo foram o de avaliar o estado actual da gestão da energia nestes hotéis, entender as políticas e estratégias seguidas para otimizar a gestão de energia, e analisar as boas práticas nesta matéria.

A população é constituída por 132 hotéis, aos quais foi enviado um questionário através de correio electrónico. A taxa de resposta foi de 39%. Os resultados evidenciam um maior nível de implementação de práticas directamente relacionadas com a otimização de energia do que nas relacionadas com a redução dos impactos ambientais. Em geral, os inquiridos consideram que a gestão de energia faz parte das preocupações dos responsáveis pelos hotéis, que o nível de implementação de boas práticas nesta matéria é elevado (78%) e que tanto os colaboradores como os turistas atribuem grande importância a esta questão.

Palavras-chave: Gestão, Energia, Eficiência, Turismo.

Classificações JEL: Q01, Q40

ABSTRACT

Tourism is the sector of the global economy that has grown faster, in such a way that the United Nations World Tourism Organization (UNWTO) predicts a global average annual growth between 1995 and 2020, around 4.1%. This growth should contribute to a sustainable development and, as such, be accompanied by an environmental awareness of all stakeholders and strategies for change pointing towards the preservation of the environment, so as not to endanger the natural resources of generations future.

Energy management in tourism is the central theme of this thesis. The scenario chosen were 4 and 5 star hotels in the Algarve, the most important tourist destination in Portugal. The main objectives of the study were to assess the current state of energy management in hotels 4 and 5 stars, understand the policies and strategies followed to optimize energy management, and analyze best practices in hotels in this subject.

The population comprises 132 hotels, of which a questionnaire was sent via email. The response rate was 39%. Results show a higher level of implementation of practices directly related to the optimization of energy than those related to the reduction of environmental impacts. In general, respondents consider that energy management is part of the concerns of those responsible for the hotels, the level of implementation of good practices in this area is high (78%) and that both employees and tourists attach great importance to this issue important.

Keywords: Management, Energy, Efficiency, Tourism.

JEL Classifications: Q01, Q40

SUMÁRIO EXECUTIVO

O turismo é o sector da economia mundial que tem registado um crescimento mais acelerado, de tal forma que a Organização Mundial do Turismo (WTO) prevê um crescimento médio anual mundial, entre 1995 e 2020, na ordem dos 4,1%. Este crescimento económico deve contribuir para um o desenvolvimento sustentável e, com tal, ser acompanhado por uma consciencialização ambiental de todos os stakeholders e por estratégias de mudança que apontem no sentido da preservação do meio ambiente, de modo a não comprometer os recursos naturais de gerações futuras.

Para as organizações sobreviverem e competirem no mercado global, precisam de melhorar bastante o seu desempenho económico e procurar soluções que sejam compatíveis com objectivos de sustentabilidade para o planeta. Neste contexto, a gestão de energia e as preocupações de eficiência energética, devem ser encaradas como uma oportunidade viável, a qual, segundo Turner (2004), terá tendência para ser cada vez mais adoptada.

A gestão da energia no turismo é o tema central da presente tese. O cenário escolhido foram os de hotéis 4 e 5 estrelas no Algarve, o destino turístico mais importante de Portugal. Os objectivos principais do estudo foram o de avaliar o estado actual da gestão da energia nos hotéis de 4 e 5 estrelas, entender as políticas e estratégias seguidas para otimizar a gestão de energia, e analisar as boas práticas em hotéis nesta matéria. Assim, a investigação debruça-se sobre duas questões: a gestão de energia ser uma prática estabelecida nesta população e quais os principais motivos intrínsecos a esta prática.

A população é constituída por 132 hotéis (35 de 5 estrelas e 97 de 4 estrelas). O questionário foi desenhado com base em três entrevistas conduzidas preliminarmente junto de um director geral e dois directores de Manutenção. Em termos de estrutura, o questionário é constituído por duas partes distintas. Uma primeira parte relacionada com a perspetiva da gestão de topo relativamente a questões estratégicas e operacionais do hotel em termos energéticos, práticas desenvolvidas, compromissos assumidos e percepções sobre o grau de importância atribuído a esta questão pelos colaboradores e pelos clientes. A segunda parte diz respeito à caracterização do hotel em si.

Seguidamente, o inquérito foi passado para uma plataforma online e enviado a todos os directores gerais dos hotéis da base de dados. Foram feitas três tentativas no sentido de aumentar a taxa de resposta ao inquérito. Responderam 51 hotéis o que corresponde a uma taxa de resposta de 39%, 12 hotéis de 5 estrelas (24%) e 39 de 4 estrelas (74%). Como já foi referido o estudo foi dirigido aos gestores das unidades hoteleiras, e em 60,8% das vezes foi o

próprio gestor do hotel a responder. Nos restantes 39,2% a respostas foram dadas por gestores intermédios, por indicação do director geral.

Em geral, os inquiridos consideram que o nível global de implementação de práticas de gestão de energia nos hotéis é elevado (78%). Esta conclusão é consistente com um estudo anterior de Viegas (2008) no Algarve, e de Min (2011) na China. O estudo realizado por Viegas (2008) concluiu que a maioria dos hotéis obteve uma classificação média-alta (80%) em todas as áreas ligadas à conservação, eficiência e gestão de energia. No estudo Min (2011), cerca de 80% dos participantes manifestou acreditar na protecção ambiental e que essa protecção é importante para a performance e desenvolvimento do turismo enquanto indústria. No entanto, os resultados evidenciam um maior nível de implementação nas questões directamente relacionadas com a otimização de energia do que com a redução do impacto ambiental (83% e 60,9% respectivamente).

Os testes estatísticos realizados revelaram não haver diferença estatisticamente significativa entre a categoria do hotel e a maior parte das práticas, à excepção de quatro práticas que incidem sobre: sistemas de iluminação eficiente; reguladores automáticos de temperatura; sistemas que utilizam energia a partir de fontes renováveis ou de cogeração; e incentivar os colaboradores a desligarem as luzes quando um espaço fica vazio. Nas primeiras 3, os hotéis de 5 estrelas tiveram melhores resultados, o que é facilmente perceptível pois são medidas de fácil implementação e cujo retorno, em termos de poupanças, é quase imediato. Estas medidas requerem investimento inicial e uma forma de pensar mais estratégica e de longo prazo. Esta filosofia está muitas vezes ligada a empresas de serviços que dependem da qualidade do produto oferecido.

Na última medida, os hotéis de 4 estrelas tiveram melhores resultados. Para além do potencial de poupança energética, esta medida não requer investimento. Este grupo de hotéis tem mais dificuldades no posicionamento dos seus produtos e corre o risco de ficar "preso no meio", ou seja, de ter que lidar e de competir com combinações de produtos com diferentes níveis de qualidade e de preço. Assim, os hotéis nesta categoria pretendem oferecer um produto de qualidade mais barato que os hotéis de 5 estrelas. Consequentemente, qualquer possibilidade de poupança de custos que não requeira investimento inicial é sempre mais que bem-vinda.

Provou-se ainda existir uma associação estatisticamente significativa entre a categoria do hotel e as seguintes práticas: investimentos destinados à redução das emissões de CO2, incentivar os colaboradores a desligarem as luzes quando um espaço fica vazio, dispor de

equipamentos de classe energética A, de reguladores automáticos de temperatura, e de sistemas que utilizam energia a partir de fontes renováveis ou de cogeração.

Resumindo, a resposta à primeira pergunta de investigação é positiva, isto é, a gestão da energia é uma prática estabelecida em hotéis de 4 e 5 estrelas no Algarve sendo que, globalmente, cada hotel implementa 78% de práticas ou, por outras palavras, implementa 14 das 18 medidas estudas. Quanto às principais razões para esta implementação são: clientes, colaboradores e custos operacionais. Na opinião dos entrevistados, ambos clientes e colaboradores atribuem bastante importância à eficiência energética. Relativamente à redução dos custos operacionais através da eficiência energética, verificou-se que tem maior importância que a redução do impacto ambiental da organização.

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1. INTRODUCTION

The recent economic crisis led to a wave of minimizing costs, not only within individuals but also amongst companies and governments. The impacts of such behaviour are being felt all over society. This fact, combined with the environmental changes the planet is suffering (such as global warming, greater natural catastrophes, among others), are starting to change the way we live and do business. People are increasingly becoming more environmental consciousness and companies feel the need to adapt to this new reality. Therefore, companies in all sectors are naturally becoming more and more involved in the community and their problems and concerns. The importance of being efficient is not just because of the economic perspective of cutting costs, which is important in nowadays situation, but also to have a long term perspective of the development of the company.

Tourism is one of the most growing sectors and one of the most resource consuming. Therefore, one of the most important aspects in the development of a company working in the Tourism segment is to operate as efficient as possible. Energy is a very expensive resource and an essential one in this sector, which makes energy efficiency in tourism a central and current problematic. Despite of its importance, the theme has poor focus at national and international policies. This thesis aims to understand how energy management influences the 4 and 5 star hotels of the most touristic areas of Portugal, Algarve. It is also intends to analyse if energy management is perceived to be an essential or important factor and what is the state-of-the-art of companies operating in tourism on this regard.

This thesis is divided in 5 chapters. Chapter 1 introduces the theme and its main topics. Chapter 2 reviews the academic, national and international literature. Then, chapter 3 presents the methodology and the strategy used to analyse the topic. It also addresses the research questions and explains the main motivations of this research. After that, chapter 4 and 5, present respectively an analysis of the gathered results, and their former discussion identifying also some areas for improvement. Chapter 6 discusses the conclusions reached with the dissertation and future areas of investigation.

2. LITERATURE REVIEW

Climate Change and Sustainable Development

The United Nations Framework Convention on Climate Change (1992: 4) provides a simple definition of climate change which is "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*". This environmental change is gradually being seen as having several interdependent causes and in need of a synchronized and integrated structure for an effective resolution (Andonova & Mitchell, 2010). The former system dominated by nation states has been substituted by one where the key player roles are governments, scientists, nongovernmental organizations (NGOs) and businesses (Andonova & Mitchell, 2010). When tackling the subject of climate change, the options are simply between acting now or postponing (Pacala & Socolow, 2004), with scientists that have been studying the phenomena long enough, possessing already the knowledge necessary to solve the climate problem (Pacala & Socolow, 2004). Business-as-usual is consuming resources faster than resources are renewing themselves therefore it is necessary to insure economic growth in a different and new perspective (WWF, 2010), which means to look simultaneously for economic growth and environmental quality, that should work together and in complementary path towards sustainable development (Young, 2007).

The World Commission on Environment and Development adopted the definition of sustainable development as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (Bruntland & others, 1987: 43). Climate Change and Sustainable Development are closely linked due to the fact that both of them address environmental issues. The effectiveness of the measures implemented under both visions depends on the diffusion of new and existing technologies (Bernstein et al., 2007). Renewable technologies are an example of a technology that is part of the answer to this change. Some countries, such as China, United States of America, United Kingdom, Spain, Brazil, Germany and Canada, have realized the importance of renewable energies to the development of their countries and are leading the investments in the area ("Renewable Energy Investment May Reach $200 Billion in 2010 - Businessweek,"). Other countries have different approaches and, when confronted with economic difficulties and restrictions, do not prioritize renewable energies. As a consequence, society is starting to shift their environmental demands towards companies. Another main reason for this change is the inefficiency of governmental developments on this matter (Auld, Bernstein, & Cashore, 2008).

Corporate Social Responsibility and Energy Efficiency

Environmental consciousness is increasingly gaining importance and, as a result, clients, communities, NGOs, suppliers, shareholders, among others, are demanding more from companies. This commitment that is being demanded from companies is the businesses contribute towards a sustainable development and, it is known as Corporate Social Responsibility (CSR) (Petkoski & Twose, 2003). As Hopkins (2004: 1) defines, CSR is:

> "*CSR is concerned with treating the stakeholders of the firm ethically or in a responsible manner. Ethically or responsible' means treating stakeholders in a manner deemed acceptable in civilized societies. Social includes economic and environmental responsibility. Stakeholders exist both within the firm and outside. The wider aim of social responsibility is to create higher and higher standards of living, while preserving the profitability of the corporation, for peoples both within and outside the corporation*"

This commitment demands companies to be pro-active and involve themselves in the improvement of social and environmental conditions, beyond what is required by law (Auld et al., 2008). Furthermore, companies pursuing a CSR strategy can create a competitive advantage over their competitors. Through investing in environmental development, production costs can be reduced in the medium and long term as they would be investing in solutions that avoid/minimizes waste and ineffective consumption of energy and raw materials (Young, 2007). Besides that, it improves the image of the company and its products among consumers (Young, 2007). Another environmental initiative defends a "top-line value" approach which sees environmental concerns as a tool towards increasing revenues rather than only to reduce costs (Kashmanian, Keenan, & Wells, 2010).

Energy functions as an engine of most sectors and industries, that is, it is a resource common to almost every sector and industry. It's a fundamental resource for the simplest activities in any company. Furthermore, it is expensive and has a constant increasing price due to the perishable nature of its origins (mostly non renewable sources). The first energy crisis in the beginning of 1970s drove energy end-users to look for substantial operation costs reduction and new ways to control and measure energy consumption (Okay & Akman, 2010). This was the first step that initiated energy efficiency discussion, since companies began to realize that it was possible to save costs and improve the environment. The report on

"Promoting Energy Efficiency in the Developing World" (Farrell & Remes, 2009) from the Mckinsey Global Institute, argues that if developing countries and their industries were to take the opportunity to improve energy efficiency, they would reduce their energy costs, protect themselves from future energy crisis and build a sustainable development which is a very desirable outcome given the current financial circumstances.

As Patterson (1996: 1) explains, energy efficiency as "*using less energy to produce the same amount of services or useful output*". So, if less energy can be used to produce the same service or output, there is room to reduce costs and save money. The basic idea of energy efficiency is to enhance the level of service per unit of energy and/or diminish the energy use per unit of activity (Jollands et al., 2010). In other words, the productivity remains the same with less energy being consumed or it augments with the same level of energy. As a consequence, production costs and greenhouse gas (GHG) emissions can be reduced (Jollands et al., 2010). Several authors have argued that energy efficiency is the most cost-effective strategy to reduce costs and to reduce polluted emissions (Stanford, 1997; Jollands et al., 2010; Martin, Muûls, de Preux, & Wagner, 2011; Abulfotuh, 2007).

Energy Management

In a scenario where companies, industries and governments are under remarkable economic and environmental stress (Turner, 2004), such as the one we face nowadays, this discussion becomes even more relevant. Turner (2004) argues that organizations have to survive in global market while they are also pressured to diminish their air and water contamination, which implies the need for investments in technologies. In addition, companies who have already reduced cost from downsizing and still need to improve their economic performance are looking for other solutions such as energy management, which is a viable opportunity with an upcoming tendency for companies to adopt (Turner, 2004). Energy management is "*the strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems*" (Bureau of Energy Efficiency, 2005: 1). Another interesting definition is presented in the Guide of Energy Management (Capehart, Turner, & Kennedy, 2003:15), and it considers energy management as "*the judicious and effective use of energy to maximize profits (minimize costs) and enhance competitive positions*".

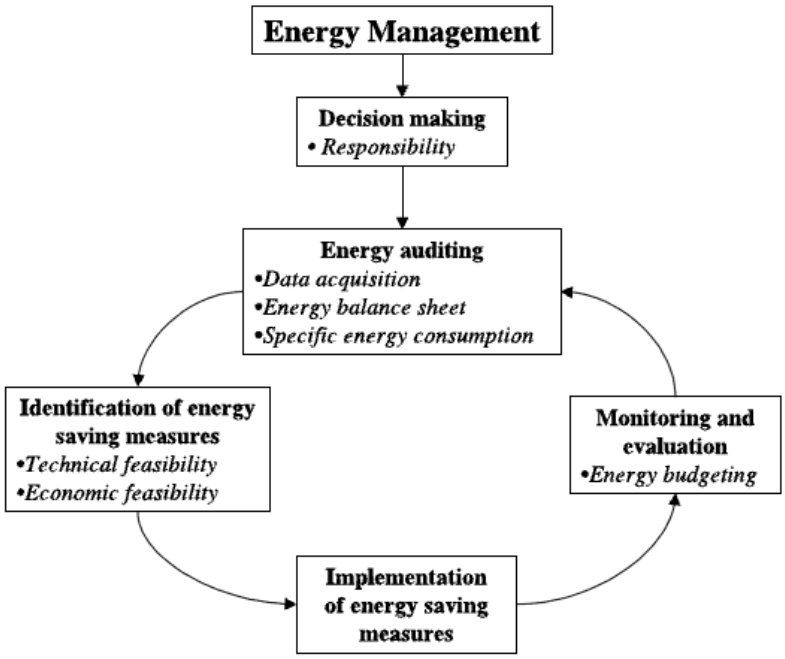
There are several definitions but the critical issue is the rational and effective use of energy in order to reduce costs without disturbing the current level of production or the quality of the

service. Managers are starting to recognize that they are losing money by disregarding energy management and Turner (2004) advances a basic structure of how companies can save costs: by implementing low cost actions an organization can save of 5 to 15% in the first couple years; with medium cost activities and a significant effort, the company can save 15 to 30% between three to five years; and with higher cost activities and more engineering actions, the savings can reach 30 to 50% in the long term period. Therefore, the objectives of energy management, according to the Bureau of Energy Efficiency (2005) are:

- To reduce energy costs/waste with no disruption of production & quality.
- To diminish environmental impacts.

To achieve these objectives an energy management plan or program should be developed. Kannan & Boie (2003) suggest a structure of energy management program which is describer in Figure 1.

Figure 1 – Energy Management Program



Source – "Energy Management Practices in SME – case study of a bakery in German" (Kannan & Boie, 2003)

Several authors emphasise the importance of the top management commitment to energy management programs (Kannan & Boie, 2003; Capehart, Turner, & Kennedy, 2003; Turner, 2004). In fact, the Energy Management Handbook (Turner, 2004) goes one step further and

says that without leadership, any energy program is destined to have little results. Moreover, the proximity of the energy manager with the CEO of the company influences the amount of climate practices adopted (Martin et al., 2011). That is, the closest is this relationship the more practices should be implemented (Martin et al., 2011). Under Turner (2004) the effectiveness of these programs can be enhanced if four basic principles are adopted:

1. "*Control the costs of the energy function or service provided, but not the Btu (British Thermal Unit) of energy*" – Besides the energy costs, it is helpful to measure the depreciation, maintenance, labour, and other operating costs implicated in the production of the output. This total cost is the one that should be supervised and controlled, not the unit of energy alone.
2. "*Control energy functions as a product cost, not as a part of manufacturing or general overhead*" – Energy must be incorporated in the cost system in order to calculate its impact on the product cost. The initial process for minimizing costs should be to reach the least cost possible with business-as-usual. Then, and only then, consider some changes in processes or equipments. The inverse order should not occur as it could lead to the pointless replacement of equipments or to excessive size of new equipments.
3. "*Control and meter only the main energy functions, the roughly 20% that make up 80% of the costs*" - It is essential to centre the efforts on the costs that carry great weight and aggregate the other in a broad group.
4. "*Put the major effort of an energy management program into installing controls and achieving results*" – Frequently, energy managers lose focus and lack the discipline to actually obtain energy savings. Every phase has to be measured regularly so that visible changes can be seen.

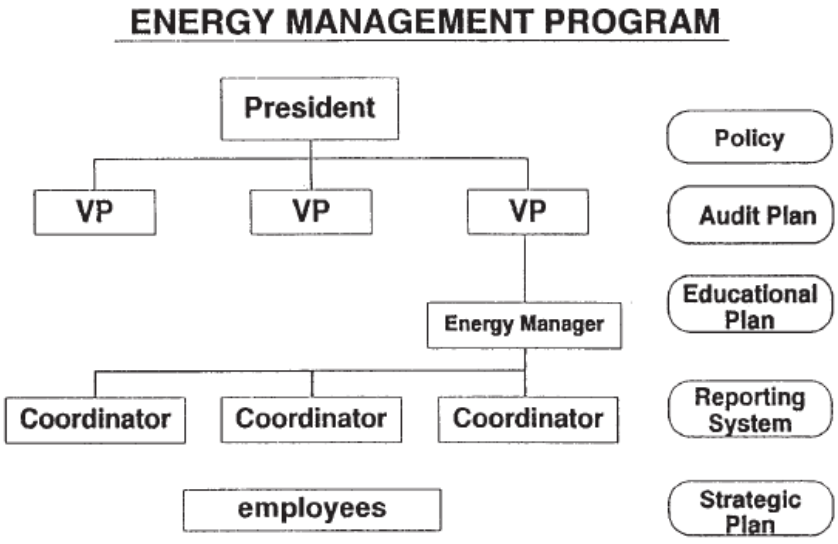
Another aspect that determines the success of the energy management plan is the energy manager. If this person is not selected, chances are that the efforts developed are considered low priority and, consequently, nothing is developed (Capehart et al., 2003). Therefore the role of the Energy Manager is extremely important and central to the continuous development of the program. Hansen (2006) described the tasks that should be part of an energy manager's job as:

- Prepare and/or execute of an energy management program.
- Setting up an energy security plan (detached or not from the main energy management program).
- Create and sustain energy records (consumption and cost).

- Identify possible support systems (e.g. utilities, public grants, and establish ways to use them).
- Engage in any management plan that influences energy (supply and/or use).
- Plan future energy needs and supervise energy audits.
- Develop a department to coordinate the program (energy committee) and, together, making energy recommendations.
- Identify and weight a financing system that best suits the company (own financing, third party financing, etc.).
- Be the connection between the company and the other companies involved in the project.
- Implement the accepted recommendations.
- Develop information to communicate (internally and/or externally).
- Evaluate the program's efficiency, revise it and regularly report its progress to top management.

In addition, the energy management program should be permanent as opposed to a temporary campaign and the enterprise's structure should reflect that (Kannan & Boie, 2003). The Energy Management Handbook presents a structure of a company alongside of an energy management program, as expressed in Figure 2. It is a broader picture of a program and adds some strategic levels to the previous one shown by Kannan & Boie in Figure 1.

Figure 2 – Energy Management Program and the structure of a company



Source - Energy Management Handbook (Turner, 2004)

Despite of all these knowledge, there are many profitable energy efficient projects that are not implemented (Kleindorfer, 2010), being possible to find cases where companies refuse investments that allow more energy savings than they cost (Jackson, 2010). This inefficiency of the market is often called the "efficiency gap" (Jackson, 2010; Martin et al., 2011) and it is the difference between the actual level of investment in energy efficiency and the higher level that would be cost advantageous from the customer's point of view (Brown, 2001). The fundamental reasons for these "efficiency gap" are appointed as market failures and barriers (Goldman, Hopper, & Osborn, 2005). In this context, the main differences between countries result from their current development and its openness to environmental concerns.

Risk Management and Market barriers

The risk perceived with the implementation of energy management programs is one barrier that countries and their businesses need to acknowledge and overcome. This risk often comes from misinformation, or lack of comparable data when considering new projects. The main barriers identified by Martin et al. (2011: 209) are:

- "*Credit constraints,*
- *Uncertainty about the future,*
- *Managerial factors such as: lack of information, managerial resources or attention to cost-cutting projects outside the scope of the firm's main business, short run optimization behaviour or the application of different hurdle rates to energy related projects*".

Regarding the financial barrier of such projects, Kleindorfer (2010) states that energy performance contracting constitutes a way to mitigate the risk often perceived by investors. Some of the risks perceived rise from the possibility of disruption of daily routine, the lack of knowledge of the factors that influence energy consumption, the relatively large initial investment, and the uncertain payback period (Kleindorfer, 2010). Energy Service Companies (ESCOs), Shared Savings Providers, Performance Contractors, and other similar companies are already providing services (auditing, energy and economic analyses, capital and monitoring) that assist other companies in these tasks of decreasing their energy consumption and expenditures on energy services (Turner, 2004). This author also adds that these organizations guarantee and share the savings from enhanced energy efficiency and productivity, therefore being an advantage for both parties involved. Moreover, Kleindorfer,

(2010) presents risk management tools as another way to mitigate risk. According to the author there are five steps to follow regarding risk management on Energy Efficiency projects:

1. Create strategic objectives and execute a first assessment to identify the conditions of the company; after this first assessment.
2. Identity in detail the sources of risk.
3. Identify the triggers of the risk factors, and its consequences.
4. Find ways to reduce or avoid the risk.
5. Simply start the project and control risk throughout the entire duration of the project.

Further exploiting market failures and barriers, Sovacool (2009) draws attention to the cultural and social nature present in these barriers, in the renewable energy and energy efficiency sectors in the United States. He argues the idea that people nowadays treat electricity as a commodity, a product abundantly available which combined with changing power stations away from urban centres, lead to an apathy and misunderstanding attitude towards energy. Besides that, Sovacool (2009) points out the existence of misinformation and, in some cases, the wish to remain uninformed. So, if one doesn't know the basics of electricity, its production and how it affects the environment, it is more difficult to convince such person to adopt more efficient habits or to embrace renewable technologies.

Jollands et al. (2010) delineated the framework used by the International Energy Agency (IEA) to create an energy efficiency policy and has identified as one of the measures to address the 'efficiency gap' the proactive energy management. This reinforces the importance of Energy Management as an instrument to assist organizations in dealing with environmental pressures while maintaining a competitive position in a global market, in the short and long term (Turner, 2004). The long term success of a company and the proactive energy management is directly connected to its productivity and quality, in a sense that these are all variables connected when addressing energy management in order to endure long term success of a company. Consequently, when organizations implement new energy efficiency technologies, new materials and/or manufacturing processes, and use new technologies in equipment and materials they are not only improving their energy efficiency levels but also their productivity and product or service quality (Turner, 2004).

Total Quality Management, Energy and Employees

Improve productivity and quality, while decreasing environmental emissions and energy costs constitute a great motivation for businesses to put into practice energy management

(Turner, 2004). According to Martin et al. (2011) organizations handle the pressure of improving the product and fulfilling the growing market demands, at the same time as decreasing the environmental footprint, through increasing their energy efficiency. Total Quality Management (TQM) is one example of a program that helps companies develop with a broad and integrated approach on how to operate a business thus energy costs should be included in this model (Turner, 2004). This author outlines that the main idea of TQM is that front-line employees should have the power to make modifications and other decisions at the smallest operating level. As a result, if these employees have energy management training, they can easily make educated and rational decisions and advices on energy operating costs (Turner, 2004).

The idea that employees may have a crucial role to play in this energy management program is very important and often not mentioned enough. Employees are part of the structure of any company and are frequently the most unexploited resource for these kinds of programs (Turner, 2004). Involving employees and solicit their ideas on how to use energy in a more efficient manner can be the most fruitful effort of the entire program (Turner, 2004). The author also states that the team that is coordinating the program should be doing so for a specific amount of time, and then rotate. This alternation brings a dynamic component to the program as new people came with new ideas and approaches, but also it provides the opportunity to diplomatically move non-performers, and to engage a superior number of people (Turner, 2004). The only factor that this author considers as criteria for participating in the coordination of these programs is interest.

Operational Costs of a Building and Energy Management Systems

The central driver in determining the performance of a building is its operation (Thorpe & Kerr, 2011). This underpins the importance of involving employees in an energy management program. Managing an energy program is not only a technological challenge but also, and the key aspect, dealing with economic limitations and without disrupting the normal course of company's daily operations (Turner, 2004; Thorpe & Kerr, 2011). In order to attain a permanent energy management and, consequently, achieve the potential energy and cost savings a building Energy Management System (EMS) is vital (Doukas, Patlitzianas, Iatropoulos, & Psarras, 2007). These systems usually control active systems (lightning, heating, ventilation and air-conditioning, among others) and decide their functioning schedules (Doukas et al., 2007).

Rikhtegar (2011) defends that an initial strategic phase, prior to the EMS, is essential in an optimization energy program. The author explains that these strategic phase, named strategic energy review (SER), consists in several actions from "*benchmarking to gap analysis, metric identification, and 'road map' development*" (2011: 32). He then adds that building a SER allows the development of a specific individual EMS for the company. The EMS simply includes information of enhanced best-practices, improved managerial requirements and monitoring tools which make possible for the operator to put in practice and maintain the energy optimization strategies from the SER (Rikhtegar, 2011).

The performance of these systems is logically connected to the quantity of energy used and the comfort of its occupants (Doukas et al., 2007). It is also a directly related to the quality of system designed (Turner, 2004). More precisely, it is proportional to the activities designed to accomplish the exact monitoring and control needed. So, the strategic energy review phase is crucial and places great influence in the final outcome of the entire program. Turner (2004) highlights the idea that this integration of the SER and EMS should be customized to meet the user's needs. On the other hand, Thorpe & Kerr (2011) argue that EMS are excellent in gathering vast amount of data, but that data has to be analyzed and transformed into information capable of being used by operators or managers to make informed choices. EMSs are failing to do this transformation in numerous cases and not being able to support in the selection of energy-saving measures (Doukas, Nychtis, & Psarras, 2009). Managers, and the team in charge of coordinating the program, need to make decisions based on information that Hansen (2006) says should be current codes, viability, cost-effectiveness, financial advantage, health and safety needs, and improving the facilities and the work environment.

Undeniably that effective energy management is based on instruments and methodologies that assist the decision-making process in the selection of proposed energy efficiency strategies, that aspire to reduce operational costs and reduce environmental harm (Doukas et al., 2009). Hence, the manager and its decisions can affect in a great manner the business and the community in which is involved. For this reason, and with no surprise, energy management across companies within a certain sector is mostly connected to assessable differences in management strategies and practices, than to various climate policy measures (Martin et al., 2011).

Tourism is frequently seen as a clean industry due to its leisure and entertainment aspects. The availability of a fresh natural environment with no the contamination as is the image of industry in general. However the lodging sector, because of its very particular function, operating features and services provided, consumes vast amounts of energy, water

and non-durable products (Min, 2011). On the other hand, the idea of environmental degradation and natural resources depletion is also frequently associated to tourism. Nevertheless, it is only very recently that literature started to study energy consumption by tourist activities and the resulting greenhouse gas emissions (Bakhat & Rosselló, 2011).

Measuring environmental impacts is vital if the sustainability of tourism is to be enhanced. So, it is important to assess the extent of environmental impacts and their associated costs, in order to determine proper development strategies and solutions (Bakhat & Rosselló, 2011). Further on, in the critical discussion, there will be comparisons between the results obtain in this thesis and similar studies.

3. REFERENCE FRAMEWORK

3.1 Objectives

Tourism is one of the most promising industries and it's expected to grow 3% to 4% worldwide in 2012 according UNWTO (Kester, 2012). In Portugal, tourism is a strategic sector for the economy representing 9,2% of the 2010 GDP (Turismo de Portugal, 2010). Algarve is the main touristic destination of Portugal representing 26,2% of total number of guest in the third quarter of 2011 (Turismo de Portugal, 2010). Moreover, approximately 76% of the total overnights in hotels in 2010 in Algarve were in 4 and 5 stars hotels (Turismo de Portugal, 2010). Consequently, the scenario of this thesis will be 4 and 5 stars hotels in Algarve. As there are few studies and knowledge about the energy efficiency or energy management in this scenario the interest of approaching the topic emerged.

On one hand, is the general "environmental consciousness" that economic growth should be complemented with environmental quality towards sustainable development. On the other hand, is the key player's response that can and are in the right place to begin this change, which means, not only governments but also businesses and industries. Energy management is one example of a solution, and the current importance of this topic seems to be getting an enduring aspect of managing any facility rather than a fashionable subject. Its connection to tourism is a recent discussion. Only recently companies, policy makers, governments, etc. started to realize the impacts that researchers and scientist long studied for tourism. The latest crisis has pushed companies to reduce costs even more.

The central question in addressing this topic is to evaluate the state-of-the-art of energy management in 4 and 5 star hotels in Algarve, and to understand which policies and strategies are in place to maximize or optimize energy management. This question has a strong effect in the structure of costs of a hotel since operational costs are very relevant on the overall cost structure.

Regarding the behaviour of tourists, it is known that some of them do not cooperate, which led companies to force behaviours through warnings in the rooms, automatic control of air conditioning, etc. This only means that they realize that tourists also have "bad behaviours", since the efficiency of the hotel was not always addressed at the beginning of the construction. Educating tourists is also a problematic issue to address in order to change the idea that as you are on holidays you can spend and abuse. The ultimate purpose is to know what can be done to improve energy management of a tourist destination, and to adopt practices that are less

evasive for the environment, that is, analyse good energy management practices in hotels that can serve as reference for others.

3.2 Methodology

The reasoning on this thesis was: deductive, since it followed a deductive research approach or "top-down" approach; objective, as it was related to a very specific problematic; and causal of the dual reality of environmental and economic concerns. Deductive reasoning starts with theory and tests it, through providing evidence for or in opposition to a set of hypotheses (Casebeer & Verhoef, 1997). In the case of this thesis, one starts by assuming that there is a theory that expresses the Energy Management processes (as expressed on chapter 2, on figures 1 and 2, and tests if the 4 and 5 star hotels in Algarve have such processes in place. Thus, the research developed from a more general scope towards a more specific one (Burney, 2008). This research aims to answer two research questions via testing hypotheses as expressed below:

Research Question 1: Is energy management an established practice in 4 and 5 star hotels in Algarve?

Hypotheses tested:

- **H 1.1** Hotels whose top/senior management have a commitment to improve energy performance have an energy policy officially instituted.
- **H 1.2** The energy management practices adopted are influenced by the category of the hotel.
- **H 1.3** Hotels do have ongoing plans to improve energy efficiency

Research Question 2: What are the main reasons that lead those hotels to implement energy management practices?

Hypotheses tested:

- **H 2.1** The respondents felt that customers attach importance to the issue of energy efficiency.
- **H 2.2** The respondents felt that employees attach importance to the issue of energy efficiency.

H 2.3 Hotels are more focused on energy management as a form of improving energy efficiency rather than as a form of decreasing the environmental impact.

This research is linked to the objective truth present in the quantitative investigation and, simultaneously, to the subjective part that is experienced as it is defended in qualitative research (Casebeer & Verhoef, 1997). The emphasis on both processes and outcome in the research means that a mix of qualitative and quantitative method were followed (Casebeer & Verhoef, 1997). This thesis begun with pre-specified objectives but also valued the processes and experiences of the hotels. The investigation was not intended to focus on the technical and engineering aspects related to the topic. The goal was to focus on the actual strategic and social nature while dealing with situational restrictions (Denzin, 2005). Regarding the type of analysis done, the calculations include both numerical estimation and statistical deduction.

3.3 Method

The population of this study were 4 and 5 star hotels in Algarve. Through crossing the databases of Algarve Tourism Association (Associação de Turismo do Algarve – ATA) with Portuguese Hotel Guide from Mais Turismo, it is possible to count 132 Hotels, where 35 were 5 star and the remaining 97 were 4 star hotels (see table 1). Since the population was considered small, a questionnaire was sent to all the elements in the population that was possible to contact and obtain information.

The questionnaire was built based on three interviews preliminarily conducted with a general manager and two maintenance directors, and it contains two distinct parts (see the questionnaire in appendix nº 1). The first one related to the managers perspective of operational and strategic aspects of the hotel, the structure of the hotel and its view one employees and customers. The second part related to characterization of the hotel per se. It was then developed on an online platform and sent to General Managers and Directors of organizations whose information was available. The purpose was to obtain information about the current state of energy management, the vision of managers operating in the sector, the strategies they pursue and how it is translated into their day-to-day operations.

There were 3 attempts to obtain the responses of the survey. The first, urging the secretariats of directions. The second time was a reinforcement to the organizations that did not answer in the first time. The third reinforcement consisted of a call to all the hotels that

had not responded, or who had not been possible to contact by email, so as to inform about the study and obtain a valid email address. The final population was constituted by 51 hotels which accounts for approximately 39% of the entire population. Within this 76% were 4 star and the remaining 24% 5 star hotels, that is, 39 and 12 hotels respectively (see table 1).

Table 1 – Composition of the population

Hotels	Population	Valid Responses
4 star	97	39 (76%)
5 star	35	12 (24%)
Total	132	51

The questionnaire was completed independently, that is, it was randomly sent to organizations inside the population, chosen on availability only, and without any other interference, hence the information can be considered reliable and unbiased (Reis, Melo, Andrade, & Calapez, 2001). The information gathered was then processed using IBM SPSS Statistics version 19.0 and Microsoft Office Excel 2007.

A summary of the methodology and methods uses is expressed in Table 2.

Table 2 – Summary of the Methodology

<table>
<tr><td>1. Objectives of Study:
Evaluate the state-of-the-art of energy management in 4 and 5 star hotels in Algarve,
Understand which policies and strategies are in place to maximize or optimize energy management,
Analyse good energy management practices in hotels that can serve as reference for others.</td><td>2. Research definition
Throughout this study it the reasoning type is: deductive, objective and causal. The emphasis on both processes and outcome in the research means that a mix of qualitative and quantitative method were followed (Casebeer & Verhoef, 1997).
Regarding the type of analysis done, the calculations include both numerical estimation and statistical deduction</td></tr>
<tr><td>3. Selection of the population
The population was considered small, so a questionnaire was sent to all the elements in the population that was possible to contact and obtain information.</td><td>4. Collect information
The questionnaire was made online and it was sent to every element of the each segment of the population whose information was available.</td></tr>
<tr><td colspan="2">5. Reliability of the scale
The questionnaire was completed independently, that is, it was randomly sent to organizations inside the population, chosen on availability only, and without any other interference, hence the information can be considered reliable and unbiased.</td></tr>
<tr><td>6. Analysis of the data
The information gathered was then processed using IBM SPSS Statistics version 19.0 and Microsoft Office Excel 2007.</td><td>7. Results and conclusions</td></tr>
</table>

4. DATA ANALYSIS

The ultimate purpose of this thesis is to study and provide an answer to the following research questions: **"***is energy management is an established practice in 4 and 5 star hotels in Algarve*" and "*what are the main reasons that lead those hotels to implement such practices*". This analysis was divided into six hypotheses that were tested using the data obtained from the questionnaire. The following sections identify the results of the data analysis and statistical tests implemented to test those hypotheses.

The survey had 51 respondents which represents a response rate of 38,6%. The 51 respondents were divided between 39 hotels with 4 stars (76%) and 12 with 5 stars (24%). For the 4 star hotels: 34 had less than 100 employees, 3 had between 100 and 250, and 2 had between 251 and 500 (see table 3). In the case of the 5 star hotels: 5 had less than 100 employees and 7 had between 100 and 250 (see table 3). There were no hotels with more the 500 employees.

Table 3 – Number of employees

Hotels with	Number of employees:			Total
	< 100	100 – 250	251 – 500	
4 stars	34	3	2	39 (76%)
5 stars	5	7	0	12 (24%)
Total	39 (76%)	10 (20%)	2 (4%)	51

The questionnaire was targeted to the General Manager of the hotel, and in approximately 60,8% of the cases it was the general manager that answered the survey (see table 4). Close to 23,5% chose not to identify (NS/NR) and the remaining 15,7% are divided among: Director's Assistant, Finance Director, and Maintenance Director. After having briefly described the characterization of the respondents, the next sections aim to respond to the two research questions which are the focus of this thesis.

Table 4 – Occupation of the respondents

Occupation of the respondents	Frequency	Percentage	Cumulative Percentage
Finance Director	1	2%	2%
Director's Assistant	2	3,9%	5,9%
Maintenance Director	5	9,8%	15,7%
NS/NR	12	23,5%	39,2%
General Manager	31	60,8%	100%
Total	51	100%	

4.1 Research Question 1: Is energy management an established practice in 4 and 5 star hotels in Algarve?

The first research question is important to understand the state-of-the-art of energy management in 4 and 5 star hotels. It will be answered through testing 3 hypotheses: the relation between the commitment of top/senior management and the actions developed under energy management; the influence of the category of the hotel in the adoption of such practices; and the existence of an ongoing plan to address this issue.

4.1.1 Hypothesis 1.1 – Commitment and energy policy

Hypothesis 1.1 was intended to test the relation between the commitment of top/senior management and the actions developed under energy management. So the hypothesis examined if "*hotels whose top/senior management have a commitment to improve energy performance have an energy policy officially instituted*". This hypothesis is partially supported by the data.

This particular hypothesis addresses a more strategic aspect of energy management. It has already been stressed the magnitude, for the success of energy management activities within companies, of a clear and official commitment from top management. So, the idea was to know if the hotel had this commitment and its relation with the existence of an energy policy, a manual of good practices, and an energy manager or energy management department.

In order to obtain such information, four "yes" or "no" questions were posed in the questionnaire about the existence of: a commitment of top/senior management; an energy policy; a manual of good practices; and an energy managers or energy management departments. Regarding the first feature – the existence of a commitment by management / senior management to the improvement of the energy performance of the organization – the results indicate that approximately 71% felt that that commitment was present (see table 5).

Table 5 – Commitment to improving energy performance

In the hotel there is: a commitment by management / senior management in improving the energy performance of the organization	Frequency	Percentage	Cumulative Percentage
No	15	29,4%	29,4
Yes	36	70,6	100%
Total	51	100%	

The responses to the next three characteristics (energy policy; manual of good practices; and energy managers or energy management departments) followed a similar pattern, that is, near 41% of the hotels have implemented an official energy policy, a manual of good practices, or have managers / departments responsible for managing energy issues and reducing CO2 emissions (see tables 6, 7 and 8). The remaining majority (59%) do not have these three characteristics.

Table 6 – Energy policy officially instituted

In the hotel there is: an energy policy officially instituted in the company	Frequency	Percentage	Cumulative Percentage
No	30	58,8%	58,8%
Yes	21	41,2%	100%
Total	51	100%	

Table 7 – Manual of good practices established

In the hotel there is: a manual of good practices in the company officially established	Frequency	Percentage	Cumulative Percentage
No	30	58,8%	58,8%
Yes	21	41,2%	100%
Total	51	100%	

Table 8 – Existence of energy manager or department

In the hotel there is: an energy manager or department responsible for managing energy issues and reducing CO2 emissions	Frequency	Percentage	Cumulative Percentage
No	30	58,8%	58,8%
Yes	21	41,2%	100%
Total	51	100%	

The relation between the commitment and actions developed under energy management is presented in table 9. The most important analysis from this crossing is that without this commitment, the probability of having a manual of good practices, or an energy manager or energy management department decreases substantially, and even ceases in the case of the energy policy.

The Chi-Square test was implemented to see if there was a statistically significant relation. This test examines if two qualitative variables are independent and in this case there is a relation between the commitment and the energy policy, and the commitment and the manual of good practices (see appendix number 2). That is to say that if there is a commitment from senior/top management to improve energy efficiency in a certain hotel, it is more probable that this hotel has an energy policy or a manual of good practices implemented. On the other hand, if there is no commitment it is almost assured that there will be no energy policy or manual or good practices established.

Table 9 – Commitment and actions developed under energy management

		Commitment to improving energy performance				Total
		Yes		No		
Energy policy officially instituted	Yes	21	58,3%	0	0,0%	21
	No	15	41,7%	15	100,0%	30
Total		36	100,0%	15	100,0%	51
Manual of good practices established	Yes	20	55,60%	1	6,7%	21
	No	16	44,40%	14	93,3%	30
Total		36	100,0%	15	100,0%	51
Existence of energy manager or department	Yes	17	47,2%	4	26,7%	21
	No	19	52,8%	11	73,3%	30
Total		36	100,0%	15	100,0%	51

When analysing the features of the hotel with the respective category the results slightly change (see table 10). The respondents of 5 star hotels feel that the commitment is stronger (83,3%) relative the 4 stars respondents (66,7%). Nonetheless, regarding the institution of an energy policy, the majority of 5 star hotels do not have it instituted (66,7%) while in 4 star hotels nearly half have it implemented (56,4%). The variable "manual of good practices" is equally distributed in both group of hotels, that is, the majority 4 and 5 star hotels have it implemented (approximately 59% for both categories of hotels).

The majority of 5 star hotels affirm to have a manager or department to manage energy whereas the 4 stars are in the opposite end with the majority not having them. The Chi-Square test confirms statistically the significance of this relation which means that, the category of the hotel influences the existence of an energy manager or energy management department (see appendix number 3). Moreover, it is more probable that 5 star hotels have this kind of managers or departments than the 4 star.

Table 10 – Features of the hotel per category

Features	Classification of the hotel			
	4 star		5 star	
	Yes	No	Yes	No
Commitment to improving energy performance	66,7%	33,3%	83,3%	16,7%
Energy policy officially instituted	43,6%	56,4%	33,3%	66,7%
Manual of good practices established	41%	59%	41,7%	58,3%
Existence of energy manager or department	33,3%	66,7%	66,7%	33,3%

So, in conclusion, the hypothesis aimed to test the relation between the commitment of top/senior management and the actions developed under energy management. The hypothesis was supported by the data in relation to the existence of an energy policy and a manual of good practices. This means that if there is a commitment from top/senior management to improve energy performance, the hotel will most likely have an energy policy officially instituted or a manual of good practices implemented. The hypothesis was not supported by the data in relation with the existence of and energy manager or energy management department, which is to say that, in this population, the commitment is an independent force to the fact that hotels have or not such managers or departments. However, it is more probable that 5 star hotels have this kind of managers or departments than the 4 star.

4.1.2 Hypothesis 1.2 – Practices and category of the hotel

Hypothesis 1.2 intended to test if "*the energy management practices adopted are influenced by the category of the hotel*". The hypothesis was supported by the data for 4 of the 18 group of practices (see the entire group of practices in table 11). These 18 practices being analyzed were develop based on the interviews with the general manager and the two

maintenance directors. These included both strategic and operational levels, and are presented in the order they were tested (see the questionnaire in appendix number 1).

Table 11 – Group of practices

1	Identification of energy costs
2	Internal communication of the implemented solutions that improve energy efficiency
3	Integration of energy management topics in external reports
4	Identification of energy consumption levels
5	Information search about energy efficiency
6	Investments aimed at reducing their energy consumption
7	Investments aimed at reducing their CO2 emissions
8	Management of energy consumption through systematic monitoring
9	Evaluation of the systems that generate, transform and utilize energy
10	Measurement of CO2 emissions
11	Fulfilment of energy efficiency criteria in the structure of their buildings
12	Optimization of the use of daylight
13	Existence of effective lighting systems
14	Encouragement of its employees to turn off the lights when a space is empty
15	Existence of energy class A equipments
16	Existence of automatic internal temperature regulators
17	Existence of a plan for waste optimization
18	Implementation of systems that utilize energy from renewable sources or cogeneration

In order to test hypothesis 1.2 two statistical tests were performed: the Mann-Whitney test and the Monte Carlo test. The Mann-Whitney test was performed to analyze if the difference among the means of the practices adopted in 4 and 5 star hotels is statistically significant (see the test in the appendix number 4). For the Mann-Whitney test differences are statistically significant when the significance of the test[1] is less than 0.05. In this study it was possible to find statistically significant differences to the following practices: existence of effective

[1] Asymp. Sig. Two-tailed

lighting systems (number 13), encouragement of its employees to turn off the lights when a space is empty (number 14), existence of automatic internal temperature regulators (number 16), and implementation of systems that utilize energy from renewable sources or cogeneration (number 18).

This shows that in these four practices there is a statistically significant difference between 4 and 5 star hotels, that is, in practices number 13, 16 and 18, the 5 star hotels score better than the 4 star while in practice number 14 the 4 stars score better than the 5 stars. That is, 5 star hotels have a higher level of implementation on the following practices: existence of effective lighting systems, existence of automatic internal temperature regulators, and implementation of systems that utilize energy from renewable sources or cogeneration. On the other hand, 4 start hotels encouragement more its employees to turn off the lights when a space is empty.

In order to statistically test the association between the group of practices and the category of the hotel, the Monte Carlo test was used since the Chi-Square was not possible to utilize (see appendix number 5). It was not possible to use the Chi-Square test because the conditions necessary to implement it were not verified. That is, the test states that no more than 20% of the cells should have frequencies (observed values) of less than 5, and that none of the cells should have a frequency of less than 1, which did not happen in this case.

According to the Monte Carlo test, the practices that have statistically significant association with the category of the hotel are: investments aimed at reducing their CO2 emissions (number 7), encouragement of its employees to turn off the lights when a space is empty (number 14), existence of energy class A equipments (number 15), existence of automatic internal temperature regulators (number 16), and implementation of systems that utilize energy from renewable sources or cogeneration (number 18). This means that, it is more probable that 5 star hotels have investments aimed at reducing their CO2 emissions, automatic internal temperature regulators, and systems that utilize energy from renewable sources or cogeneration, than the 4 stars. On the contrary it is more probable that 4 star hotels to have energy class A equipments, and to encourage of its employees to turn off the lights when a space is empty.

Despite of the statistically significant difference between the means of the existence of effective lighting systems in 4 and 5 star hotels (practice number 13), it is not possible to conclude that the category of the hotel influences this implementation of this practice. This means that, 5 star hotels implement more effective lighting systems than the 4 stars, and not that it is more probable for the 5 star categories to have these lighting systems.

Thus, the research hypothesis is confirmed for practices number 7, 14, 15, 16 and 18 by the evidence presented through the Monte Carlo test. So, it is possible to conclude that the category of the hotel is an influence for the following measures: investments aimed at reducing their CO2 emissions (number 7), encouragement of its employees to turn off the lights when a space is empty (number 14), existence of energy class A equipments (number 15), existence of automatic internal temperature regulators (number 16), and implementation of systems that utilize energy from renewable sources or cogeneration (number 18).

4.1.3 Hypothesis 1.3 – Action Plan

Hypothesis 1.3 was intended to test if "*The majority of hotels have an ongoing plan to improve energy efficiency*". This hypothesis was not supported by the data.

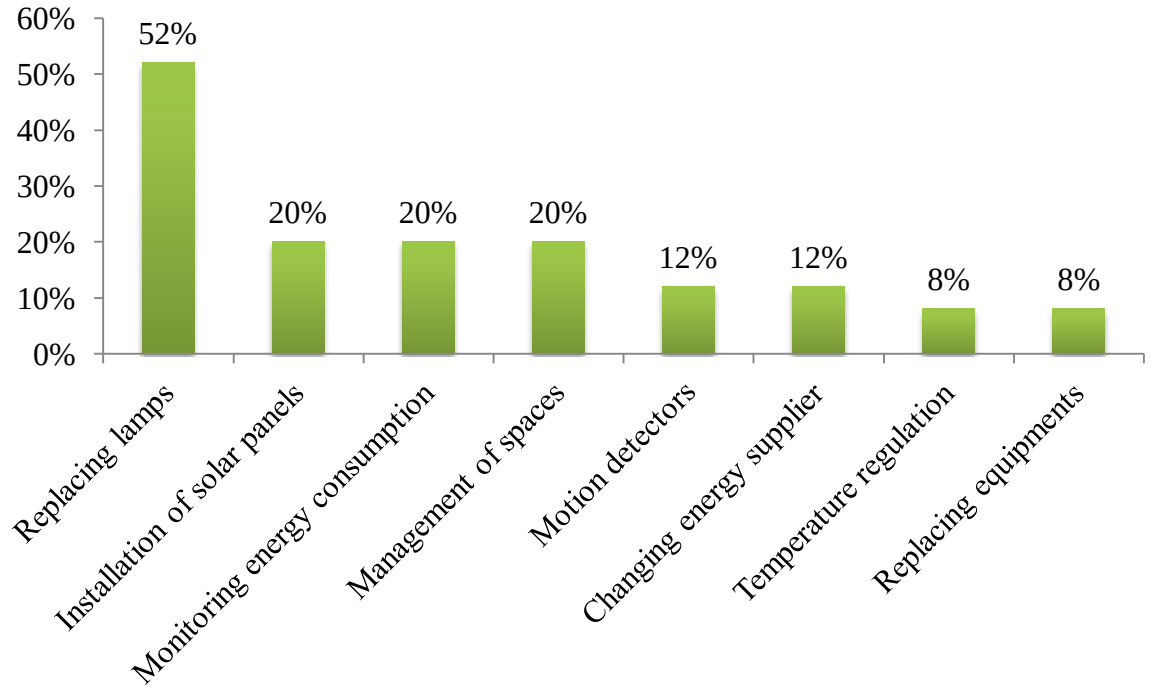
The goal in this hypothesis was to simply analyze if hotels had an ongoing action plan to improve energy efficiency and, if so, what were the core actions being implemented. The data obtained allowed to conclude that only 49% of the Hotels had an ongoing plan to improve energy efficiency (see table 12). Within these, 16 hotels were 4 star (64%) and 9 were 5 star (36%), which means that 75% of all 5 star hotels had an ongoing plan, while within 4 star hotels there were only 41%.

Table 12 – Action plan to improve energy efficiency

Is there any ongoing action plan to improve energy efficiency?	Frequency	Percentage	Classification of the hotel	
			4 stars	5 stars
No	26	51%	59%	25%
Yes	25	49%	41%	75%
Total	51	100%	100%	100%

The main actions involved in these plans were: replacing lamps in 52% of the plans; 20% had measures such as installation of solar panels, monitoring energy consumption, and management of spaces; installation of motion detectors, and changing energy supplier in 12% of the plans; and 8% related to temperature regulation and replacing equipments (see chart 1).

Chart 1 – Main measures implemented under an ongoing plan



When asked if whether these plans contributed to the optimization of energy of the hotel 16% were not sure about this answer (12% do not agree nor disagree and 4% disagree), against the remaining 84% that agreed or totally agreed to have noted the contribution (see table 13). Overall the contribution of the plan to energy optimization ranked 4,04 on a scale of 1-5.

Table 13 – Contribution of the plan to energy optimization

To what extent the action plan already in place contributed to the energy optimization of your organization	Frequency	Percentage	Valid Percentage
2 – Disagree	1	2%	4%
3 – Don't agree nor disagree	3	5,9%	12%
4 – Agree	15	29,4%	60%
5 – Totally Agree	6	11,8%	24%
Total	25	49%	100%
Missing Answers[2]	26	51%	
Total	51	100%	

[2] In this case, the missing answers are the hotels that do not have an ongoing action plan

It is also important to cross this analysis with the hotel features tested in hypothesis 1.1. By crossing these variables, it is possible to understand how one of the features (commitment from top/senior management, energy policy, manual of good practise, and energy manager/department) has an impact on having an ongoing plan. Results indicate that if the hotel has one of the four features it is also more probable to have an ongoing plan (see table 14). The opposite deduction is also true, that is, if the hotel does not have one of the features it is also more probable not to have an ongoing plan.

Additionally, according to the Chi-Square test (see test in appendix number 6) there is a statistically significant association between having an ongoing plan and the features of the hotel: commitment to improving energy performance, energy policy, manual of good practices and energy manager or department. This means that hotels who have an ongoing plan to improve energy efficiency will more likely have implemented: a commitment to improving energy performance; an energy policy; a manual of good practices; or an energy manager or department.

Table 14 – Features of the hotel crossed with ongoing action plan

Features of the hotel		Is there any ongoing action plan to improve energy efficiency?	
		Yes	No
Commitment to improving energy performance	Yes	58,3%	41,7%
	No	26,7%	73,3%
Energy policy officially instituted	Yes	71,4%	28,6%
	No	33,3%	66,7%
Manual of good practices established	Yes	81,0%	19,0%
	No	26,7%	73,3%
Existence of energy manager or department	Yes	76,2%	23,8%
	No	30,0%	70,0%

The contribution of the measures implemented under those ongoing plans was also examined regarding its relation with the features of the hotel tested in hypothesis 1.1 (see table 15). The results demonstrate that hotels who have an ongoing plan to improve energy efficiency, and a commitment from top/senior management or an energy policy, observe greater contribution of the implemented measures (86% and 93% respectively) than those hotels who do not have this two features (75% and 70% respectively).

Table 15 – Features of the hotels and the contribution of the implemented measures

Hotels that have an ongoing action plan to improve energy efficiency, and where:		Level of agreement to see the contribution of implemented measures
There **is**	a commitment by management / senior management in improving the energy performance of the organization	85,7%
There **isn't**		75%
There **is**	an energy policy officially instituted in the company	93,3%
There **isn't**		70,0%
There **is**	a manual of good practices in the company officially established	82,4%
There **isn't**		87,5%
There **is**	an energy manager or department responsible for managing energy issues and reducing CO2 emissions	82,4%
There **isn't**		87,5%

That is, according to this analysis, having a commitment from top/senior management or an energy policy increases the contribution of the measures implemented under a plan to improve energy efficiency (86% and 93%, versus 75% and 70% respectively). This confirms the theory advanced by several authors who enhanced the importance of a commitment from top/senior management to the success of energy management programs (Kannan & Boie, 2003; Capehart, Turner, & Kennedy, 2003; Turner, 2004,Martin et al., 2011).

Curiously, the opposite situation happens for hotels where there is a manual of good practices or an energy manager / department. In these cases the contribution of the measures implemented on the ongoing plan is greater for hotels that do not have a manual of good practices or an energy manager / department (88%), then for those who have them (82%) (see table 14). This analysis counteracts the importance of the energy manager or department as was advanced by authors like Hansen (2006), Capehart et al. (2003), and Turner (2004).

With the intention of testing the analysis presented in table 14, was performed a Monte Carlo test and, according to it, these associations have no statistically significance (see appendix number 7). In other words, it is not possible to conclude that these features influence the level of agreement to see the contribution of implemented measures under ongoing plans.

In conclusion hypothesis 1.3 was not supported since the results show that hotels are equally divided in regards to having ongoing plans to improve energy efficiency, 51% do not have plans versus 49% of hotels that actually have a plan. Furthermore, it is more probable that these 49% hotels, who have an ongoing plan, will have implemented: a commitment to improving energy performance; an energy policy; a manual of good practices; or an energy manager or department. Moreover, in this population, having a commitment from top/senior management or an energy policy increased the contribution of the implemented measures within the plan.

4.2 Research Question 2: What are the main reasons that lead those hotels to implement energy management practices?

The second research question complements the analysis of this thesis through understanding motivations and reasons that lead hotel managers and operators to implement energy management actions. It will be answered by testing 3 hypotheses: the commitment of customer, the commitment of staff, and the problematic of energy efficiency versus environmental impact.

4.2.1 Hypothesis 2.1 – The commitment of Customers

Hypothesis 2.1 aimed to test if "*The respondents felt that customers attach importance to the issue of energy efficiency"*. The hypothesis was supported by the data.

Kostakis & Sardianou (2012) state that energy management programs constitute an excellent marketing opportunity, since environmental awareness positively affects the likelihood of paying more for a state at a "green". The same authors state that "*45% of tourists are willing to pay more for accommodation in a hotel with renewable energy sources*". The image of the so called "green tourist" is influenced by age, that is, it is estimated to that younger tourists are less keen to pay more in comparison to middle-aged tourists (Kostakis & Sardianou, 2012). Usually, consumers who are more open to environmental products, and

decide to purchase them, are willing to spend more for environmental benefits (Kostakis & Sardianou, 2012). Fortuny et al. (2008) draw attention to the fact that customers are the key players for the organization's success, but the organization's management is the key factor for the customer's attitude.

Taking this into consideration, hypothesis 2.1 aimed to understand what was the organization's management opinion about the importance that customers attached to energy efficiency. In the respondents opinion, customers consider energy efficiency to be important (81,2% or 4,06 in a scale of 1-5) (see table 16). Nonetheless, according to the Monte Carlo Test, there is no statistical significant association between customers and the category of the hotel (see appendix number 8), which means that, it is not possible to conclude that neither 4 nor 5 star hotel managers will more probably consider their customers to attribute more importance to energy efficiency.

To test the relation between the respondents' opinion on the customer and energy efficiency and the existence of an ongoing plan, a Monte Carlo test was implemented (see appendix number 9). It was possible to conclude that these variables are independent, that is, there is no relation between the existence of an ongoing plan to improve energy efficiency and the manager's opinion about the degree of importance given by customers to energy efficiency.

When dividing the opinions of 4 and 5 star hotel respondents, the results do not change considerable, which is confirmed by the Mann-Whitney test that allows to state that there is no statistically significant difference between the opinions of the 4 and 5 star hotel respondents.(see appendix number 10). That is to say that, it is not possible to affirm that, in this population, 5 star hotel managers consider their customers to give more importance to energy efficiency then the 4 star hotel respondents.

It is also not possible to state that the majority of the results of hypothesis 2.1 are concentrated near the total average (81,2%) which was demonstrated by the Kolmogorov-Smirnov test (K-S test) (see appendix number 11). This test verifies the assumption of normal distribution in the respondents opinion about the importance given to energy efficiency by customers and, this variable, does not follow a normal distribution. That is, the answer to this variable is not commonly agreed in all hotels, which means that, generally, hotels do not feel that customers attribute the same level of importance to energy efficiency. The answers are disparate which then translates into an total average 81,2%.

Table 16 – Customers and energy efficiency.

In your opinion, what degree of importance is given to energy efficiency by:	Total average		Classification of the hotel			
			4 star		5 star	
Customers	81,2%	4,06	80,6%	4,03	83,4%	4,17

In summary, hypothesis 2.1 was supported by the data based on the evidence that respondents felt that customers are committed to energy efficiency (81,2% or 4,06 in a scale of 1-5). There's no difference between the responses from both group of hotels and there is also no association between this commitment and the classification of the hotel, as it was stressed in the Mann-Whitney test (see appendix number 10) and in the Monte Carlo test (see appendix number 8). This means that, there is no difference in the results of the managers of both 4 and 5 star hotel, and, since they are independent variables, the category of the hotel makes no influence on this opinion. Despite that, there is no statistically significant relation between the existence of an ongoing plan to improve energy efficiency and the manager's opinion about the degree of importance given by customers to energy efficiency (see appendix number 9).

4.2.2 Hypothesis 2.2 – The commitment of Employees

The purpose of hypothesis 2.2 was to test if "*The respondents felt that employees attach importance to the issue of energy efficiency*". This hypothesis was supported.

According to several studies (Chan & Hawkins, 2010; Enz & Siguaw, 1999) the programs aimed at improving energy efficiency and minimizing environmental impact constitute a very good strategy to enhance the morale of employees and the sense of pride in the hotel. The existence of multidisciplinary teams to promote employee involvement and contribution are also indicated as a best practice in two of the four hotels studied by Enz & Siguaw (1999). Kapiki (2010) goes one step further and argues that staff training can lead to better understanding of all aspects involving energy management, increased energy savings, and, certainly, increased profitability.

Hence the importance of employees is major to the success of any energy management program. The goal of the hypothesis 2.2 was to study the views of managers regarding the importance attributed by employees to energy efficiency. The results indicate that managers

perceive that employees consider energy efficiency important (87% or 4,35 in a scale of 1-5) (see table o16).

However, when crossing this information with the classification of the hotel, the results change for 5 star hotels (81,6% or 4,08), whereas in 4 star hotels they surpass the total average (88,8% or 4,44) (see table 17). Despite that, there is no statistical significant association between employees and the category of the hotel (based on the Monte Carlo Test, expressed in appendix number 8). That is, it is not possible to conclude that neither 4 nor 5 star hotel managers will more probably consider their employees to give more importance to energy efficiency.

Monte Carlo test was performed to analyse the relation between the respondents' opinion about the importance of energy efficiency to employees, and the existence of an ongoing plan it a (see appendix number 9). It was possible to conclude that these variables are independent, that is, there is no relation between the existence of an ongoing plan to improve energy efficiency and the manager's opinion about the degree of importance given to energy efficiency by employees.

Furthermore, 5 star hotel managers identify customers (83,4%) has being slightly more concern about energy efficiency then employees (81,6%). On the other hand, both 4 and 5 star hotel managers identify employees (88,8%) has being slightly more concern about energy efficiency then customers (80,6%). Surprisingly, the Mann-Whitney test (see appendix number 10) show that there is no statistically significant difference between these two variables and the category of the hotel, which indicates that, neither 4 nor 5 star hotels consider their employees and customers to give more importance to energy efficiency.

With the intention of verifying the assumption of normal distribution in this hypothesis it was performed the K-S test (see appendix number 11), and results indicate that the opinion of the respondents about energy efficiency by employees does not follow a normal distribution. This means that, it is not possible to affirm that the majority of the results of hypothesis 2.2 are concentrated near the total average (87%).

Table 17 – Employees and energy efficiency.

In your opinion, what degree of importance is given to energy efficiency by:	Total average		Classification of the hotel			
			4 star		5 star	
Employees	87%	4,35	88,8%	4,44	81,6%	4,08

In conclusion, hypothesis 2.2 was supported based on the evidence that respondent's feel that employees are committed to energy efficiency (87% or 4,35 in a scale of 1-5). As in the previous hypotheses, there's no difference between the responses from both group of hotels (Mann-Whitney test, see appendix number 10) and no association between this commitment and the classification of the hotel (Monte Carlo test, see appendix number 8). So, there is no difference in the results of 4 and 5 star hotel managers, and, as independent variables, the category of the hotel presents no influence on this opinion. However, there is no statistically significant relation between the existence of a plan to improve energy efficiency and the manager's opinion about the degree of importance given to energy efficiency by employees (see appendix number 9).

4.2.3 Hypothesis 2.3 – Energy efficiency versus decreasing environmental impact

Hypothesis 2.3 aimed to test if "*Hotels are more focused on energy management as a form of improving energy efficiency rather than as a form of decreasing the environmental impact*". The hypothesis was supported. In order to analyse the implementation of energy management process and to understand if the driver for the Hotels was energy efficiency or the willingness to decrease their environmental impacts, the hotels were asked about their behaviour in relation to 18 different practices, as expressed in Table 10.

The average level on the implementation of all practices in hotels is around 78% (see table 18), or 3,92 in a scale from 1 to 5 (see table 19 in appendix number 12 for detailed results in each practice). This means that, on average each hotel of the population implements near 78% of energy management practices or, in other words, implements approximately 14 of the 18 practices that were being studied. In order to verify if the results of each practice falls near this total average (78%), it was performed the K-S test (see appendix number 11).

Table 18 – Level of implementation of the total group of practices

Practice	Mean					
	Total		4 star hotels		5 star hotels	
1	4,80	96,1%	4,79	95,9%	4,83	96,7%
2	4,47	89,4%	4,51	90,3%	4,33	86,7%
3	4,10	82%	4,15	83,1%	3,92	78,3%
4	4,69	93,7%	4,64	92,8%	4,83	96,7%
5	4,25	85,1%	4,28	85,6%	4,17	83,3%
6	4,20	83,9%	4,26	85,1%	4,00	80%
7	3,33	66,7%	3,28	65,6%	3,50	70%
8	4,02	80,4%	3,92	78,5%	4,33	86,7%
9	3,47	69,4%	3,38	67,7%	3,75	75%
10	2,45	49%	2,54	50,8%	2,17	43,3%
11	3,94	78,8%	3,85	76,9%	4,25	85,0%
12	4,24	84,7%	4,21	84,1%	4,33	86,7%
13	4,12	82,4%	4,00	80%	4,50	90%
14	4,86	97,3%	4,92	98,5%	4,67	93,3%
15	3,98	79,6%	4,05	81%	3,75	75%
16	3,18	63,5%	2,79	55,9%	4,42	88,3%
17	3,88	77,6%	3,87	77,4%	3,92	78,3%
18	2,51	50,2%	2,13	42,6%	3,75	75%
Total average	3,92	78,3%	3,87	77,3%	4,08	81,6%

The results demonstrate that both 4 and 5 star hotels do not follow a normal distribution for each practice with the exception of 5 star hotels in practices identified with the numbers 3, 9 and 15 on table 5. In these three practices, the 5 star hotels do not deviate from the mean thus following a gauss curve. The gauss curve is the graphical representation of the normal distribution and, in this graph the majority of the results are near the total average, which is the exact situation of practices number 3, 9 and 15. That is to say that, in general, hotels have the same agreement level of implementation in these three practices.

The analysis of the level of implementation on entire group of practices per the classification of the hotel decreases to 77% for the 4 star, but increases to near 82% in 5 star

hotels. That is to say that, the average number of practices adopted per 4 star hotels remains near 14, whereas the 5 star hotels have an average implementation around 15 energy management practices.

However, if the practices that are not directly linked with optimization of energy efficiency (practices number 7, 10, 17 and 18 – see table 5) are removed the average number of practices adopted per hotel is nearly 12 from the group of 14, which means that, the overall level of agreement increases to 83% approximately (see table 20). Although the percentage level changes per category of hotel, the number of practices adopted is the same.

Table 20 – Energy efficiency versus environmental impact

Energy efficiency practices		
Mean	4 star	5 star
83,3%	82,5%	85,8%
Environmental impact practices		
Mean	4 star	5 star
60,9%	59,1%	66,7%

On the other hand, on the group of 4 practices directly connected to the environmental impact of hotels (practices number 7, 10, 17 and 18) the average number of practices adopted per hotel is around 2. This means that generally hotels implement 60,9% of environmental practices which is a much lower level than the practices related to energy efficiency (83% of implementation). In addition, these practices are among the least implement ones (see table 21).

Table 21 – Implementation of the practices in decreasing order

Practice	Total Group of practices		Practice	Energy efficiency practices		Practice	Environmental impact practices	
14	4,86	97,3%	**14**	4,86	97,3%	**17**	3,88	77,6%
1	4,8	96,1%	**1**	4,8	96,1%	**7**	3,33	66,7%
4	4,69	93,7%	**4**	4,69	93,7%	**18**	2,51	50,2%
2	4,47	89,4%	**2**	4,47	89,4%	**10**	2,45	49%
5	4,25	85,1%	**5**	4,25	85,1%			
12	4,24	84,7%	**12**	4,24	84,7%			
6	4,2	83,9%	**6**	4,2	83,9%			
13	4,12	82,4%	**13**	4,12	82,4%			
3	4,1	82%	**3**	4,1	82%			
8	4,02	80,4%	**8**	4,02	80,4%			
15	3,98	79,6%	**15**	3,98	79,6%			
11	3,94	78,8%	**11**	3,94	78,8%			
17	3,88	77,6%	**9**	3,47	69,4%			
9	3,47	69,4%	**16**	3,18	63,5%			
7	3,33	66,7%						
16	3,18	63,5%						
18	2,51	50,2%						
10	2,45	49%						

In conclusion, hypothesis 2.3 is supported since the total average level of implementation of the entire group of practices is 78%, but, for the practices directly linked with optimization of energy efficiency, this level increases to approximately 83% while, in the practices related with the environmental impact, it falls to 60,9%. In addition, the former group of practices related to environmental impact were among the less implemented ones.

Further analysis of the entire group of practices and the features of the hotels studied in hypothesis 1.1 demonstrated that the overall level of implementation of the 18 practices (78,3%) change with the existence of certain features. The Monte Carlo test was done in order to statistically test the association between these variables (see the resume in table 22, and the total analysis in appendix number 14). The values that are underlined in table 22 represent the

statistically significant relations, that is, for example having a commitment to improve energy efficiency influences the probability of implementing practices number 1, 3, 4, 5, 7, 8, 12, 16, 17, and 18. That is to say, if this commitment is present, it is more likely that such practices are implemented. The same reasoning applies to: instituting and energy policy and practices number 7, 8, 10, 12 and 16; having a manual of good practices established and practices number 9, 10, 11, 13 and 17; and having an energy manager or department and practices number 7, 11, 15, 16 and 18.

Table 22 – Implemented practices per hotel features

Practice	Values of the Monte Carlo test			
	Commitment to improving energy performance	Energy policy officially instituted	Manual of good practices established	Existence of energy manager or department
1	0,029	0,541	0,825	0,081
2	0,168	0,264	0,155	0,383
3	0,000	0,273	0,273	0,692
4	0,005	0,724	0,200	0,264
5	0,001	0,106	0,106	0,077
6	0,219	0,658	0,658	0,290
7	0,003	0,010	0,098	0,007
8	0,000	0,012	0,716	0,447
9	0,218	0,055	0,042	0,174
10	0,351	0,002	0,006	0,077
11	0,763	0,413	0,013	0,009
12	0,001	0,000	0,109	0,682
13	0,925	0,502	0,047	0,056
14	0,066	0,466	0,923	0,466
15	0,088	0,552	0,552	0,023
16	0,000	0,035	0,161	0,001
17	0,000	0,123	0,022	0,587
18	0,003	0,149	0,402	0,008

This finding confirms the theory advanced in the literature review (Kannan & Boie, 2003; Capehart et al. (2003); Turner, 2004; Martin et al., 2011; Hansen, 2006) which stated that, having a strong commitment, or an energy policy officially instituted, or a manual of good practices, or even an energy manager / department, clearly increases the probabilities of implementing measures that improve energy efficiency and/or decrease environmental impacts. Subsequently, a more detailed analysis is presented on each of the practices of the study in order to further deepen the response of hypothesis 2.3.

Practice no.1 Identification of energy costs

The estimation of eco-efficiency ratios involves two data-sets, energy use and economic turnover (Gössling et al., 2005). Gössling et al. (2005) draws attention to the complex dynamic that involves tourism and energy as energy is used for transportation, lodging and activities. Lodging infrastructure and its maintenance is very energy intensive, and their energy consumption as well as the environmental impact varies considerably (Gössling et al., 2005). Usually, hotels calculate energy per visitor in order to incorporate the costs of the various amenities (bars, restaurants, pools, among others) (Gössling et al., 2005). Identification of energy costs is the bases for any energy management program since it is not possible to manage what it is not measured as argued by Peter Drucker (undated).

The questionnaire developed to the 4 and 5 star hotels in Algarve had two sections that dealt with this problematic. One that asked hotel managers about the ratio of energy consumption per occupied room and another that simply asked if energy costs were being identified. The answers to the first section were disparate, in different units of measure, this reveal a weakness in how the issue was raised but it could also indicate that it is a practice that is not discussed so there isn't a usual and common unit of measure in the lodging industry. Nonetheless, practically 10% claimed to not even calculate it at all.

Regarding the other section, and the first practice being studied, all respondents agree and totally agree to have implemented except for one individual case (see table 23 in appendix number 13). The overall implementation level is around 96% and both 4 and 5 star hotels have similar results (95,9% and 96,7% respectively) with no statistically significant difference (see table 24 in appendix number 13). One interesting note about the individual case that did not agree nor disagree to identify energy costs is that this respondent is a General Manager, which means that this general manager was not aware it energy costs were being identified or not.

Practice no.2 Internal Communication of the implemented solutions that improve energy efficiency

The next two practices related to both external and internal communication of energy management topics, had high levels of implementation. The internal part of communication was intended to study the extent to which the hotels agree to communicate the implemented solutions that improve energy efficiency, and this level was 89,4% (see table 25 in appendix number 13).

Within the respondents that didn't agree nor disagree there is a high percentage of General Managers (75%), which means that managers were not aware of this behaviour. These results can indicate that a high percentage of the General Managers (75%) are uninformed about the present and future energy costs, and are not concerned with the implementation of potential practices related to energy management at their hotel.

After the application of the Mann-Whitney test, it appears that there are neither statistically significant differences nor associations between this practice in 4 and 5 star hotels, as it could be expected by their somewhat similar implementation levels. This means that both 4 and 5 star hotels communicate internally the implemented solutions that improve energy efficiency, and the difference between the implementation levels is not relevant.

Practice no.3 Integration of energy management topics in external reports

The external communication was analysed by questioning the integration of energy management in external reports. The responses from the questionnaires indicated that this level of implementation was high (82%), but lower than the internal communication implementation level (89,4%). The K-S test was implemented to see if the results of this variable were all close to the mean, therefore being a practice that the majority of hotels implement around the same level. This rational is true for the 5 star hotels, that is, the majority of 5 star hotels adopt this practice close to an implementation level of 78% (see appendix number 12).

Within the respondents that agree to implement the practices studied so far, near 60% have been General Manager's, and this practice is not an exception. The hotels that did not agree nor disagree, and simply disagree to integrate energy management in external reports,

are equally divided between general managers and unidentified respondents (see table 26 in appendix number 13).

Statistical tests demonstrate that 4 star hotels do not follow a normal distribution for this practice as opposed to 5 star hotels, which means that, the level of integration of energy management in external reports in these hotels is close to mean. That is, in general 5 star hotels integrate energy management topics in external reports. Nevertheless, there is still no statistically significant association between this measure and the category of the hotel, which means that the data does not allow to conclude that to be a 5 star hotels is to integrate these topics in external reports.

Practice no.4 Identification of energy consumption levels

The practice number four is about the identification energy consumption levels, and its results are quite similar to the first practice (identification of energy costs). In this practice, all respondents agree and totally agree to have implemented except for an individual case (see table 27 in appendix number 13).

The total average level of implementation was 93,7% and, when dividing this variable by hotel classification, 5 star hotels rate higher than the 4 stars (96,7% and 92,8% respectively – see table 28 in appendix number 13). Once again, there is no statistically significant difference between this measure and the category of the hotel, and no statistically significant association, which means that both groups of hotels, in general, identify energy consumption levels and the nearly 4% difference between them is not pertinent. This is not surprising, since the universe of these two groups of hotels develops very close practices and management philosophies.

Practice no.5 Information search about energy efficiency

The extent to which managers know about energy efficiency is crucial as it can influence the decisions they make. Even more so, when "*lack of information*" is one of the barriers identified by Martin et al. (2011: 209) for the implementation of energy management programs. For that reason, the goal of this practice was to analyse the interest for seeking information on the topic, and, although it was not one of the most adopted practices, it still was able to get a high level of adoption (see table 29 in appendix number 13). Nonetheless,

the result reveals that roughly 15% of the hotels do not have such behaviour or are unaware of its existence, and it is the general manager himself, in the majority of the cases, to admit so.

Practice no.6 Investments aimed at reducing their energy consumption

Kapiki (2010) argues that hotels utilize vast amounts of energy, thus investing in solutions that reduce energy consumption can lead to important savings in operating costs and energy bills. As it was previously stated, one of the objectives of energy management is to reduce energy costs so, in order to study that, this practice was included. In this study, the hotels that have investments aimed at reducing their energy consumption is approximately 84% (see table 30 in appendix number 13).

Once again the majority of respondents that agreed to this behaviour are General Managers. Nevertheless, the trend of unawareness or unwillingness to agree to such behaviours from General Managers is high. There is another interesting result, since it was possible to find that these type of investments have a higher degree of implementation in the 4 star hotels (85,1%) than in the 5 star (80%).

Practice no.7 Investments aimed at reducing their CO2 emissions

Global warming or climate change is caused by emission of carbon dioxide and other Green House Gases (GHG). One solution to this problem is through the conservation of energy. Thus, energy conservation is closely linked to the environmental issues of energy management. On this issue, there were four practices whose purpose was to analyse if hotels were implementing measures beyond what is required by law in regards to the decreasing the environmental impact. These practices were: investments aimed at reducing their CO2 emissions (practice number 7), measurement of CO2 emissions (practice number 10), existence of a plan for waste optimization (practice number 17), and implementation of systems that utilize energy from renewable sources or cogeneration (practice number 18). Results indicate that this group of practices is among the six less adopted practices (see table 21).

Investments aimed at reducing CO2 emissions qualified relatively low when compared with the previous investment aimed at reducing their energy consumption (84%), with 66,7% of hotels agreeing to adopt such practice (see table 31 in appendix number 13). On the other

hand, 5 star hotels have a superior level of agreement (70%) over 4 star hotels (65,6%). Consequently, it is with no surprise that this practice has a statistically significant association with the category of the hotel. This means that, it is more probable that 5 star hotels have investments aimed at reducing CO2 emissions than the 4 stars.

Practice no.8 Management of energy consumption through systematic monitoring

Hotel Energy Solutions (HES) developed a best practice guide on successful cases of energy efficiency solutions in SME Hotels (Small and Medium Enterprises) in 2011, that was supported by institutions such as UNWTO, Intelligent Energy Europe, UNEP (*United Nations Environment Programme*), among others. Management of energy consumption through systematic monitoring was a common and almost basic measure to 17 of the 18 hotels present in this guide. Energy, as a resource of a company, should be managed and controlled through a systematic method in harmony with the management of other resources. Kannan & Boie, (2003) also refer the importance of energy monitoring and evaluation.

In this thesis, this practice aimed to examine if this monitoring is common among the hotels of this population. Globally, the level of implementation reached 80,4% but, when dividing per category of hotel the level increases for 5 star hotels (86,7%) and decreases for the 4 star (78,5%) (see table 32 in appendix number 13). Even so, the Mann-Whitney test reveals that the difference between the level of implementation in both 4 and 5 star hotels is not statistically significant.

Practice no.9 Evaluation of the systems that generate, transform and utilize energy

Evaluation is always an important phase in any program or system implement in a company. It is in the evaluation phase that it is possible to effectively know if the outcome that was set to obtain is in fact being achieved or not. In the best practice guide from Hotel Energy Solutions project publications (2011) this behaviour is adopted in 3 hotels thus verifying the importance given in the international scenario.

This practice was intended to see if the electrical systems utilized by the hotel were being evaluated. Surprisingly, in the overall rank, this measure is the 5th less adopted practice or, in

the group of exclusively energy efficiency optimization related topics, the second last (see table 21). So, the level of implementation is not one of the highest within the group, it is in fact one of the lowest with only 69% of the hotels agree to evaluate such systems (see table 33 in appendix number 13). There is a variation with the classification of the hotel but this difference is not statistically significant in order to verify an association between this measure and the category of the hotel.

The K-S test demonstrate that, in this practice, 5 star hotels follow a normal distribution as opposed to 4 star hotels, which means that, the implementation of the evaluation of electric systems in 5 star hotels is close to mean. That is to say, the level of evaluating the systems that generate, transform and utilize energy is close to 75% in most of 5 star hotels.

Practice no.10 Measurement of CO2 emissions

The best practices guide from Hotel Energy Solutions project publications (2011), indicates that the CO2 measurement implemented by hotels can be seen as a best practice. In the study of the 4 and 5 star hotels in Algarve, the measurement of CO2 emissions (practice number 10) is the second practice whose purpose was to analyse if hotels were implementing measures beyond what is required by law, that is, measures related to the environmental impacts as opposed to energy efficiency and performance.

Results show that it was the least adopted measure with a level of agreement of 49% (see table 21). Even so, 50,8% of the 4 star hotels agree to perform this measurement against 43,3% of 5 star hotels (see table 34 in appendix number 13). Nevertheless, tests reveal that this difference is not statistically significant, which means that it is not possible to say that the classification of the hotel influences the adoption of this practice, nor to say that 4 star hotels in general have a higher level of implementation than the 5 stars.

Practice no.11 Fulfilment of energy efficiency criteria in the structure of their buildings

According to information from Eficiência Energética nos Edificios (2002), service buildings had the biggest growth rate between 1990 and 1999 and, as major energy consumers, are the main responsible entities for the strong growth in consumption of final energy in Portugal. This consumption is influenced by the fulfilment of energy efficiency criteria in the

structure of their buildings. Measures relate to insulation, double glazed windows among many others fall in this category (Fortuny et al., 2008).

Regarding the issue of including energy efficiency criteria on their buildings, 78,4% of the respondents agree that their hotel fulfils energy efficiency criteria in the structure of the buildings (see table 35 in appendix number 13). This level varies with the category of the hotel: reaching 83,3% in 5 star when compared to 78,4% in the 4 star. Once more, there is no statistical significance association between the two variables.

Practice no.12 Optimization of the use of daylight

Intelligent use of natural light can enable hotels to reduce energy consumption for lighting spaces. The best practices guide from Hotel Energy Solutions project publications (2011) refers some examples of hotels that currently optimize the use of daylight. For the 4 and 5 star Hotels in Algarve, the level of implementation of such practice was 80,4%, with a small difference between 4 and 5 star hotels but with no statistical significance (79,5% and 83,3% respectively).

Practice no.13 Existence of effective lighting systems

The implementation of effective lighting systems is a common best practice in Hotel Energy Solutions project publications (2011). Kannan & Boie (2003) and Min (2011) also analyse the implement of this measure and conclude that it has a considerable potential positive effect on savings. Kapiki (2010) further states energy-efficient lighting as a simple green practices that can much contribute to costs controlling, as well as to environmental sustainability. Regarding the existence of effective lighting systems in the Algarve hotels, close to 88% of the respondents said it had implemented such practice. When comparing the data between the 4 and 5 star hotels, it is possible to find statistically significant difference, with the 5 star hotels having greater implementation, since all of them agreed to implement this practice.

Practice no.14 Encouragement of its employees to turn off the lights when a space is empty

The issue of increasing potential saving on energy cost is also relevant to analyse in relation with the behaviour of people. Therefore, it was also intention of the research to understand if the hotel employees had been encouraged to turn off the lights of empty spaces. The data indicates that this practice was implemented by all hotels. Nonetheless, the 4 star hotels have a higher level of agreement than the 5 stars, 99% versus 93% (see table 38 in appendix number 13).

Statistical tests have also demonstrated that such difference is statistically significant. This means that, in this population 4 star hotels encourage more its employees to turn off the lights when a space is empty. Besides that, there is also a statistically significant association between these variables, that is, the category of the hotel influences this practice. In other words, globally 4 star hotels will probably encourage more its employees to turn off the lights when a space is empty than the 5 star hotels, which is coherent with the previous rational where the 4 star hotels scored better than the 5 stars.

Practice no.15 Existence of energy class A equipments

The Hotel Energy Solutions project publications (2011), considers the existence of energy class A equipments as a best practice (7 out of 18 hotels affirmed to have changed equipments). On the other hand Min (2011) enhances the importance of life cycle philosophy when evaluating the cost of equipments and the influence of labelling schemes in the progression of the sales of these equipments. Therefore was interesting to understand if the hotels in Algarve were implementing this practice. The overall level of implementation of this practice was 79,6% (see table 39 in appendix number 13).

The 5 star hotels follow a normal distribution in this practice, which means that the majority of the results of 5 star hotels remain near average of 75%. This indicates that, most of the respondents of 5 star hotels implement this measure at the same level (75%).

It was also possible to identify an influence of the category of the hotel in the existence of these equipments which is confirmed by the Monte Carlo tests done. This means that, the 4 star hotels will more likely have class A equipments than 5 star hotels.

Practice no.16 Existence of automatic internal temperature regulators

A great part of energy consumption goes to heating, ventilation and air conditioning systems (HVAC). Automatic temperature regulators enable a more efficient management of these systems because they seek to adapt the interior temperature on an ongoing and global manner. The existence of automatic internal temperature regulators was the 4th less adopted practice (see table 21) with a level of agreement of 63,5%. In the group of exclusively energy efficiency optimization related topics, the practice is the least adopted one (see table 21).

Nonetheless, when crossing this variable with the category of the hotel, results change drastically. The 5 star hotels increase severely the level of implementation of this practice 88,3% (see table 40 in appendix number 13), in other words, there is a statistically significant difference between 4 and 5 star hotels (Mann-Whitney test, see appendix number 4). Additionally, and without any surprise, tests confirm that the category of the hotel influences the level of adoption of this measure. This means that, it is more likely that 5 star hotels have automatic internal temperature regulators than the 4 stars.

Practice no.17 Existence of a plan for waste optimization

Practices number 17 and 18 are the last two being analyzed, and also the last two to test the respondents about the actions developed to decrease their environmental impact. In this particular practice, 77,6% of the hotels agreed or totally agreed to have implement a plan for waste optimization (see table 41 in appendix number 13). In comparison with other categories it isn't as well ranked but still has a high level.

If this level is crossed with the category of the hotel, 5 star hotels rank a little higher (78,3%) than 4 star (77,4%) but this difference is not statistically significant. The Monte Carlo test indicates that the classification of the hotel is not influence over this variable.

Practice no.18 Implementation of systems that utilize energy from renewable sources or cogeneration

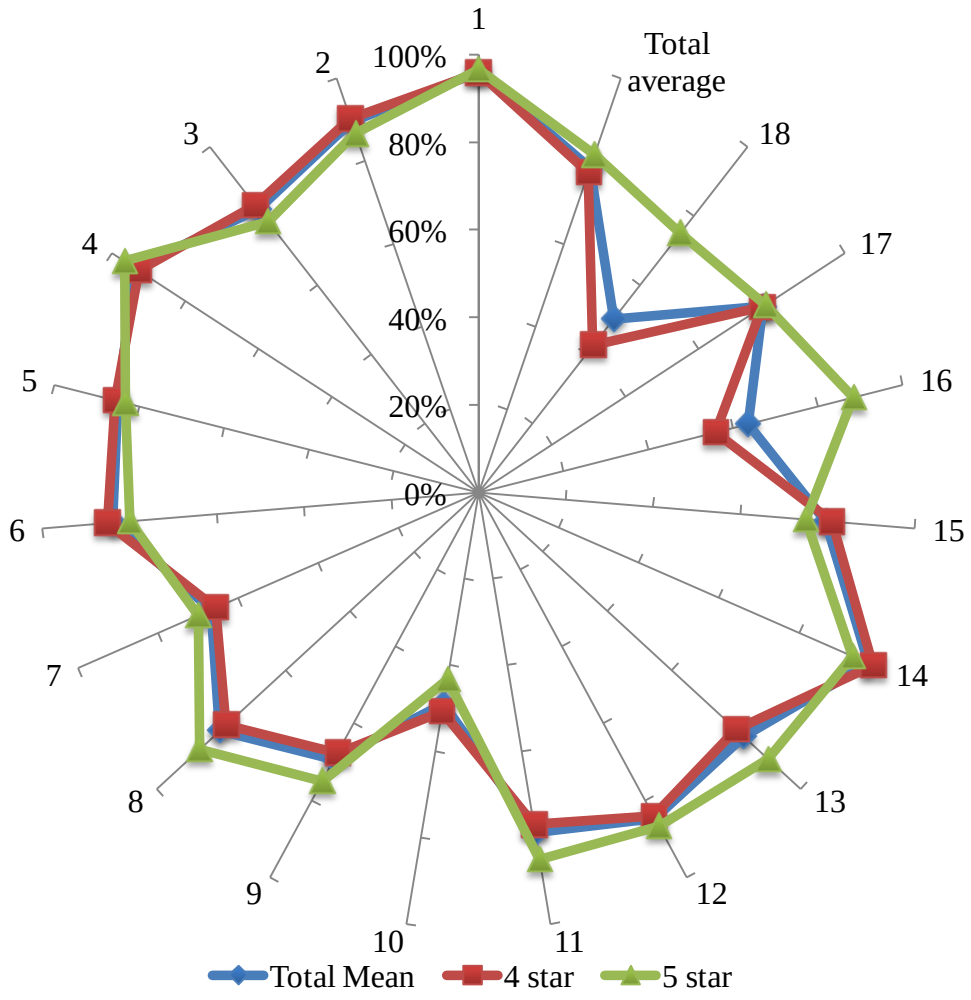
Implementing systems that utilize energy from renewable sources or cogeneration revealed to be the second last implemented practice (see table 21) with an implementation level around 50,2% (see table 42 in appendix number 13). It is remarkable that, in this

population, nearly half of the hotels do not use any form of renewable energy source taking into account the favourable climate conditions and the consequent potential energy savings.

When differentiating the hotels that have this kind of systems implemented per category, the group of the 5 star improves its level to 75% thus attributing a statistically significant difference between these variables. So, in this practice the 5 star hotels score better than the 4 stars. The Monte Carlo test also confirm that there is also statistically significant association between the category of the hotel and implementation of systems that utilize energy from renewable sources or cogeneration, which means that 5 star hotels probably will implement more such systems than 4 star hotels.

In conclusion, and analysing all 18 practices, there is a clear difference between 4 and 5 star hotels in the majority of practices that hotels have implemented (see chart 2). The 5 star hotels have a higher level of agreement on the implementation of 11 practices, whereas 4 star hotels only have it on 7 practices. This translated into a superior average of approximately 82% on the total number of practices in 5 star hotels, a value that is a little bit higher than the 77% of 4 star hotels.

Chart 2 – Implementation level of the entire group of practices



Legend of chart 2:

1. Identification of energy costs
2. Internal communication of the implemented solutions that improve energy efficiency
3. Integration of energy management topics in external reports
4. Identification of energy consumption levels
5. Information search about energy efficiency
6. Investments aimed at reducing their energy consumption
7. Investments aimed at reducing their CO2 emissions
8. Management of energy consumption through systematic monitoring
9. Evaluation of the systems that generate, transform and utilize energy
10. Measurement of CO2 emissions
11. Fulfilment of energy efficiency criteria in the structure of their buildings
12. Optimization of the use of daylight
13. Existence of effective lighting systems
14. Encouragement of its employees to turn off the lights when a space is empty
15. Existence of energy class A equipments
16. Existence of automatic internal temperature regulators
17. Existence of a plan for waste optimization
18. Implementation of systems that utilize energy from renewable sources or cogeneration

In a scale of 1 to 5, where 5 is the highest level of implementation, the best practices identified in this population were considered to be the ones whose classification was above 4 (or 80%). Consequently, the best practices of this study are constituted by 10 measures present in table 43, and are all related to improving energy efficiency. There are no measures to decrease the environmental impacts in this top. It is important to underline that this top 10 constitutes the best practices that are in place to deal with energy management in this population.

Table 43 – Best practices

Practice	Level of implementation	
14 – Encouragement of its employees to turn off the lights when a space is empty	4,86	97,3%
1 – Identification of energy costs	4,8	96,1%
4 – Identification of energy consumption levels	4,69	93,7%
2 – Internal communication of the implemented solutions that improve energy efficiency	4,47	89,4%
5 – Information search about energy efficiency	4,25	85,1%
12 – Optimization of the use of daylight	4,24	84,7%
6 – Investments aimed at reducing their energy consumption	4,2	83,9%
13 – Existence of effective lighting systems	4,12	82,4%
3 – Integration of energy management topics in external reports	4,1	82%
8 – Management of energy consumption through systematic monitoring	4,02	80,4%

Regarding the nature of these practices, there are three aspects to enhance: the general, the strategic and the operational level present in these practices. The general aspect of energy management was analyzed in the identification of energy costs and energy consumption levels, and in the information search on energy efficiency. All practices are in the top 10 of implementation, which means that, the basic and general aspects of energy management are adopted in this population.

The strategic practices are related to the internal and external communication of hotels, and to the investments performed by them. Of this group, three practices reached the top 10 implemented ones: internal communication of the implemented solutions that improve energy efficiency (number 2), investments aimed at reducing their energy consumption (number 6), and integration of energy management topics in external reports (number 3). The other strategically practice is not present in this table refers to the investments aimed at reducing CO2 emissions, which is the 4 less adopted practice perhaps because it is related to decreasing environmental impacts.

In the operational level, the goal was to simply to analyze the extent to what hotels agree to have certain practices or behaviours that were more related to the day-to-day actions of a company. This level was constituted by the remaining 11 practices (practices number 8 to 18, see chart number 2). Practices number 8, 12, 13, and 14 reached the top 10 implemented measures and are therefore considered to be best practices.

5. CRITICAL DISCUSSION OF THE RESULTS

After the presentation of the results, follows the critical discussion which is the purpose of this section. Once again it is very important to relate to studies and articles already written in a national and international scenario. Firstly, a summary of the findings will be described. Then, a comparison with other the results of studies, followed by limitations of this study and the respective areas of improvement.

5.1 Summary of the findings

The purpose of this thesis was to evaluate the state-of-the-art of energy management in 4 and 5 star hotels in Algarve, and to understand which policies and strategies are in place to maximize or optimize energy management. In order to do that, six hypotheses were tested to answer two research questions: **"**is energy management is an established practice in 4 and 5 star hotels in Algarve" and "the main reasons that lead those hotels to implement such practices".

Regarding hypothesis 1.1 it is possible to understand that:

- If there is a commitment from top/senior management to improve energy performance, the hotel will most likely have an energy policy officially instituted or a manual of good practices implemented.
- The commitment is an independent force to the existence energy manager or energy management department, there is no relation.
- It is more probable that 5 star hotels have an energy manager or energy management department than the 4 stars.

Regarding hypothesis 1.2 it is possible to state that:

- 5 star hotels have a higher level of implementation on the following practices: existence of effective lighting systems, existence of automatic internal temperature regulators, and implementation of systems that utilize energy from renewable sources or cogeneration. On the other hand, 4 start hotels encouragement more its employees to turn off the lights when a space is empty.

- The category of the hotel is an influence for the following measures: investments aimed at reducing their CO2 emissions (number 7), encouragement of its employees to turn off the lights when a space is empty (number 14), existence of energy class A equipments (number 15), existence of automatic internal temperature regulators (number 16), and implementation of systems that utilize energy from renewable sources or cogeneration (number 18). So, it is more probable that 5 star hotels have investments aimed at reducing their CO2 emissions, automatic internal temperature regulators, and systems that utilize energy from renewable sources or cogeneration, than the 4 stars. On the contrary it is more probable that 4 star hotels to have energy class A equipments, and to encourage of its employees to turn off the lights when a space is empty.

Regarding hypothesis 1.3 it is possible to verify that:

- Hotels are equally divided in regards to having ongoing plans to improve energy efficiency, 51% do not have plans versus 49% of hotels that actually have a plan.
- Hotels who have an ongoing plan will more probably have implemented: a commitment to improving energy performance; an energy policy; a manual of good practices; or an energy manager or department.
- In this population, having a commitment from top/senior management or an energy policy increased the contribution noted upon the implementation of the measures within the ongoing plan.

Regarding hypotheses 2.1 and 2.2 it is possible to observe that:

- Respondents felt that both customers and employees are committed to energy efficiency (81,2% or 4,06 in a scale of 1-5, and 87% or 4,35 in a scale of 1-5 respectively).
- There is no difference in the results of the managers of both 4 and 5 star hotel, and, since they are independent variables, the category of the hotel makes no influence on the respondent's opinion about the importance given to energy efficiency by customers and employees.
- There is no statistically significant relation between the existence of an ongoing plan to improve energy efficiency and the manager's opinion about the degree of importance given by customers and employees to energy efficiency.

Finally, regarding hypothesis 2.3, it is possible to comprehend that:

- The total average level of implementation of the entire group of practices is 78%, but, for the practices directly linked with optimization of energy efficiency, this level increases to approximately 83% while, in the practices related with the environmental impact, it falls to 60,9%.
- The group of practices related to environmental impact were among the less implemented ones.
- All basic and general aspects of energy management constitute best practices for this population (identification of energy costs and energy consumption levels, and information search on energy efficiency).
- Three of the four strategic practices were present in the best practices: internal communication of the implemented solutions that improve energy efficiency (number 2), investments aimed at reducing their energy consumption (number 6), and integration of energy management topics in external reports (number 3).
- The only strategically practice that is not present in best practices refers to the investments aimed at reducing CO2 emissions, and is the 4 less adopted practice.
- The remaining 11 practices are operational (practices number 8 to 18) and practices number 8, 12, 13, and 14 reached the top 10.

5.2 Comparing with other studies

It is important to compare the findings on this thesis with the finding of other studies and articles related to energy management in the tourism industry. Min (2011) developed a study about environmental consciousness and performance in Chinese Hospitality Industry, and had a similar response rate (35%). The response rate of this thesis was approximately 39%. Additionally, the results regarding the occupation of the respondent were very similar in Min (2011). In his analysis, Min (2011) had 62,3% managers, and 15,7% anonymous interviewees, whereas in this thesis 60,8% where managers and 23,5% chose not to identify (NS/NR).

Kapiki (2010) developed a similar study in 4 and 5 star hotels in Thessaloniki, Greece whose purpose was to identify the energy saving systems as well as to explore whether these systems reduce the energy, and, consequently, the operating costs of the hotels. The results had some similar analogies with the analysis of this thesis, thus extolling the importance of

this issue in an international setting. The magnitude of energy management in a hotel is simply as the following rational: operating a hotel that is not sustainable can cost much more (Kapiki, 2010).

Choosing 4 and 5 star hotels in Algarve as the population may have proven to avoid deviated results. That is, same authors (Assaf, Barros, & Josiassen, 2012; O'Donnell, Rao, & Battese, 2007) argue that combining different groups of hotels in a sample can deform the efficiency results. For example, there are aspects that differentiate small and large hotels such as: economies of scale, access to technology and market share (Assaf et al., 2012) which clearly have an impact on energy efficiency and environmental impacts.

The homogeneity or heterogeneity of energy efficiency studies in hotels is far from having an accepted and converged conclusion in literature (Assaf et al., 2012). Nevertheless, in a study on Portuguese hotels Barros (2005) concluded that size affected efficiency. Although size was not a variable studied in this thesis, the group of 4 and 5 star hotels are not drastically different in this matter. In fact, 76% of the hotels had less than 100 employees which can relate to the similar size of the structure of the hotels.

Hypothesis 1.1 – Commitment and energy policy

Top (senior) management needs to announce an explicit commitment to the Energy Management and act accordingly – for example, through involving themselves in events related to the subject and through encouraging staff. It is expected that top management establishes an energy policy. This is very helpful in order to let people inside and outside the company, know the undeniable commitment to energy management. The format of the energy policy statement varies, but it typically comprises the goal or objective of the company and more specific targets of the program, such as main measures and timetables. The establishment of this energy policy should be integrated with the company's mission statement or overall management strategy plan.

Several authors (Kannan & Boie, 2003; Capehart, Turner, & Kennedy, 2003; Turner, 2004,Martin et al., 2011) reinforce the importance of a commitment to the success of energy management programs. This thesis follows this idea with results demonstrating that if this commitment is present, the hotel will most likely have an energy policy officially instituted or a manual of good practices implemented. Having this features implemented further contributed to the success of any energy management program because it increases the awareness and time spent developing actions to address this matter.

Enz & Siguaw (1999) discovered that, in the best practice examples chosen in the USA, three out of the four had created extraordinary positions to manage their environmental programs, while all four have a special committee or staff team working in waste optimization and recycling. In addition, these organizations also felt that this new positions were essential to implement their environmental programs effectively (Enz & Siguaw, 1999). Chan & Hawkins (2010) draw attention to the fact that cross-functional teams are especially helpful in achieving environmental improvement across departments. An interesting conclusion drawn in this thesis is that it is more probable for 5 star hotels to have an energy manager or energy management department than the 4 stars.

Hypothesis 2.2 – The commitment of Employees

The level of importance assigned by staff in Kapiki's (2010) study was around 50%. In this thesis the relation between energy efficiency and employees was tested through the perspective of the manager. This thesis is directed to the manager's point of view and results indicate that the level of importance given was 87%. Still, the difference in the results is very significant which implies that either Portuguese employees are more committed to energy efficiency or Portuguese managers are oblivious from reality.

Hypothesis 2.3 – Energy efficiency versus decreasing environmental impact

Viegas (2008) developed a study on environmental practices in the hospitality sector in Algarve which comprised 2, 3, 4 and 5 star hotels. The purpose of Viegas (2008) was to understand if the environmental practices of these hotels were contributing to a sustainable development for the touristic destination. In this study from 2008, the conclusion reached was that environmental practices were far from being well implemented much less to be able to contribute to the sustainable development of the region. Moreover, most hotels classified as medium-high (80%) in all areas related with the conservation, efficiency and management of energy. Results of this thesis indicate that overall hotel was also medium-high (78,3%).

Viegas (2008) tested the possibility of energy management practices being well classified due to its strong impact on the cost structure of the hotel. The author discovered that energy related practices rated better with 3,5, in a scale from 1 to 5, or 70%, and that environmental practices were badly implement with a 3,17 level or 63,4%. 4 years later, this thesis reaches the same conclusion, that is, energy efficiency practices rated 83,3%, and environmental

practices 60,9%. In Portugal hotels are forced by legislation to have an energy certificate which, as Viegas (2008) already predicted, influences the type of practices adopted.

Ali, Mustafa, Al-Mashaqbah, Mashal, & Mohsen (2008) developed a study about potential energy savings in 1-5 star hotels in Jordan, and discovered that the classification of the hotel played a great influence in explaining the variations in the efficiency results. This takes us back to the issue of homogenous versus heterogeneous populations and its influence in the results. In this thesis, the category of the hotel only influenced the results on 5 of the 18 practices studied. This difference may be explained with the different scopes of both studies.

Practice number 2 and 3 – Internal and External communication

It only makes sense to develop communication programs that include this component, where top management is committed to the problem and wants to differentiate the hotel from others, asserting itself to both its internal and external customers (employees and customers) as a hotel concerned with environmental issues. Chan & Hawkins (2010) discovered in their study that some employees were not aware of what the other departments were doing and due to this fact had doubts over the performance of the environmental management program. Thus, reaffirming the importance of internal communication for the outcome of any management program related to energy and/or the environment.

Chan & Hawkins (2010), draw attention to the fact that, in their study, many executive-level employees did not know what other hotels were doing and were concerned about it. In addition, those employees expressed their willingness for sharing information in order to know how they could improve their efforts. External sharing with other business associates can help the process of continuous improvement and accomplished by partnering with consultants and/or academics (Chan & Hawkins, 2010). In this thesis, the implementation level of this practice regarding internal communication supplanted the results of the external communication practice.

Practice number 5 – Information search on energy efficiency

Kounetas, Skuras, & Tsekouras (2011) stated that the information barrier is like a "*wall that does not allow a firm to view a wider energy efficiency technologies landscape*". The adoption of these technologies presumes that the organization knows about energy efficiency and existing technologies, assess the costs and benefits, and is able to decrease its risk

(Kounetas et al., 2011). Interestingly, in this thesis the practice that studied this topic had an implementation level of 85% thus being a best practice.

Practice number 7, 10, 17 and 18 – Environmental practices

Viegas (2008) already alerted for the fact that environmental practices that were not legislated were less implemented. This was exactly what was being tested with hypothesis 2.3 which, according to the results obtained, is supported. In this thesis, this group of practices is among the less implemented ones. In fact practice number 10, measurement of CO2 emissions, was the least implement measure (49%).

Waste optimization, a practice that is commonly tested in other articles (Fortuny et al., 2008; Min, 2011; Viegas, 2008) had an implementation level of 77,6%. In the study conducted by Viegas (2008), waste minimization ranked on the group that show the best results. Kapiki (2010) showed that 58% of the participants of the study in 4 and 5 star hotels in Thessaloniki, Greece, applied recycling.

Renewable energy sources and cogeneration had an implementation level of 50,2%, which is much lower than Kapiki's (2010) study where 76% hotels admit to use renewable energy sources. Min (2011) stated that installation of renewable energy systems was a very frequently implemented measure. So, it is an extremely important practice and the low level of implementation in Algarve is a complete waste of a natural abundant, renewable and clean resource.

Practice number 16 – Automatic internal temperature regulators

In her study, Kapiki (2010) found that only 13% of hotels admitted to use automatic regulators as opposed to the 63,5% of implementation in my thesis. Both studies focus on 4 and 5 star hotels so the scope of the population should not be an explanation for this difference. Automatic temperature regulators are a more widely expanded practice in Algarve than in Thessaloniki, Greece.

5.3 Limitations of the study

The development of this study had some limitations which, in one form or another, conditioned results.

Firstly, the fact that the questionnaires were sent by electronic mail, implied some limitations. General Managers of hotels in the Algarve receive too many requests of this kind and the response rate tends to be increasingly reduced. This is a process that is used in order to facilitate rapid answers, but turns out to be cumbersome, energy consuming and in some cases ultimately referred to those that are not familiar with the problem.

Another limitation of this study is that it only focuses on 4 and 5 star hotels. The reason for this choice has to do with the fact that these units are normally large and therefore, the problem under analysis assumes greater significance in this context.

The third limitation is the regional character. The study focused only on hotels from the largest Portuguese touristic destination - the Algarve. Thus, the findings pertain only to the universe of these categories of hotels in a region of the country and, therefore, cannot be inferred for the national universe.

In addition to the scale of agreement used to perceive the practices developed by the hotel in terms of energy management, it would have been interesting to analyze the degree of importance and level of implementation of each of these practices, so as to have a more integrated reading of the question.

5.4 Areas for improvement

From the limitations presented in the previous section, and throughout the entire study derive the following suggestions for improvement of this research:

- Expanding the scope of the study to other categories of hotels and to national representative samples of the universe.

- Compare different kinds of ownership of hotels and types of tourisms.

- Compare various perceptions and opinions on the subject, confronting views of various groups of employees, supervisors and tourists.

- Deepening other dimensions of the problem of energy management in this context. In order to facilitate getting answers, it was develop a questionnaire that does not linger too long to answer.

- Include the perspective of national institutions and associations, confronting results in an international scenario.

6. CONCLUSION AND FUTURE AREAS OF RESEARCH

Throughout this thesis, energy management has been analyzed in 4 and 5 star hotels in Algarve. The overall implementation level of energy management in this population is 78%. In a study about instruments for sustainable tourism in Algarve, Viegas (2008) tested the possibility of energy management practices being well classified due to its strong impact on the cost structure of the hotel. Viegas (2008) concluded that, in general, respondents consider that the issue of energy management is well implemented with a high overall level (3,92 or 72%) which supports the findings of this thesis.

Comparing with other similar studies (Min, 2011; Viegas, 2008; KAPIKI 2010), this thesis, generally speaking, finds similar trends. Min (2011) stated that 80% of the participants expressed belief in environmental protection and that this protection is important to the performance and development of tourism as an industry. Viegas (2008) alerted for the fact that environmental practices that were not legislated were less implemented. Kapiki (2010) simply argued that the magnitude of energy management in a hotel as: operating a hotel that is not sustainable can cost much more.

Results show that energy management has a higher level of implementation in the questions directly related to the optimization energy when compared with the questions about reducing environmental impacts. That is, in the 4 and 5 star hotel analysis in Algarve, if the practices that are not directly linked with optimization of energy efficiency (practices number 7, 10, 17 and 18) are removed, the overall level of agreement increases to 82% approximately. This result is consistent with another analysis made by Viegas (2008), which revealed that most hotels classified as medium-high (80%) in all areas related with the conservation, efficiency and management of energy.

There is no statistically significant difference between the category of the hotel and the implemented practices except for four variables. The 5 star hotels had better results in three measures: existence of effective lighting systems, existence of automatic internal temperature regulators, and implementation of systems that utilize energy from renewable sources or cogeneration. This is simply understood as these measures are somewhat easy to implement and have a high turnover in regards to the immediate saving that provides. These three practices require initial investment and the strategic long term thinking process that sometimes is more associated with companies that provide and depend on the quality of the service or product offered.

On the other hand, encouraging employees to turn the lights off when a space is empty has better results in 4 star hotels. In addition to potential energy savings, this behaviour does not require any investment except for disclosure. This group of hotels have a very difficult product to manage since they are in the middle, that is, there are cheaper products with different levels of quality and more expensive ones with higher quality associated. The hotels in this category aim to have a quality product that is less expensive than the 5 stars. Consequently, any possible cost saving measure which in addition does not required investment is more than welcome.

According to statistical tests, the practices that have statistically significant association with the category of the hotel are: investments aimed at reducing their CO2 emissions (number 7), encouragement of its employees to turn off the lights when a space is empty (number 14), existence of energy class A equipments (number 15), existence of automatic internal temperature regulators (number 16), and implementation of systems that utilize energy from renewable sources or cogeneration (number 18). So, it is more probable that 5 star hotels have investments aimed at reducing their CO2 emissions, automatic internal temperature regulators, and systems that utilize energy from renewable sources or cogeneration, than the 4 stars. On the contrary it is more probable that 4 star hotels to have energy class A equipments, and to encourage of its employees to turn off the lights when a space is empty.

As it was stated in theory, if the hotel has a commitment from top management, or an energy policy officially instituted, or a manual of good practices established, or a energy manager or department, it is also more probable to have an ongoing plan to improving energy performance. In fact, hotels who have an ongoing plan to improve energy efficiency, and a commitment by management / senior management or an energy policy, felt that the contribution of the implemented measures was greater than of those hotels who do not have this two features.

Nonetheless, there was an interesting and contradictive conclusion in the two practices where the exact opposite situation happens. That is, for hotels where there is a manual of good practices or an energy manager / department the contribution of the measures implemented under the action plan was slightly greater for hotels that did not adopt have those characteristics. This exposes a limitation of the study, since there are no representative samples it is not possible to conclude if it is a common characteristic of the touristic destination as a whole.

Returning to the first research question initially posed, **“**is energy management is an established practice in 4 and 5 star hotels in Algarve”, the answer in a global perspective is

positive. Generally speaking, each hotel implements near 78% of energy management practices or, in other words, implements 14 of the 18 practices that were being studied. Within energy management practices, the practices directly linked with optimization of energy efficiency, are better established (83%) than the practices related with the environmental impact (60,9%).

To complement the first question, a second one was analyzed so as to know "the main reasons that lead those hotels to implement such practices". There are three main reasons that were studied in this thesis: clients, staff and operational costs. Customers and employees attribute a high level of importance to energy efficiency according to the opinion of the interviewees. Since the respondents felt that both stakeholders attach value to energy efficiency, they constitute in fact a reason to implement energy management programs. The other reason is to increase energy efficiency and consequently reduce operational costs. Decreasing environmental impacts is not a strong reason that leads hotels to implement such practices as it was shown with the considerably lower level of implementation.

6.1 Prospects for future research

From the literature review that accompanied this thesis all along, and from the analysis of the results and their subsequent, derives the following suggestions for future research:

- Expand the scope of the study to other dimensions of tourism, such as touristic activities and transportation, so as to engage the tourism industry as a whole.
- Further explore the problematic of energy in tourism. Its consumption, measurement and record keeping. This is a very complex topic since it is very hard to obtain data and then be able to make comparisons.
- Understand what can be done to educate tourists into include an environmental perspective in their choices, and to make them acknowledge that their actions have consequential impacts on the local environment, and future development on the tourism industry. In sum, to proactively develop and implement strategies instead of waiting for a mass tourist evolution into 'green tourists'.
- Development of models that help managers to make more assertive choices when considering investments in new technologies or equipments.

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8. APPENDIX

Appendix nº 1

Questionnaire

Em que medida concorda que o seu hotel:

1 – Discordo totalmente, 2 – Discordo, 3 – Não concordo nem discordo, 4 – Concordo, 5 – Concordo totalmente

	1	2	3	4	5
Identifica custos energéticos					
Comunica internamente a implementação de soluções para melhorar a eficiência energética					
Integra a problemática da gestão da energia nos relatórios que divulga					
Identifica consumos energéticos					
Procura informação sobre eficiência energética					
Tem efectuado investimentos visando a redução dos seus consumos energéticos					
Tem efectuado investimentos visando a redução das emissões de CO2					
Efectua a gestão de consumos energéticos através de monitorização sistemática					
Avalia do desempenho dos sistemas de geração, transformação e utilização de energia					
Procede à quantificação de emissões de CO2					
Respeitou os critérios de eficiência energética na estrutura dos seus edifícios					
Procura optimizar a utilização da luz natural					
Dispõe de sistemas de iluminação mais eficientes					
Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio					
Tem maioritariamente equipamentos de classe energética A					

Possui um sistema de regulação automática interna de temperaturas					
Dispõe de um plano de optimização de resíduos					
Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração					

Na sua opinião, qual o grau de importância atribuído à eficiência energética por:

	Nada importante	Pouco importante	Neutro	Importante	Extremamente importante
Colaboradores					
Clientes					

No seu hotel existe:

	Sim	**Não**
Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização		
Uma política energética oficialmente instituída na empresa		
Um manual de boas práticas oficialmente instituída na empresa		
Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2		

Existe algum plano de acção em curso para a melhoria da eficiência energética?

□ Sim □ Não

(Em caso afirmativo aparecem estas 2 perguntas)

1.2 a) Quais as principais medidas do plano de acção que foram implementadas:

Medida

1.2 b) Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização

Não contribuíram nada	Contribuíram pouco	Neutro	Contribuíram razoavelmente	Contribuíram muito

Dados de caracterização

1 – Nome da unidade hoteleira: _____

2 – Nome do respondente: _____

3 – Cargo ocupado: _____

4 – Classificação da unidade hoteleira

□ 4* □ 5*

5 – Consumo energético por quarto ocupado:_____

6 – Número de Trabalhadores:

□ < 100

□ 100 a 250

□ 251 a 500

□ >500

Appendix nº 2

Chi-Square Test – Commitment of top/senior management versus other features of the hotel

No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

			No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
			Sim	Não	Total
No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Sim	Count	21	15	36
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	58,3%	41,7%	100,0%

	Não	Count	0	15	15
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	,0%	100,0%	100,0%
Total		Count	21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14,875[a]	1	,000		
Continuity Correction[b]	12,564	1	,000		
Likelihood Ratio	20,203	1	,000		
Fisher's Exact Test				,000	,000
N of Valid Cases	51				

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14,875[a]	1	,000		
Continuity Correction[b]	12,564	1	,000		
Likelihood Ratio	20,203	1	,000		
Fisher's Exact Test				,000	,000
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,18.

b. Computed only for a 2x2 table

No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

	No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]	Total

			Sim	Não	
No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Sim	Count	20	16	36
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	55,6%	44,4%	100,0%
	Não	Count	1	14	15
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	6,7%	93,3%	100,0%
Total		Count	21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10,448[a]	1	,001		
Continuity Correction[b]	8,527	1	,003		
Likelihood Ratio	12,295	1	,000		
Fisher's Exact Test				,001	,001
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,18.

b. Computed only for a 2x2 table

No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

			No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
			Sim	Não	Total
No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Sim	Count	17	19	36
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	47,2%	52,8%	100,0%
	Não	Count	4	11	15

	% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	26,7%	73,3%	100,0%
Total	Count	21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,847[a]	1	,174		
Continuity Correction[b]	1,096	1	,295		
Likelihood Ratio	1,912	1	,167		
Fisher's Exact Test				,221	,148
N of Valid Cases	51				

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,847[a]	1	,174		
Continuity Correction[b]	1,096	1	,295		
Likelihood Ratio	1,912	1	,167		
Fisher's Exact Test				,221	,148
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,18.

b. Computed only for a 2x2 table

Appendix nº 3

Chi-Square Test– Classification of the hotel versus features of the hotel

Classificação da unidade hoteleira * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

			No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
			Sim	Não	Total
Classificação da unidade hoteleira	4 estrelas	Count	17	22	39
		% within Classificação da unidade hoteleira	43,6%	56,4%	100,0%
		% within No seu hotel existe: [Uma política energética oficialmente instituída na empresa]	81,0%	73,3%	76,5%
	5 estrelas	Count	4	8	12
		% within Classificação da unidade hoteleira	33,3%	66,7%	100,0%

	% within No seu hotel existe: [Uma política energética oficialmente instituída na empresa]	19,0%	26,7%	23,5%
Total	Count	21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,399[a]	1	,528	,739	,388
Continuity Correction[b]	,088	1	,767		
Likelihood Ratio	,405	1	,524	,739	,388
Fisher's Exact Test				,739	,388
N of Valid Cases	51				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 4,94.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Classificação da unidade hoteleira * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

			No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
			Sim	Não	Total
Classificação da unidade hoteleira	4 estrelas	Count	16	23	39
		% within Classificação da unidade hoteleira	41,0%	59,0%	100,0%
		% within No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]	76,2%	76,7%	76,5%
	5 estrelas	Count	5	7	12
		% within Classificação da unidade hoteleira	41,7%	58,3%	100,0%
		% within No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]	23,8%	23,3%	23,5%

Total	Count	21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,002[a]	1	,969	1,000	,612
Continuity Correction[b]	,000	1	1,000		
Likelihood Ratio	,002	1	,969	1,000	,612
Fisher's Exact Test				1,000	,612
N of Valid Cases	51				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 4,94.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Classificação da unidade hoteleira * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

			No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
			Sim	Não	Total
Classificação da unidade hoteleira	4 estrelas	Count	13	26	39
		% within Classificação da unidade hoteleira	33,3%	66,7%	100,0%
		% within No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]	61,9%	86,7%	76,5%
	5 estrelas	Count	8	4	12
		% within Classificação da unidade hoteleira	66,7%	33,3%	100,0%

	% within No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]	38,1%	13,3%	23,5%
Total	Count	21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,210[a]	1	,040	,051	,044
Continuity Correction[b]	2,946	1	,086		
Likelihood Ratio	4,180	1	,041	,091	,044
Fisher's Exact Test				,051	,044
N of Valid Cases	51				

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,210[a]	1	,040	,051	,044
Continuity Correction[b]	2,946	1	,086		
Likelihood Ratio	4,180	1	,041	,091	,044
Fisher's Exact Test				,051	,044
N of Valid Cases	51				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 4,94.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Classificação da unidade hoteleira * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

			No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
			Sim	Não	Total
Classificação da unidade hoteleira	4 estrelas	Count	26	13	39
		% within Classificação da unidade hoteleira	66,7%	33,3%	100,0%
		% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	72,2%	86,7%	76,5%
	5 estrelas	Count	10	2	12
		% within Classificação da unidade hoteleira	83,3%	16,7%	100,0%

	% within No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	27,8%	13,3%	23,5%
Total	Count	36	15	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,228[a]	1	,268	,312	,233
Continuity Correction[b]	,556	1	,456		
Likelihood Ratio	1,330	1	,249	,312	,233
Fisher's Exact Test				,470	,233
N of Valid Cases	51				

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1,228[a]	1	,268	,312	,233
Continuity Correction[b]	,556	1	,456		
Likelihood Ratio	1,330	1	,249	,312	,233
Fisher's Exact Test				,470	,233
N of Valid Cases	51				

a. 1 cells (25,0%) have expected count less than 5. The minimum expected count is 3,53.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Appendix nº 4

Mann- Whitney Test – Classification of the hotel versus practices

Rank

Practices	Classification of the hotel	N	Mean Rank	Sum of Ranks
1 – Identification of energy costs	4 star	39	25,9	1010
	5 star	12	26,33	316
	Total	51		
2 – Communication of the implemented solutions that improve energy efficiency	4 star	39	26,97	1052
	5 star	12	22,83	274
	Total	51		
3 – Integration of energy management topics in external reports	4 star	39	26,73	1042,5
	5 star	12	23,63	283,5
	Total	51		
4 – Identification of energy consumption levels	4 star	39	24,97	974
	5 star	12	29,33	352
	Total	51		
5 – Information search on energy efficiency	4 star	39	26,73	1042,5
	5 star	12	23,63	283,5

	Total	51		
6 – Investments aimed at reducing their energy consumption	4 star	39	26,71	1041,5
	5 star	12	23,71	284,5
	Total	51		
7 – Investments aimed at reducing their CO2 emissions	4 star	39	24,77	966
	5 star	12	30	360
	Total	51		
8 – Management of energy consumption through systematic monitoring	4 star	39	24,87	970
	5 star	12	29,67	356
	Total	51		
9 – Evaluation of the systems that generate, transform and utilize energy	4 star	39	24,87	970
	5 star	12	29,67	356
	Total	51		
10 – Measurement of CO2 emissions	4 star	39	27,12	1057,5
	5 star	12	22,38	268,5
	Total	51		
11 – Fulfilment of energy efficiency criteria in the structure of their buildings	4 star	39	24,12	940,5
	5 star	12	32,13	385,5
	Total	51		
12 – Optimization of the use of daylight	4 star	39	25,14	980,5
	5 star	12	28,79	345,5

	Total	51		
13 – Existence of effective lighting systems	4 star	39	23,62	921
	5 star	12	33,75	405
	Total	51		
14 – Encouragement of its employees to turn off the lights when a space is empty	4 star	39	27,54	1074
	5 star	12	21	252
	Total	51		
15 – Existence of energy class A equipments	4 star	39	27,18	1060
	5 star	12	22,17	266
	Total	51		
16 – Existence of automatic internal temperature regulators	4 star	39	22,21	866
	5 star	12	38,33	460
	Total	51		
17 – Existence of a plan for waste optimization	4 star	39	25,72	1003
	5 star	12	26,92	323
	Total	51		
18 – Implementation of systems that utilize energy from renewable sources or cogeneration	4 star	39	22,54	879
	5 star	12	37,25	447
	Total	51		

Test Statistics (a)

Practices	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
1 – Identification of energy costs	230	1010	-0,134	0,893
2 – Communication of the implemented solutions that improve energy efficiency	196	274	-0,954	0,34
3 – Integration of energy management topics in external reports	205,5	283,5	-0,693	0,488
4 – Identification of energy consumption levels	194	974	-1,121	0,262
5 – Information search on energy efficiency	205,5	283,5	-0,696	0,487
6 – Investments aimed at reducing their energy consumption	206,5	284,5	-0,667	0,505
7 – Investments aimed at reducing their CO2 emissions	186	966	-1,134	0,257
8 – Management of energy consumption through systematic monitoring	190	970	-1,043	0,297
9 – Evaluation of the systems that generate, transform and utilize energy	190	970	-1,038	0,299
10 – Measurement of CO2 emissions	190,5	268,5	-1,042	0,297
11 – Fulfilment of energy efficiency criteria in the structure of their buildings	160,5	940,5	-1,804	0,071
12 – Optimization of the use of daylight	200,5	980,5	-0,803	0,422
13 – Existence of effective lighting systems	141	921	-2,408	0,016

14 – Encouragement of its employees to turn off the lights when a space is empty	174	252	-2,235	0,025
15 – Existence of energy class A equipments	188	266	-1,169	0,243
16 – Existence of automatic internal temperature regulators	86	866	-3,375	0,001
17 – Existence of a plan for waste optimization	223	1003	-0,256	0,798
18 – Implementation of systems that utilize energy from renewable sources or cogeneration	99	879	-3,115	0,002

a Grouping Variable: Classification of the hotel

Appendix nº 5

Monte Carlo Test – Classification of the hotel versus practices

Classification of the hotel * To what extent do you agree that your hotel: [Identification of energy costs]

Crosstab

		To what extent do you agree that your hotel: [Identification of energy costs]			
		Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	1	6	32	39
	5 star	0	2	10	12
Total		1	8	42	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound

Pearson Chi-Square	,319(a)	2	,853	1,000(b)	1,000	1,000			
Likelihood Ratio	,548	2	,760	1,000(b)	1,000	1,000			
Fisher's Exact Test	,567			1,000(b)	1,000	1,000			
Linear-by-Linear Association	,068(c)	1	,795	1,000(b)	1,000	1,000	,575(b)	,563	,588
N of Valid Cases	51								

a 3 cells (50,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is ,260.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,079	,853	1,000(c)	1,000	1,000
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Communication of the implemented solutions that improve energy efficiency]

Crosstab

		To what extent do you agree that your hotel: [Communication of the implemented solutions that improve energy efficiency]			
		Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	3	13	23	39
	5 star	1	6	5	12
Total		4	19	28	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower	Upper		Lower	Upper

					Bound	Bound		Bound	Bound
Pearson Chi-Square	1,190(a)	2	,552	,697(b)	,685	,709			
Likelihood Ratio	1,177	2	,555	,697(b)	,685	,709			
Fisher's Exact Test	1,424			,536(b)	,523	,549			
Linear-by-Linear Association	,714(c)	1	,398	,442(b)	,430	,455	,273(b)	,261	,284
N of Valid Cases	51								

a 3 cells (50,0%) have expected count less than 5. The minimum expected count is ,94.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -,845.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,151	,552	,697(c)	,685	,709
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Integration of energy management topics in external reports]

Crosstab

		To what extent do you agree that your hotel: [Integration of energy management topics in external reports]				
		Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	1	4	22	12	39
	5 star	1	3	4	4	12
Total		2	7	26	16	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound

Pearson Chi-Square	3,210(a)	3	,360	,376(b)	,364	,389			
Likelihood Ratio	2,998	3	,392	,437(b)	,424	,450			
Fisher's Exact Test	3,740			,248(b)	,237	,259			
Linear-by-Linear Association	,846(c)	1	,358	,405(b)	,393	,418	,239(b)	,228	,250
N of Valid Cases	51								

a 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,47.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -,920.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
					99% Confidence Interval	
				Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,243	,360	,376(c)	,364	,389
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Identification of energy consumption levels]

Crosstab

		To what extent do you agree that your hotel: [Identification of energy consumption levels]			
		Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	1	12	26	39
	5 star	0	2	10	12
Total		1	14	36	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-	1,334(a)	2	,513	,591(b)	,578	,603			

Square									
Likelihood Ratio	1,627	2	,443	,591(b)	,578	,603			
Fisher's Exact Test	1,316			,591(b)	,578	,603			
Linear-by-Linear Association	1,307(c)	1	,253	,340(b)	,328	,353	,207(b)	,196	,217
N of Valid Cases	51								

a 3 cells (50,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 1,143.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,160	,513	,591(c)	,578	,603
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Information search on energy efficiency]

Crosstab

		To what extent do you agree that your hotel: [Information search on energy efficiency]				
		Totally disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	2	1	18	18	39
	5 star	0	3	4	5	12
Total		2	4	22	23	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	6,895(a)	3	,075	,110(b)	,102	,118			
Likelihood Ratio	6,205	3	,102	,139(b)	,130	,148			

Fisher's Exact Test	5,424			,136(b)	,127	,145			
Linear-by-Linear Association	,147(c)	1	,702	,724(b)	,713	,736	,396(b)	,383	,408
N of Valid Cases	51								

a 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,47.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -,383.

Symmetric Measures

				Monte Carlo Sig.	
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,345	,075	,110(c)	,102	,118
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Investments aimed at reducing their energy consumption]

Crosstab

		To what extent do you agree that your hotel: [Investments aimed at reducing their energy consumption]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	0	2	3	17	17	39
	5 star	1	0	1	6	4	12
Total		1	2	4	23	21	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	4,188(a)	4	,381	,382(b)	,370	,395			
Likelihood Ratio	4,299	4	,367	,460(b)	,447	,472			
Fisher's Exact Test	3,552			,460(b)	,447	,473			

Linear-by-Linear Association	,753(c)	1	,385	,468(b)	,455	,481	,246(b)	,235	,257
N of Valid Cases	51								

a 7 cells (70,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -,868.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,275	,381	,382(c)	,370	,395
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Investments aimed at reducing their CO2 emissions]

Crosstab

		To what extent do you agree that your hotel: [Investments aimed at reducing their CO2 emissions]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	0	5	20	12	2	39
	5 star	1	2	1	6	2	12
Total		1	7	21	18	4	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	9,979(a)	4	,041	,031(b)	,026	,035			
Likelihood Ratio	10,775	4	,029	,028(b)	,024	,032			
Fisher's Exact Test	10,336			,016(b)	,013	,019			
Linear-by-Linear Association	,554(c)	1	,457	,588(b)	,575	,600	,299(b)	,287	,311

N of Valid Cases	51								

a 7 cells (70,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is ,744.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,405	,041	,031(c)	,026	,035
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Management of energy consumption through systematic monitoring]

Crosstab

		To what extent do you agree that your hotel: [Management of energy consumption through systematic monitoring]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	2	4	4	14	15	39
	5 star	0	1	0	5	6	12
Total		2	5	4	19	21	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	2,259(a)	4	,688	,799(b)	,788	,809			
Likelihood Ratio	3,619	4	,460	,639(b)	,626	,651			
Fisher's Exact Test	1,600			,925(b)	,918	,932			
Linear-by-Linear Association	1,226(c)	1	,268	,311(b)	,299	,323	,173(b)	,163	,182

N of Valid Cases	51								

a 8 cells (80,0%) have expected count less than 5. The minimum expected count is ,47.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 1,107.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,206	,688	,799(c)	,788	,809
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Evaluation of the systems that generate, transform and utilize energy]

Crosstab

		To what extent do you agree that your hotel: [Evaluation of the systems that generate, transform and utilize energy]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	2	3	15	16	3	39
	5 star	0	1	4	4	3	12
Total		2	4	19	20	6	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	3,160(a)	4	,531	,546(b)	,533	,558			
Likelihood Ratio	3,261	4	,515	,677(b)	,665	,689			
Fisher's Exact Test	2,950			,570(b)	,557	,582			
Linear-by-Linear Association	1,370(c)	1	,242	,302(b)	,290	,314	,164(b)	,154	,173

N of Valid Cases	51								

a 8 cells (80,0%) have expected count less than 5. The minimum expected count is ,47.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 1,171.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,242	,531	,546(c)	,533	,558
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Measurement of CO2 emissions]

Crosstab

	To what extent do you agree that your hotel: [Measurement of CO2 emissions]	Total

		Totally disagree	Disagree	Don't agree nor disagree	Agree	
Classification of the hotel	4 star	9	5	20	5	39
	5 star	5	1	5	1	12
Total		14	6	25	6	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	1,642(a)	3	,650	,664(b)	,652	,676			
Likelihood Ratio	1,568	3	,667	,682(b)	,670	,694			
Fisher's Exact Test	1,572			,706(b)	,694	,717			
Linear-by-Linear Association	1,205(c)	1	,272	,339(b)	,327	,351	,172(b)	,162	,182
N of Valid Cases	51								

a 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,41.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -1,098.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,177	,650	,664(c)	,652	,676
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Fulfilment of energy efficiency criteria in the structure of their buildings]

Crosstab

	To what extent do you agree that your hotel: [Fulfilment of energy efficiency criteria in the structure of their buildings]	Total

		Disagree	Don't agree nor disagree	Agree	Totally agree	
Classification of the hotel	4 star	3	6	24	6	39
	5 star	1	1	4	6	12
Total		4	7	28	12	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	6,340(a)	3	,096	,101(b)	,093	,108			
Likelihood Ratio	5,808	3	,121	,157(b)	,148	,167			
Fisher's Exact Test	5,820			,093(b)	,086	,101			
Linear-by-Linear Association	2,149(c)	1	,143	,169(b)	,160	,179	,102(b)	,094	,110
N of Valid Cases	51								

a 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,94.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 1,466.

Symmetric Measures

			Monte Carlo Sig.		
				99% Confidence Interval	
	Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	,333	,096	,101(c)	,093	,108
N of Valid Cases	51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Optimization of the use of daylight]

Crosstab

	To what extent do you agree that your hotel: [Optimization of the use of daylight]				
	Disagree	Don't agree nor disagree	Agree	Totally agree	Total

Classification of the hotel	4 star	0	8	15	16	39
	5 star	1	1	3	7	12
Total		1	9	18	23	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	5,102(a)	3	,164	,185(b)	,175	,195			
Likelihood Ratio	4,884	3	,180	,220(b)	,209	,231			
Fisher's Exact Test	4,299			,195(b)	,185	,206			
Linear-by-Linear Association	,227(c)	1	,634	,689(b)	,677	,701	,402(b)	,390	,415
N of Valid Cases	51								

a 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is ,477.

Symmetric Measures

				Monte Carlo Sig.		
					99% Confidence Interval	
		Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,302	,164	,185(c)	,175	,195
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Existence of effective lighting systems]

Crosstab

		To what extent do you agree that your hotel: [Existence of effective lighting systems]				
		Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	1	5	26	7	39
	5 star	0	0	6	6	12

Total	1	5	32	13	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	5,951(a)	3	,114	,084(b)	,077	,091			
Likelihood Ratio	6,821	3	,078	,088(b)	,081	,096			
Fisher's Exact Test	5,175			,121(b)	,113	,130			
Linear-by-Linear Association	5,387(c)	1	,020	,022(b)	,018	,025	,014(b)	,011	,017
N of Valid Cases	51								

a 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 2,321.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,323	,114	,084(c)	,077	,091
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Encouragement of its employees to turn off the lights when a space is empty]

Crosstab

		To what extent do you agree that your hotel: [Encouragement of its employees to turn off the lights when a space is empty]		Total
		Agree	Totally agree	
Classification of the hotel	4 star	3	36	39
	5 star	4	8	12

Total	7	44	51

Chi-Square Tests(d)

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5,095(b)	1	,024	,044	,044	
Continuity Correction(a)	3,160	1	,075			
Likelihood Ratio	4,366	1	,037	,044	,044	
Fisher's Exact Test				,044	,044	
Linear-by-Linear Association	4,995(c)	1	,025	,044	,044	,039
N of Valid Cases	51					

a Computed only for a 2x2 table

b 1 cells (25,0%) have expected count less than 5. The minimum expected count is 1,65.

c The standardized statistic is -2,235.

d For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Symmetric Measures

				Monte Carlo Sig.		
					99% Confidence Interval	
		Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,301	,024	,043(c)	,037	,048
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Existence of energy class A equipments]

Crosstab

		To what extent do you agree that your hotel: [Existence of energy class A equipments]				
		Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	2	2	27	8	39
	5 star	1	4	4	3	12

Total	3	6	31	11	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	8,396(a)	3	,038	,036(b)	,031	,040			
Likelihood Ratio	7,461	3	,059	,073(b)	,066	,080			
Fisher's Exact Test	7,884			,028(b)	,024	,032			
Linear-by-Linear Association	1,437(c)	1	,231	,282(b)	,270	,293	,165(b)	,155	,174
N of Valid Cases	51								

a 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,71.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is -1,199.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,376	,038	,036(c)	,031	,040
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Existence of automatic internal temperature regulators]

Crosstab

		To what extent do you agree that your hotel: [Existence of automatic internal temperature regulators]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	11	4	12	6	6	39
	5 star	0	1	1	2	8	12
Total		11	5	13	8	14	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	14,032(a)	4	,007	,005(b)	,003	,007			
Likelihood Ratio	15,477	4	,004	,005(b)	,003	,007			
Fisher's Exact Test	12,704			,004(b)	,002	,006			
Linear-by-Linear Association	10,832(c)	1	,001	,001(b)	,000	,002	,000(b)	,000	,001
N of Valid Cases	51								

a 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,18.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 3,291.

Symmetric Measures

	Value	Approx. Sig.	Monte Carlo Sig.

					99% Confidence Interval	
				Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,465	,007	,005(c)	,003	,007
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Existence of a plan for waste optimization]

Crosstab

		To what extent do you agree that your hotel: [Existence of a plan for waste optimization]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	0	7	6	11	15	39
	5 star	1	1	1	4	5	12
Total		1	8	7	15	20	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	4,229(a)	4	,376	,435(b)	,422	,447			
Likelihood Ratio	3,990	4	,407	,497(b)	,484	,510			
Fisher's Exact Test	3,507			,532(b)	,519	,545			
Linear-by-Linear Association	,014(c)	1	,907	1,000(b)	1,000	1,000	,525(b)	,512	,538
N of Valid Cases	51								

a 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,24.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is ,117.

Symmetric Measures

	Value	Approx. Sig.	Monte Carlo Sig.		
			Sig.	99% Confidence Interval	
				Lower Bound	Upper Bound

Nominal by Nominal	Contingency Coefficient	,277	,376	,435(c)	,422	,447
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Classification of the hotel * To what extent do you agree that your hotel: [Implementation of systems that utilize energy from renewable sources or cogeneration]

Crosstab

		To what extent do you agree that your hotel: [Implementation of systems that utilize energy from renewable sources or cogeneration]					
		Totally disagree	Disagree	Don't agree nor disagree	Agree	Totally agree	Total
Classification of the hotel	4 star	18	6	10	2	3	39
	5 star	1	2	2	1	6	12
Total		19	8	12	3	9	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	13,315(a)	4	,010	,008(b)	,006	,010			
Likelihood Ratio	12,728	4	,013	,017(b)	,014	,021			
Fisher's Exact Test	12,226			,006(b)	,004	,008			
Linear-by-Linear Association	10,897(c)	1	,001	,001(b)	,000	,001	,000(b)	,000	,001
N of Valid Cases	51								

a 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,71.

b Based on 10000 sampled tables with starting seed 2000000.

c The standardized statistic is 3,301.

Symmetric Measures

	Value	Approx. Sig.	Monte Carlo Sig.		
			Sig.	99% Confidence Interval	
				Lower Bound	Upper Bound

Nominal by Nominal	Contingency Coefficient	,455	,010	,008(c)	,006	,010
N of Valid Cases		51				

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on 10000 sampled tables with starting seed 2000000.

Appendix nº6

Chi-Square Test – Features of the hotel versus ongoing plan

No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

		Existe algum plano de acção em curso para a melhoria da eficiência energética?		
		Sim	Não	Total
No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Sim	21	15	36
	Não	4	11	15
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4,249[a]	1	,039		
Continuity Correction[b]	3,076	1	,079		
Likelihood Ratio	4,382	1	,036		
Fisher's Exact Test				,064	,039
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 7,35.

b. Computed only for a 2x2 table

No seu hotel existe: [Uma política energética oficialmente instituída na empresa] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

		Existe algum plano de acção em curso para a melhoria da eficiência energética?		
		Sim	Não	Total
No seu hotel existe: [Uma política energética oficialmente instituída na empresa]	Sim	15	6	21
	Não	10	20	30
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7,174[a]	1	,007		
Continuity Correction[b]	5,730	1	,017		
Likelihood Ratio	7,363	1	,007		
Fisher's Exact Test				,011	,008
N of Valid Cases	51				

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7,174[a]	1	,007		
Continuity Correction[b]	5,730	1	,017		
Likelihood Ratio	7,363	1	,007		
Fisher's Exact Test				,011	,008
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 10,29.

b. Computed only for a 2x2 table

No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

	Existe algum plano de acção em curso para a melhoria da eficiência energética?	Total

		Sim	Não	
No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]	Sim	17	4	21
	Não	8	22	30
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14,567[a]	1	,000		
Continuity Correction[b]	12,476	1	,000		
Likelihood Ratio	15,436	1	,000		
Fisher's Exact Test				,000	,000
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 10,29.

b. Computed only for a 2x2 table

No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

		Existe algum plano de acção em curso para a melhoria da eficiência energética?		
		Sim	Não	Total
No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]	Sim	16	5	21
	Não	9	21	30
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)

Pearson Chi-Square	10,546[a]	1	,001		
Continuity Correction[b]	8,779	1	,003		
Likelihood Ratio	10,977	1	,001		
Fisher's Exact Test				,002	,001
N of Valid Cases	51				

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 10,29.

b. Computed only for a 2x2 table

Appendix nº7

Monte Carlo Test – Features of the hotel versus the contribution of the implemented measures under the ongoing plan

No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização] * Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:

Crosstab

Count

		Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:				
		Não contribuíram pouco	Neutro	Contribuíram razoavelmente	Contribuíram muito	Total
No seu hotel existe: [Um	Sim	1	2	12	6	21

compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Não	0	1	3	0	4
Total		1	3	15	6	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,183[a]	3	,535	,637[b]	,625	,650
Likelihood Ratio	3,152	3	,369	,514[b]	,501	,527
Fisher's Exact Test	2,581			,514[b]	,501	,527
N of Valid Cases	25					

a. 6 cells (75,0%) have expected count less than 5. The minimum expected count is ,16.

b. Based on 10000 sampled tables with starting seed 1947735306.

No seu hotel existe: [Uma política energética oficialmente instituída na empresa] * Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:

Crosstab

Count

		Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:				
		Não contribuíram pouco	Neutro	Contribuíram razoavelmente	Contribuíram muito	Total
No seu hotel existe: [Uma política energética oficialmente instituída na empresa]	Sim	0	1	11	3	15
	Não	1	2	4	3	10
Total		1	3	15	6	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,750[a]	3	,290	,348[b]	,335	,360
Likelihood Ratio	4,116	3	,249	,388[b]	,375	,401
Fisher's Exact Test	3,762			,230[b]	,220	,241
N of Valid Cases	25					

a. 6 cells (75,0%) have expected count less than 5. The minimum expected count is ,40.

b. Based on 10000 sampled tables with starting seed 1947735306.

No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa] * Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:

Crosstab

Count

		Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:				
		Não contribuíram pouco	Neutro	Contribuíram razoavelmente	Contribuíram muito	Total
No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]	Sim	1	2	10	4	17
	Não	0	1	5	2	8
Total		1	3	15	6	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	,490[a]	3	,921	1,000[b]	1,000	1,000
Likelihood Ratio	,791	3	,852	1,000[b]	1,000	1,000
Fisher's Exact Test	,842			1,000[b]	1,000	1,000
N of Valid Cases	25					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	,490[a]	3	,921	1,000[b]	1,000	1,000
Likelihood Ratio	,791	3	,852	1,000[b]	1,000	1,000
Fisher's Exact Test	,842			1,000[b]	1,000	1,000
N of Valid Cases	25					

a. 7 cells (87,5%) have expected count less than 5. The minimum expected count is ,32.

b. Based on 10000 sampled tables with starting seed 1947735306.

No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2] * Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:

Crosstab

Count

		Em que medida as acções do plano já implementadas contribuíram para a optimização energética da sua organização:				
		Não contribuíram pouco	Neutro	Contribuíram razoavelmente	Contribuíram muito	Total
No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]	Sim	0	2	11	3	16
	Não	1	1	4	3	9
Total		1	3	15	6	25

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,865[a]	3	,413	,620[b]	,607	,632
Likelihood Ratio	3,137	3	,371	,620[b]	,607	,632
Fisher's Exact Test	2,944			,437[b]	,424	,450

N of Valid Cases	25					

a. 6 cells (75,0%) have expected count less than 5. The minimum expected count is ,36.

b. Based on 10000 sampled tables with starting seed 1947735306.

Appendix nº8

Monte Carlo Test – Classification of the hotel versus employees and customers

In your opinion, what degree of importance is given to energy efficiency by: [Employees] * Classification of the hotel

		Classification of the hotel		Total
		4 estrelas	5 estrelas	
In your opinion, what degree of importance is given to energy efficiency by: [Employees]	Pouco importante	0	1	1
	Neutro	1	2	3
	Importante	20	4	24
	Muito importante	18	5	23
Total		39	12	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
					99% Confidence Interval			99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	7,022 [a]	3	,071	,062 [b]	,056	,068			

Likelihood Ratio	6,120	3	,106	,089 b	,082	,097			
Fisher's Exact Test	6,146			,071 b	,064	,077			
Linear-by-Linear Association	2,412 c	1	,120	,151 b	,142	,160	,100 b	,092	,107
N of Valid Cases	51								

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,24.

b. Based on 10000 sampled tables with starting seed 957002199.

c. The standardized statistic is -1,553.

Symmetric Measures

				Monte Carlo Sig.		
					99% Confidence Interval	
		Value	Approx. Sig.	Sig.	Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,348	,071	,062[a]	,056	,068
N of Valid Cases		51				

a. Based on 10000 sampled tables with starting seed 957002199.

In your opinion, what degree of importance is given to energy efficiency by: [Customers] * Classification of the hotel

		Classification of the hotel		Total
		4 estrelas	5 estrelas	
In your opinion, what degree of importance is given to energy efficiency by: [Customers]	Neutro	7	1	8
	Importante	24	8	32
	Muito importante	8	3	11
Total		39	12	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	,665[a]	2	,717	,798[b]	,788	,809			
Likelihood Ratio	,742	2	,690	,798[b]	,788	,809			
Fisher's Exact Test	,617			,798[b]	,788	,809			
Linear-by-Linear Association	,485[c]	1	,486	,590[b]	,577	,602	,328[b]	,316	,340
N of Valid Cases	51								

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,88.

b. Based on 10000 sampled tables with starting seed 957002199.

c. The standardized statistic is ,696.

Symmetric Measures

		Value	Approx. Sig.	Monte Carlo Sig.		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Nominal by Nominal	Contingency Coefficient	,113	,717	,798[a]	,788	,809
N of Valid Cases		51				

a. Based on 10000 sampled tables with starting seed 957002199.

Appendix nº 9

Monte Carlo Test – Employees and customers versus plan

Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Colaboradores] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

		Existe algum plano de acção em curso para a melhoria da eficiência energética?		
		Sim	Não	Total
Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Colaboradores]	Pouco importante	0	1	1
	Neutro	1	2	3
	Importante	13	11	24
	Muito importante	11	12	23
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	1,524[a]	3	,677	,865[b]	,856	,874
Likelihood Ratio	1,917	3	,590	,865[b]	,856	,874
Fisher's Exact Test	1,563			,865[b]	,856	,874
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,49.

b. Based on 10000 sampled tables with starting seed 2000000.

Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Clientes] * Existe algum plano de acção em curso para a melhoria da eficiência energética?

		Existe algum plano de acção em curso para a melhoria da eficiência energética?		
		Sim	Não	Total
Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Clientes]	Neutro	4	4	8
	Importante	13	19	32
	Muito importante	8	3	11
Total		25	26	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,379[a]	2	,185	,169[b]	,160	,179
Likelihood Ratio	3,470	2	,176	,169[b]	,160	,179
Fisher's Exact Test	3,334			,169[b]	,160	,179
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,379[a]	2	,185	,169[b]	,160	,179
Likelihood Ratio	3,470	2	,176	,169[b]	,160	,179
Fisher's Exact Test	3,334			,169[b]	,160	,179
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 3,92.

b. Based on 10000 sampled tables with starting seed 2000000.

Appendix nº10

Mann-Whitney Test – Employees and Customers versus Classification of the hotel

Ranks

	Classificação da unidade hoteleira	N	Mean Rank	Sum of Ranks
Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Colaboradores]	4 estrelas	39	27,00	1053,00
	5 estrelas	12	22,75	273,00
	Total	51		
Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Clientes]	4 estrelas	39	25,32	987,50
	5 estrelas	12	28,21	338,50
	Total	51		

Test Statistics[a]

	Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Colaboradores]	Na sua opinião, qual o grau de importância atribuído à eficiência energética por: [Clientes]
Mann-Whitney U	195,000	207,500
Wilcoxon W	273,000	987,500
Z	-,966	-,684
Asymp. Sig. (2-tailed)	,334	,494

a. Grouping Variable: Classificação da unidade hoteleira

Appendix nº11

Test of Normality – Classification of the hotel versus practices, and Classification of the hotel versus employees and customers

Practices	Classification of the hotel	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
1 – Identification of energy costs	4 star	0,49	39	0	0,488	39	0
	5 star	0,499	12	0	0,465	12	0
2 – Communication of the implemented solutions that improve energy efficiency	4 star	0,365	39	0	0,707	39	0
	5 star	0,279	12	0,011	0,784	12	0,006
3 – Integration of energy management topics in external reports	4 star	0,286	39	0	0,794	39	0
	5 star	0,2	12	,200(*)	0,877	12	0,08
4 – Identification of energy consumption levels	4 star	0,415	39	0	0,642	39	0
	5 star	0,499	12	0	0,465	12	0
5 – Information search on energy efficiency	4 star	0,306	39	0	0,657	39	0
	5 star	0,258	12	0,027	0,802	12	0,01
6 – Investments aimed at reducing their energy consumption	4 star	0,254	39	0	0,774	39	0
	5 star	0,333	12	0,001	0,754	12	0,003
7 – Investments aimed at reducing their CO2 emissions	4 star	0,286	39	0	0,849	39	0
	5 star	0,323	12	0,001	0,856	12	0,044
8 – Management of energy consumption through	4 star	0,27	39	0	0,813	39	0

systematic monitoring	5 star	0,274	12	0,013	0,716	12	0,001
9 – Evaluation of the systems that generate,	4 star	0,232	39	0	0,87	39	0
transform and utilize energy	5 star	0,198	12	,200(*)	0,894	12	0,134
10 – Measurement of CO2 emissions	4 star	0,319	39	0	0,817	39	0
	5 star	0,273	12	0,014	0,801	12	0,01
11 – Fulfilment of energy efficiency criteria in the	4 star	0,347	39	0	0,798	39	0
structure of their buildings	5 star	0,281	12	0,009	0,778	12	0,005
12 – Optimization of the use of daylight	4 star	0,26	39	0	0,791	39	0
	5 star	0,334	12	0,001	0,731	12	0,002
13 – Existence of effective lighting systems	4 star	0,346	39	0	0,767	39	0
	5 star	0,331	12	0,001	0,65	12	0
14 – Encouragement of its employees to turn off the	4 star	0,535	39	0	0,297	39	0
lights when a space is empty	5 star	0,417	12	0	0,608	12	0
15 – Existence of energy class A equipments	4 star	0,368	39	0	0,709	39	0
	5 star	0,198	12	,200(*)	0,894	12	0,134
16 – Existence of automatic internal temperature	4 star	0,179	39	0,003	0,876	39	0
regulators	5 star	0,388	12	0	0,668	12	0
17 – Existence of a plan for waste optimization	4 star	0,226	39	0	0,82	39	0
	5 star	0,275	12	0,012	0,807	12	0,011
18 – Implementation of systems that utilize energy	4 star	0,272	39	0	0,806	39	0
from renewable sources or cogeneration	5 star	0,3	12	0,004	0,807	12	0,011

* This is a lower bound of the true significance.

a Lilliefors Significance Correction

In your opinion, what degree of importance is given to energy efficiency by:	Classification of the hotel	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Employees	4 star	0,323	39	0	0,707	39	0
	5 star	0,238	12	0,059	0,84	12	0,028
Customers	4 star	0,311	39	0	0,779	39	0
	5 star	0,364	12	0	0,753	12	0,003

a Lilliefors Significance Correction

Appendix nº12

Table 19 – Results of each practice

Practice	Totally disagree		Disagree		Don't agree nor disagree		Agree		Totally agree	
1					1	2,0%	8	15,7%	42	82,4%
2					4	7,8%	19	37,3%	28	54,9%
3			2	3,9%	7	13,7%	26	51,0%	16	31,4%
4					1	2,0%	14	27,5%	36	70,6%
5	2	3,9%			4	7,8%	22	43,1%	23	45,1%
6	1	2,0%	2	3,9%	4	7,8%	23	45,1%	21	41,2%
7	1	2,0%	7	13,7%	21	41,2%	18	35,3%	4	7,8%
8	2	3,9%	5	9,8%	4	7,8%	19	37,3%	21	41,2%
9	2	3,9%	4	7,8%	19	37,3%	20	39,2%	6	11,8%
10	14	27,5%	6	11,8%	25	49,0%	6	11,8%		
12			4	7,8%	7	13,7%	28	54,9%	12	23,5%
13			1	2,0%	9	17,6%	18	35,3%	23	45,1%
14			1	2,0%	5	9,8%	32	62,7%	13	25,5%
11							7	13,7%	44	86,3%
15			3	5,9%	6	11,8%	31	60,8%	11	21,6%
16	11	21,6%	5	9,8%	13	25,5%	8	15,7%	14	27,5%
17	1	2,0%	8	15,7%	7	13,7%	15	29,4%	20	39,2%
18	19	37,3%	8	15,7%	12	23,5%	3	5,9%	9	17,6%

Appendix nº13

Table 23 – Identification of energy costs (descriptive analysis)

To what extent do you agree that your hotel: Identifies energy costs	Frequency	Percentage	Cumulative Percentage
3 – Don't agree nor disagree	1	2%	2%
4 – Agree	8	15,7%	17,6%
5 – Totally Agree	42	82,4%	100%
Total	51	100%	

Table 24 – Identification of energy costs (cross table resume)

Level of implementation		4,80
		96,1%
Classification of the hotel	4 star	95,9%
	5 star	96,7%
Level of agreement on implementation	NS/NR	24%
	Director's Assistant	4%
	Finance Director	2%
	General Manager	60%
	Maintenance Director	10%
	Total	100%
Neutral to implementation	General Manager	100%
	Total	100%

Table 25 – Communication of the implemented solutions that improve energy efficiency

Level of implementation		4,47
		89,4%
Classification of the hotel	4 star	90,3%
	5 star	86,7%

Level of agreement on implementation	NS/NR	23,4%
	Director's Assistant	4,3%
	Finance Director	2,1%
	General Manager	59,6%
	Maintenance Director	10,6%
	Total	100%
Neutral to implementation	NS/NR	25%
	General Manager	75%
	Total	100%

Table 26 – Integration of energy management topics in external reports

Level of implementation		4,10
		82%
Classification of the hotel	4 star	83,1%
	5 star	78,3%
Level of agreement on implementation	NS/NR	19%
	Director's Assistant	4,8%
	Finance Director	2,4%
	General Manager	61,9%
	Maintenance Director	11,9%
	Total	100%
Neutral to implementation	NS/NR	42,9%
	General Manager	57,1%
	Total	100%
Level of disagreement on implementation	NS/NR	50%
	General Manager	50%
	Total	100%

Table 27 – Identification of energy consumption levels (descriptive analysis)

To what extent do you agree that your hotel: Identifies energy consumption levels	Frequency	Percentage	Cumulative Percentage
3 – Don't agree nor disagree	1	2%	2%

4 – Agree	14	27,5%	29,4%
5 – Totally Agree	36	70,6%	100%
Total	51	100%	

Table 28 – Identification of energy consumption levels (cross table resume)

Level of implementation		4,69
		93,7%
Classification of the hotel	4 star	92,8%
	5 star	96,7%
Level of agreement on implementation	NS/NR	24%
	Director's Assistant	4%
	Finance Director	2%
	General Manager	60%
	Maintenance Director	10%
	Total	100%
Neutral to implementation	General Manager	100%
	Total	100%

Table 29 – Information search about energy efficiency

Level of implementation		4,25
		85,1%
Classification of the hotel	4 star	85,6%
	5 star	83,3%
Level of agreement on implementation	NS/NR	24,4%
	Director's Assistant	4,4%
	Finance Director	2,2%
	General Manager	57,8%
	Maintenance Director	11,1%
	Total	100%
Neutral to implementation	NS/NR	25%
	General Manager	75%
	Total	100%

Level of disagreement on implementation	General Manager	100%
	Total	100%

Table 30 – Investments aimed at reducing energy consumption

Level of implementation		4,20
		83,9%
Classification of the hotel	4 star	85,1%
	5 star	80%
Level of agreement on implementation	NS/NR	22,7%
	Director's Assistant	2,3%
	Finance Director	2,3%
	General Manager	61,4%
	Maintenance Director	11,4%
	Total	100%
Neutral to implementation	NS/NR	25%
	Director's Assistant	25%
	General Manager	50%
	Total	100%
Level of disagreement on implementation	NS/NR	33,3%
	General Manager	66,7%
	Total	100%

Table 31 – Investments aimed at reducing CO2 emissions

Level of implementation		3,33
		66,7%
Classification of the hotel	4 star	65,6%
	5 star	70%
Level of agreement on implementation	NS/NR	9,1%
	Director's Assistant	4,5%
	Finance Director	4,5%
	General Manager	63,6%
	Maintenance Director	18,2%

	Total	100%
Neutral to implementation	NS/NR	33,3%
	Director's Assistant	4,8%
	General Manager	61,9%
	Total	100%
Level of disagreement on implementation	NS/NR	37,5%
	General Manager	50%
	Maintenance Director	12,5%
	Total	100%

Table 32 – Management of energy consumption through systematic monitoring

Level of implementation		4,02
		80,4%
Classification of the hotel	4 star	78,5%
	5 star	86,7%
Level of agreement on implementation	NS/NR	15%
	Director's Assistant	2,5%
	Finance Director	2,5%
	General Manager	67,5%
	Maintenance Director	12,5%
	Total	100%
Neutral to implementation	NS/NR	75%
	Director's Assistant	25%
	Total	100%
Level of disagreement on implementation	NS/NR	42,9%
	General Manager	57,1%
	Total	100%

Table 33 – Evaluation of the systems that generate, transform and utilize energy

Level of implementation		3,47
		69,4%
Classification of the	4 star	67,7%

hotel	5 star	75%
Level of agreement on implementation	NS/NR	19,2%
	Director's Assistant	7,7%
	Finance Director	3,8%
	General Manager	57,7%
	Maintenance Director	11,5%
	Total	100%
Neutral to implementation	NS/NR	21,1%
	General Manager	68,4%
	Maintenance Director	10,5%
	Total	100%
Level of disagreement on implementation	NS/NR	50%
	General Manager	50%
	Total	100%

Table 34 – Measurement of CO2 emissions

Level of implementation		2,45
		49%
Classification of the hotel	4 star	50,8%
	5 star	43,3%
Level of agreement on implementation	NS/NR	16,7%
	Director's Assistant	16,7%
	General Manager	50%
	Maintenance Director	16,7%
	Total	100%
Neutral to implementation	NS/NR	24%
	Finance Director	4%
	General Manager	64%
	Maintenance Director	8%
	Total	100,0%

Level of disagreement on implementation	NS/NR	25%
	Director's Assistant	5%
	General Manager	60%
	Maintenance Director	10%
	Total	100%

Table 35 – Fulfilment of energy efficiency criteria in the structure of their buildings

Level of implementation		3,94
		78,8%
Classification of the hotel	4 star	76,9%
	5 star	85%
Level of agreement on implementation	NS/NR	20%
	Director's Assistant	5%
	Finance Director	2,5%
	General Manager	62,5%
	Maintenance Director	10%
	Total	100%
Neutral to implementation	NS/NR	42,9%
	General Manager	42,9%
	Maintenance Director	14,3%
	Total	100%
Level of disagreement on implementation	NS/NR	25,0%
	General Manager	75,0%
	Total	100%

Table 36 – Optimization of the use of daylight

Level of implementation		4,24
		84,7%
Classification of the hotel	4 star	84,1%
	5 star	86,7%

Level of agreement on implementation	NS/NR	26,8%
	Director's Assistant	4,9%
	Finance Director	2,4%
	General Manager	56,1%
	Maintenance Director	9,8%
	Total	100%
Neutral to implementation	NS/NR	11,1%
	General Manager	88,9%
	Total	100%
Level of disagreement on implementation	Maintenance Director	100%
	Total	100%

Table 37 – Existence of effective lighting systems

Level of implementation		4,12
		82,4%
Classification of the hotel	4 star	80%
	5 star	90%
Level of agreement on implementation	NS/NR	24,4%
	Director's Assistant	4,4%
	Finance Director	2,2%
	General Manager	57,8%
	Maintenance Director	11,1%
	Total	100%
Neutral to implementation	General Manager	100%
	Total	100%
Level of disagreement on implementation	NS/NR	100%
	Total	100%

Table 38 – Encouragement of its employees to turn off the lights when a space is empty

Level of implementation		4,86
		97,3%
Classification of	4 star	98,5%

the hotel	5 star	93,3%
Level of agreement on implementation	NS/NR	23,5%
	Director's Assistant	3,9%
	Finance Director	2%
	General Manager	60,8%
	Maintenance Director	9,8%
	Total	100%

Table 39 – Existence of energy class A equipments

Level of implementation		3,98
		79,6%
Classification of the hotel	4 star	81%
	5 star	75%
Level of agreement on implementation	NS/NR	26,2%
	Director's Assistant	4,8%
	General Manager	59,5%
	Maintenance Director	9,5%
	Total	100%
Neutral to implementation	NS/NR	16,7%
	General Manager	66,7%
	Maintenance Director	16,7%
	Total	100%
Level of disagreement on implementation	Finance Director	33,3%
	General Manager	66,7%
	Total	100%

Table 40 – Existence of automatic internal temperature regulators

Level of implementation		3,18
		63,5%
Classification of the hotel	4 star	55,9%
	5 star	88,3%

Level of agreement on implementation	NS/NR	27,3%
	Director's Assistant	4,5%
	Finance Director	4,5%
	General Manager	50,0%
	Maintenance Director	13,6%
	Total	100%
Neutral to implementation	NS/NR	15,4%
	General Manager	69,2%
	Maintenance Director	15,4%
	Total	100%
Level of disagreement on implementation	NS/NR	25%
	Director's Assistant	6,3%
	General Manager	68,8%
	Total	100%

Table 41 – Existence of a plan for waste optimization

Level of implementation		3,88
		77,6%
Classification of the hotel	4 star	77,4%
	5 star	78,3%
Level of agreement on implementation	NS/NR	20%
	Director's Assistant	5,7%
	Finance Director	2,9%
	General Manager	57,1%
	Maintenance Director	14,3%
	Total	100%
Neutral to implementation	NS/NR	28,6%
	General Manager	71,4%
	Total	100%
Level of disagreement on implementation	NS/NR	33,3%
	General Manager	66,7%
	Total	100%

Table 42 – Implementation of systems that utilize energy from renewable sources or cogeneration

Level of implementation		2,51
		50,2%
Classification of the hotel	4 star	42,6%
	5 star	75%
Level of agreement on implementation	NS/NR	25%
	Director's Assistant	8,3%
	General Manager	50%
	Maintenance Director	16,7%
	Total	100%
Neutral to implementation	NS/NR	33,3%
	General Manager	50%
	Maintenance Director	16,7%
	Total	100%
Level of disagreement on implementation	NS/NR	18,5%
	Director's Assistant	3,7%
	Finance Director	3,7%
	General Manager	70,4%
	Maintenance Director	3,7%
	Total	100%

Appendix nº14

Monte Carlo Test – Group of practices per Features studied

Em que medida concorda que o seu hotel: [Identifica custos energéticos] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica custos energéticos]	Não concordo nem discordo	0	1	1
	Concordo	8	0	8
	Concordo totalmente	28	14	42
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,044[a]	2	,049	,029[b]	,025	,033
Likelihood Ratio	8,324	2	,016	,021[b]	,017	,024
Fisher's Exact Test	5,783			,029[b]	,025	,033
N of Valid Cases	51					

a. 3 cells (50,0%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica custos energéticos] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o	Não concordo nem discordo	0	1	1

seu hotel: [Identifica custos energéticos]	Concordo	2	6	8
	Concordo totalmente	19	23	42
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	1,850[a]	2	,396	,541[b]	,528	,554
Likelihood Ratio	2,264	2	,322	,439[b]	,426	,452
Fisher's Exact Test	1,702			,541[b]	,528	,554
N of Valid Cases	51					

a. 4 cells (66,7%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica custos energéticos] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica custos energéticos]	Não concordo nem discordo	0	1	1
	Concordo	4	4	8
	Concordo totalmente	17	25	42
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	,966[a]	2	,617	,825[b]	,815	,835
Likelihood Ratio	1,323	2	,516	,825[b]	,815	,835
Fisher's Exact Test	,994			,825[b]	,815	,835
N of Valid Cases	51					

a. 4 cells (66,7%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica custos energéticos] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica custos energéticos]	Não concordo nem discordo	1	0	1
	Concordo	1	7	8
	Concordo totalmente	19	23	42
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,431[a]	2	,109	,081[b]	,074	,088
Likelihood Ratio	5,233	2	,073	,081[b]	,074	,088
Fisher's Exact Test	4,208			,081[b]	,074	,088
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,431[a]	2	,109	,081[b]	,074	,088
Likelihood Ratio	5,233	2	,073	,081[b]	,074	,088
Fisher's Exact Test	4,208			,081[b]	,074	,088
N of Valid Cases	51					

a. 4 cells (66,7%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética]	Não concordo nem discordo	4	0	4
	Concordo	15	4	19
	Concordo totalmente	17	11	28
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,621[a]	2	,164	,168[b]	,158	,177
Likelihood Ratio	4,714	2	,095	,109[b]	,101	,117
Fisher's Exact Test	3,029			,213[b]	,203	,224
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,18.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética]	Não concordo nem discordo	0	4	4
	Concordo	8	11	19
	Concordo totalmente	13	15	28
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,126[a]	2	,210	,264[b]	,253	,275

Likelihood Ratio	4,567	2	,102	,181[b]	,171	,191
Fisher's Exact Test	2,829			,284[b]	,273	,296
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética]	Não concordo nem discordo	0	4	4
	Concordo	10	9	19
	Concordo totalmente	11	17	28
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,871[a]	2	,144	,155[b]	,146	,164
Likelihood Ratio	5,297	2	,071	,101[b]	,094	,109
Fisher's Exact Test	3,539			,155[b]	,146	,164
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Comunica internamente a implementação de soluções para melhorar a eficiência energética]	Não concordo nem discordo	2	2	4
	Concordo	10	9	19
	Concordo totalmente	9	19	28
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,101[a]	2	,350	,383[b]	,370	,395
Likelihood Ratio	2,108	2	,349	,383[b]	,370	,395
Fisher's Exact Test	2,225			,347[b]	,335	,360
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga]	Discordo	2	0	2
	Não concordo nem discordo	4	3	7
	Concordo	24	2	26
	Concordo totalmente	6	10	16
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-	Monte Carlo Sig. (2-sided)

			sided)	Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	15,788[a]	3	,001	,000[b]	,000	,001
Likelihood Ratio	16,959	3	,001	,001[b]	,000	,001
Fisher's Exact Test	15,391			,000[b]	,000	,001
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,59.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Integra a problemática da gestão da	Discordo	0	2	2
	Não concordo nem discordo	2	5	7
	Concordo	14	12	26

energia nos relatórios que divulga]	Concordo totalmente	5	11	16
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,233[a]	3	,237	,273[b]	,261	,284
Likelihood Ratio	4,964	3	,174	,252[b]	,240	,263
Fisher's Exact Test	3,725			,303[b]	,291	,315
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga]	Discordo	0	2	2
	Não concordo nem discordo	2	5	7
	Concordo	14	12	26
	Concordo totalmente	5	11	16
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,233[a]	3	,237	,273[b]	,261	,284
Likelihood Ratio	4,964	3	,174	,252[b]	,240	,263
Fisher's Exact Test	3,725			,303[b]	,291	,315
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Integra a problemática da gestão da energia nos relatórios que divulga]	Discordo	0	2	2
	Não concordo nem discordo	3	4	7
	Concordo	12	14	26
	Concordo totalmente	6	10	16
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound

Pearson Chi-Square	1,763[a]	3	,623	,692[b]	,680	,704
Likelihood Ratio	2,484	3	,478	,674[b]	,662	,686
Fisher's Exact Test	1,491			,736[b]	,725	,748
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica consumos energéticos] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica consumos	Não concordo nem discordo	0	1	1
	Concordo	14	0	14

energéticos]	Concordo totalmente	22	14	36
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	9,791[a]	2	,007	,005[b]	,003	,007
Likelihood Ratio	13,677	2	,001	,002[b]	,001	,003
Fisher's Exact Test	10,644			,002[b]	,001	,003
N of Valid Cases	51					

a. 3 cells (50,0%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica consumos energéticos] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica consumos energéticos]	Não concordo nem discordo	0	1	1
	Concordo	7	7	14
	Concordo totalmente	14	22	36
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	1,228[a]	2	,541	,724[b]	,713	,736
Likelihood Ratio	1,582	2	,453	,724[b]	,713	,736
Fisher's Exact Test	1,215			,724[b]	,713	,736
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica consumos energéticos] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica consumos energéticos]	Não concordo nem discordo	0	1	1
	Concordo	8	6	14
	Concordo totalmente	13	23	36
Total		21	30	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	2,555[a]	2	,279	,200[b]	,190	,210
Likelihood Ratio	2,891	2	,236	,264[b]	,252	,275
Fisher's Exact Test	2,475			,200[b]	,190	,210
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Identifica consumos energéticos] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Identifica consumos energéticos]	Não concordo nem discordo	1	0	1
	Concordo	4	10	14
	Concordo totalmente	16	20	36
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)	
				Sig.	99% Confidence Interval

					Lower Bound	Upper Bound
Pearson Chi-Square	2,506[a]	2	,286	,264[b]	,252	,275
Likelihood Ratio	2,892	2	,236	,206[b]	,196	,216
Fisher's Exact Test	2,370			,264[b]	,252	,275
N of Valid Cases	51					

a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o	Discordo totalmente	2	0	2

seu hotel: [Procura informação sobre eficiência energética]	Não concordo nem discordo	1	3	4
	Concordo	21	1	22
	Concordo totalmente	12	11	23
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	15,146[a]	3	,002	,001[b]	,000	,002
Likelihood Ratio	17,315	3	,001	,001[b]	,000	,001
Fisher's Exact Test	15,221			,001[b]	,000	,001
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,59.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética]	Discordo totalmente	0	2	2
	Não concordo nem discordo	0	4	4
	Concordo	12	10	22
	Concordo totalmente	9	14	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,863[a]	3	,118	,106[b]	,098	,114
Likelihood Ratio	7,999	3	,046	,073[b]	,066	,079
Fisher's Exact Test	5,122			,126[b]	,117	,134
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética]	Discordo totalmente	0	2	2
	Não concordo nem discordo	0	4	4
	Concordo	12	10	22
	Concordo totalmente	9	14	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,863[a]	3	,118	,106[b]	,098	,114

Likelihood Ratio	7,999	3	,046	,073[b]	,066	,079
Fisher's Exact Test	5,122			,126[b]	,117	,134
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura informação sobre eficiência energética]	Discordo totalmente	2	0	2
	Não concordo nem discordo	3	1	4
	Concordo	6	16	22

	Concordo totalmente	10	13	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,553[a]	3	,088	,077[b]	,070	,084
Likelihood Ratio	7,331	3	,062	,099[b]	,091	,107
Fisher's Exact Test	5,996			,077[b]	,070	,083
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos]	Discordo totalmente	1	0	1
	Discordo	2	0	2
	Não concordo nem discordo	2	2	4
	Concordo	19	4	23
	Concordo totalmente	12	9	21
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,496[a]	4	,240	,219[b]	,208	,230
Likelihood Ratio	6,310	4	,177	,241[b]	,230	,252
Fisher's Exact Test	5,247			,209[b]	,198	,219
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos]	Discordo totalmente	0	1	1
	Discordo	0	2	2
	Não concordo nem discordo	1	3	4
	Concordo	11	12	23
	Concordo totalmente	9	12	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)	
				Sig.	99% Confidence Interval

					Lower Bound	Upper Bound
Pearson Chi-Square	2,977[a]	4	,562	,658[b]	,646	,670
Likelihood Ratio	4,082	4	,395	,607[b]	,594	,620
Fisher's Exact Test	2,546			,713[b]	,701	,725
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos	Discordo totalmente	0	1	1
	Discordo	0	2	2
	Não concordo nem discordo	1	3	4
	Concordo	11	12	23

energéticos]	Concordo totalmente	9	12	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,977[a]	4	,562	,658[b]	,646	,670
Likelihood Ratio	4,082	4	,395	,607[b]	,594	,620
Fisher's Exact Test	2,546			,713[b]	,701	,725
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução dos seus consumos energéticos]	Discordo totalmente	0	1	1
	Discordo	2	0	2
	Não concordo nem discordo	1	3	4
	Concordo	11	12	23
	Concordo totalmente	7	14	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,942[a]	4	,293	,290[b]	,278	,302
Likelihood Ratio	6,031	4	,197	,314[b]	,302	,326
Fisher's Exact Test	4,401			,353[b]	,341	,366
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2]	Discordo totalmente	1	0	1
	Discordo	7	0	7
	Não concordo nem discordo	9	12	21
	Concordo	15	3	18
	Concordo totalmente	4	0	4
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	14,187[a]	4	,007	,003[b]	,002	,005
Likelihood Ratio	16,889	4	,002	,002[b]	,001	,002
Fisher's Exact Test	12,592			,006[b]	,004	,008
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado	Discordo totalmente	0	1	1
	Discordo	1	6	7

investimentos visando a redução das emissões de CO2]	Não concordo nem discordo	6	15	21
	Concordo	10	8	18
	Concordo totalmente	4	0	4
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	11,418[a]	4	,022	,010[b]	,007	,012
Likelihood Ratio	13,505	4	,009	,009[b]	,006	,011
Fisher's Exact Test	10,659			,013[b]	,010	,015
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2]	Discordo totalmente	0	1	1
	Discordo	2	5	7
	Não concordo nem discordo	7	14	21
	Concordo	8	10	18
	Concordo totalmente	4	0	4
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	7,486[a]	4	,112	,098[b]	,091	,106
Likelihood Ratio	9,264	4	,055	,082[b]	,075	,089
Fisher's Exact Test	6,938			,109[b]	,101	,117
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem efectuado investimentos visando a redução das emissões de CO2]	Discordo totalmente	0	1	1
	Discordo	3	4	7
	Não concordo nem discordo	4	17	21
	Concordo	10	8	18
	Concordo totalmente	4	0	4
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	12,205[a]	4	,016	,007[b]	,005	,009
Likelihood Ratio	14,363	4	,006	,006[b]	,004	,008
Fisher's Exact Test	11,850			,006[b]	,004	,008
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

	No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]	Total

		Sim	Não	
Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática]	Discordo totalmente	2	0	2
	Discordo	3	2	5
	Não concordo nem discordo	3	1	4
	Concordo	19	0	19
	Concordo totalmente	9	12	21
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	16,836[a]	4	,002	,000[b]	,000	,001
Likelihood Ratio	21,880	4	,000	,000[b]	,000	,000
Fisher's Exact Test	18,212			,000[b]	,000	,001
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,59.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática]	Discordo totalmente	1	1	2
	Discordo	2	3	5
	Não concordo nem discordo	0	4	4
	Concordo	13	6	19
	Concordo totalmente	5	16	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	11,305[a]	4	,023	,012[b]	,010	,015
Likelihood Ratio	12,850	4	,012	,020[b]	,016	,023
Fisher's Exact Test	11,067			,010[b]	,007	,012
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	11,305[a]	4	,023	,012[b]	,010	,015
Likelihood Ratio	12,850	4	,012	,020[b]	,016	,023
Fisher's Exact Test	11,067			,010[b]	,007	,012
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o	Discordo totalmente	1	1	2

seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática]	Discordo	2	3	5
	Não concordo nem discordo	3	1	4
	Concordo	8	11	19
	Concordo totalmente	7	14	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,497[a]	4	,645	,716[b]	,704	,728
Likelihood Ratio	2,506	4	,644	,766[b]	,755	,777
Fisher's Exact Test	2,759			,657[b]	,645	,670
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Efectua a gestão de consumos energéticos através de monitorização sistemática]	Discordo totalmente	1	1	2
	Discordo	2	3	5
	Não concordo nem discordo	0	4	4
	Concordo	7	12	19
	Concordo totalmente	11	10	21
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,103[a]	4	,392	,447[b]	,434	,460
Likelihood Ratio	5,529	4	,237	,341[b]	,329	,353
Fisher's Exact Test	4,123			,427[b]	,414	,440
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,103[a]	4	,392	,447[b]	,434	,460
Likelihood Ratio	5,529	4	,237	,341[b]	,329	,353
Fisher's Exact Test	4,123			,427[b]	,414	,440
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia]	Discordo totalmente	1	1	2
	Discordo	3	1	4
	Não concordo nem discordo	10	9	19
	Concordo	17	3	20
	Concordo totalmente	5	1	6
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,867[a]	4	,209	,218[b]	,207	,229
Likelihood Ratio	5,918	4	,205	,293[b]	,281	,304
Fisher's Exact Test	5,951			,165[b]	,155	,175
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,59.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia]	Discordo totalmente	1	1	2
	Discordo	1	3	4
	Não concordo nem discordo	4	15	19
	Concordo	10	10	20
	Concordo totalmente	5	1	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)	
				Sig.	99% Confidence Interval

					Lower Bound	Upper Bound
Pearson Chi-Square	8,718[a]	4	,069	,055[b]	,049	,061
Likelihood Ratio	9,144	4	,058	,096[b]	,089	,104
Fisher's Exact Test	8,662			,046[b]	,040	,051
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e	Discordo totalmente	2	0	2
	Discordo	1	3	4
	Não concordo nem discordo	5	14	19
	Concordo	8	12	20

utilização de energia]	Concordo totalmente	5	1	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	9,435[a]	4	,051	,042[b]	,037	,047
Likelihood Ratio	10,378	4	,035	,058[b]	,052	,064
Fisher's Exact Test	8,617			,047[b]	,042	,053
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Avalia o desempenho dos sistemas de geração, transformação e utilização de energia]	Discordo totalmente	0	2	2
	Discordo	1	3	4
	Não concordo nem discordo	7	12	19
	Concordo	8	12	20
	Concordo totalmente	5	1	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,393[a]	4	,172	,174[b]	,164	,184
Likelihood Ratio	7,270	4	,122	,189[b]	,179	,199
Fisher's Exact Test	5,684			,196[b]	,186	,206
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,82.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2]	Discordo totalmente	9	5	14
	Discordo	5	1	6
	Não concordo nem discordo	16	9	25
	Concordo	6	0	6
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-	Monte Carlo Sig. (2-sided)

			sided)	Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,760[a]	3	,289	,351[b]	,339	,363
Likelihood Ratio	5,465	3	,141	,218[b]	,208	,229
Fisher's Exact Test	3,427			,358[b]	,345	,370
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,76.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de	Discordo totalmente	2	12	14
	Discordo	1	5	6
	Não concordo nem discordo	12	13	25

CO2]	Concordo	6	0	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	14,720[a]	3	,002	,002[b]	,001	,003
Likelihood Ratio	17,597	3	,001	,002[b]	,001	,003
Fisher's Exact Test	14,439			,002[b]	,001	,003
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is 2,47.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2]	Discordo totalmente	3	11	14
	Discordo	5	1	6
	Não concordo nem discordo	8	17	25
	Concordo	5	1	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	11,928[a]	3	,008	,006[b]	,004	,008
Likelihood Ratio	12,399	3	,006	,011[b]	,008	,014
Fisher's Exact Test	11,224			,007[b]	,005	,009
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is 2,47.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procede à quantificação de emissões de CO2]	Discordo totalmente	7	7	14
	Discordo	2	4	6
	Não concordo nem discordo	7	18	25
	Concordo	5	1	6
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,797[a]	3	,079	,077[b]	,070	,084

Likelihood Ratio	7,004	3	,072	,123[b]	,115	,132
Fisher's Exact Test	6,526			,083[b]	,075	,090
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is 2,47.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética	Discordo	3	1	4
	Não concordo nem discordo	6	1	7
	Concordo	18	10	28

na estrutura dos seus edifícios]	Concordo totalmente	9	3	12
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	1,457[a]	3	,692	,763[b]	,752	,774
Likelihood Ratio	1,557	3	,669	,763[b]	,752	,774
Fisher's Exact Test	1,335			,809[b]	,799	,819
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,18.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios]	Discordo	0	4	4
	Não concordo nem discordo	3	4	7
	Concordo	12	16	28
	Concordo totalmente	6	6	12
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	3,227[a]	3	,358	,413[b]	,400	,425
Likelihood Ratio	4,665	3	,198	,254[b]	,243	,265
Fisher's Exact Test	3,036			,413[b]	,400	,425
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios]	Discordo	0	4	4
	Não concordo nem discordo	5	2	7
	Concordo	8	20	28
	Concordo totalmente	8	4	12
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	10,501[a]	3	,015	,013[b]	,010	,016
Likelihood Ratio	11,949	3	,008	,012[b]	,009	,015
Fisher's Exact Test	9,868			,014[b]	,011	,017
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	10,501[a]	3	,015	,013[b]	,010	,016
Likelihood Ratio	11,949	3	,008	,012[b]	,009	,015
Fisher's Exact Test	9,868			,014[b]	,011	,017
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Respeitou os critérios de eficiência energética na estrutura dos seus edifícios]	Discordo	3	1	4
	Não concordo nem discordo	2	5	7
	Concordo	7	21	28
	Concordo totalmente	9	3	12
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	11,041[a]	3	,012	,009[b]	,007	,012
Likelihood Ratio	11,243	3	,010	,015[b]	,012	,018
Fisher's Exact Test	10,647			,010[b]	,007	,012
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,65.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural]	Discordo	1	0	1
	Não concordo nem discordo	7	2	9
	Concordo	18	0	18
	Concordo totalmente	10	13	23
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)	
				Sig.	99% Confidence Interval

					Lower Bound	Upper Bound
Pearson Chi-Square	16,283[a]	3	,001	,001[b]	,000	,001
Likelihood Ratio	20,764	3	,000	,000[b]	,000	,001
Fisher's Exact Test	17,425			,000[b]	,000	,001
N of Valid Cases	51					

a. 3 cells (37,5%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural]	Discordo	0	1	1
	Não concordo nem discordo	1	8	9
	Concordo	14	4	18
	Concordo totalmente	6	17	23

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural]	Discordo	0	1	1
	Não concordo nem discordo	1	8	9
	Concordo	14	4	18
	Concordo totalmente	6	17	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	16,176[a]	3	,001	,000[b]	,000	,001
Likelihood Ratio	17,354	3	,001	,001[b]	,000	,002
Fisher's Exact Test	15,700			,001[b]	,000	,001
N of Valid Cases	51					

a. 3 cells (37,5%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural]	Discordo	0	1	1
	Não concordo nem discordo	2	7	9
	Concordo	11	7	18
	Concordo totalmente	8	15	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	5,376[a]	3	,146	,109[b]	,101	,117

Likelihood Ratio	5,793	3	,122	,139[b]	,130	,148
Fisher's Exact Test	5,083			,143[b]	,134	,152
N of Valid Cases	51					

a. 3 cells (37,5%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Procura optimizar a utilização da luz natural]	Discordo	1	0	1
	Não concordo nem discordo	3	6	9
	Concordo	8	10	18

	Concordo totalmente	9	14	23
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	1,776[a]	3	,620	,682[b]	,670	,694
Likelihood Ratio	2,127	3	,546	,682[b]	,670	,694
Fisher's Exact Test	1,730			,709[b]	,698	,721
N of Valid Cases	51					

a. 3 cells (37,5%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes]	Discordo	1	0	1
	Não concordo nem discordo	3	2	5
	Concordo	23	9	32
	Concordo totalmente	9	4	13
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	,724[a]	3	,868	,925[b]	,918	,932
Likelihood Ratio	,989	3	,804	1,000[b]	1,000	1,000
Fisher's Exact Test	1,027			,925[b]	,918	,932
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes]	Discordo	0	1	1
	Não concordo nem discordo	1	4	5
	Concordo	13	19	32
	Concordo totalmente	7	6	13
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,491[a]	3	,477	,502[b]	,489	,515

Likelihood Ratio	2,926	3	,403	,502[b]	,489	,515
Fisher's Exact Test	2,328			,529[b]	,516	,542
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes]	Discordo	1	0	1
	Não concordo nem discordo	3	2	5
	Concordo	9	23	32
	Concordo totalmente	8	5	13
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,636[a]	3	,084	,047[b]	,042	,053
Likelihood Ratio	7,027	3	,071	,087[b]	,080	,094
Fisher's Exact Test	6,550			,044[b]	,039	,049
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de sistemas de iluminação mais eficientes]	Discordo	0	1	1
	Não concordo nem discordo	1	4	5
	Concordo	11	21	32
	Concordo totalmente	9	4	13
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,461[a]	3	,091	,056[b]	,050	,062
Likelihood Ratio	6,869	3	,076	,106[b]	,098	,114
Fisher's Exact Test	6,060			,070[b]	,064	,077
N of Valid Cases	51					

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio]	Concordo	7	0	7
	Concordo totalmente	29	15	44
Total		36	15	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3,381[a]	1	,066	,090	,072
Continuity Correction[b]	1,938	1	,164		
Likelihood Ratio	5,327	1	,021	,090	,072
Fisher's Exact Test				,090	,072
N of Valid Cases	51				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 2,06.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o	Concordo	2	5	7

seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio]	Concordo totalmente	19	25	44
Total		21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,532[a]	1	,466	,685	,384
Continuity Correction[b]	,100	1	,752		
Likelihood Ratio	,552	1	,457	,685	,384
Fisher's Exact Test				,685	,384
N of Valid Cases	51				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 2,88.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio]	Concordo	3	4	7
	Concordo totalmente	18	26	44
Total		21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,009[a]	1	,923	1,000	,616
Continuity Correction[b]	,000	1	1,000		
Likelihood Ratio	,009	1	,923	1,000	,616
Fisher's Exact Test				1,000	,616
N of Valid Cases	51				

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,009[a]	1	,923	1,000	,616
Continuity Correction[b]	,000	1	1,000		
Likelihood Ratio	,009	1	,923	1,000	,616
Fisher's Exact Test				1,000	,616
N of Valid Cases	51				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 2,88.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Incentiva os seus colaboradores a desligarem as luzes sempre que um espaço fica vazio]	Concordo	2	5	7
	Concordo totalmente	19	25	44
Total		21	30	51

Chi-Square Tests[c]

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,532[a]	1	,466	,685	,384
Continuity Correction[b]	,100	1	,752		
Likelihood Ratio	,552	1	,457	,685	,384
Fisher's Exact Test				,685	,384
N of Valid Cases	51				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 2,88.

b. Computed only for a 2x2 table

c. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A]	Discordo	2	1	3
	Não concordo nem discordo	2	4	6
	Concordo	22	9	31
	Concordo totalmente	10	1	11
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-	Monte Carlo Sig. (2-sided)

			sided)	Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,223[a]	3	,101	,088[b]	,081	,096
Likelihood Ratio	6,281	3	,099	,137[b]	,128	,146
Fisher's Exact Test	5,946			,082[b]	,074	,089
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is ,88.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos	Discordo	1	2	3
	Não concordo nem discordo	1	5	6
	Concordo	13	18	31

de classe energética A]	Concordo totalmente	6	5	11
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,383[a]	3	,497	,552[b]	,539	,565
Likelihood Ratio	2,555	3	,465	,552[b]	,539	,565
Fisher's Exact Test	2,351			,503[b]	,490	,516
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A]	Discordo	1	2	3
	Não concordo nem discordo	1	5	6
	Concordo	13	18	31
	Concordo totalmente	6	5	11
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2,383[a]	3	,497	,552[b]	,539	,565
Likelihood Ratio	2,555	3	,465	,552[b]	,539	,565
Fisher's Exact Test	2,351			,503[b]	,490	,516
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem maioritariamente equipamentos de classe energética A]	Discordo	2	1	3
	Não concordo nem discordo	5	1	6
	Concordo	8	23	31
	Concordo totalmente	6	5	11
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	9,042[a]	3	,029	,023[b]	,019	,027

Likelihood Ratio	9,317	3	,025	,038[b]	,033	,042
Fisher's Exact Test	8,878			,022[b]	,018	,025
N of Valid Cases	51					

a. 5 cells (62,5%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna	Discordo totalmente	1	10	11
	Discordo	3	2	5
	Não concordo nem discordo	13	0	13

de temperaturas]	Concordo	8	0	8
	Concordo totalmente	11	3	14
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	29,488[a]	4	,000	,000[b]	,000	,000
Likelihood Ratio	33,811	4	,000	,000[b]	,000	,000
Fisher's Exact Test	27,964			,000[b]	,000	,000
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,47.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas]	Discordo totalmente	1	10	11
	Discordo	1	4	5
	Não concordo nem discordo	9	4	13
	Concordo	4	4	8
	Concordo totalmente	6	8	14
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	10,099[a]	4	,039	,035[b]	,030	,040
Likelihood Ratio	11,138	4	,025	,039[b]	,034	,044
Fisher's Exact Test	10,033			,033[b]	,028	,038
N of Valid Cases	51					

a. 5 cells (50,0%) have expected count less than 5. The minimum expected count is 2,06.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas]	Discordo totalmente	1	10	11
	Discordo	3	2	5
	Não concordo nem discordo	7	6	13
	Concordo	4	4	8
	Concordo totalmente	6	8	14
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,542[a]	4	,162	,161[b]	,151	,170
Likelihood Ratio	7,516	4	,111	,147[b]	,138	,156

Fisher's Exact Test	6,896			,136[b]	,127	,145
N of Valid Cases	51					

a. 5 cells (50,0%) have expected count less than 5. The minimum expected count is 2,06.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Possui um sistema de regulação automática interna de temperaturas]	Discordo totalmente	0	11	11
	Discordo	2	3	5
	Não concordo nem discordo	4	9	13
	Concordo	4	4	8

	Concordo totalmente	11	3	14
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	16,624[a]	4	,002	,001[b]	,000	,002
Likelihood Ratio	20,687	4	,000	,001[b]	,000	,001
Fisher's Exact Test	17,663			,001[b]	,000	,001
N of Valid Cases	51					

a. 5 cells (50,0%) have expected count less than 5. The minimum expected count is 2,06.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos]	Discordo totalmente	1	0	1
	Discordo	7	1	8
	Não concordo nem discordo	6	1	7
	Concordo	15	0	15
	Concordo totalmente	7	13	20
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	20,741[a]	4	,000	,000[b]	,000	,000
Likelihood Ratio	24,124	4	,000	,000[b]	,000	,000
Fisher's Exact Test	20,153			,000[b]	,000	,000
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,29.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos]	Discordo totalmente	0	1	1
	Discordo	3	5	8
	Não concordo nem discordo	3	4	7
	Concordo	10	5	15
	Concordo totalmente	5	15	20
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)	
				Sig.	99% Confidence Interval

					Lower Bound	Upper Bound
Pearson Chi-Square	6,937[a]	4	,139	,123[b]	,114	,131
Likelihood Ratio	7,370	4	,118	,131[b]	,122	,139
Fisher's Exact Test	6,792			,117[b]	,108	,125
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos]	Discordo totalmente	0	1	1
	Discordo	5	3	8
	Não concordo nem discordo	2	5	7
	Concordo	10	5	15

	Concordo totalmente	4	16	20
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	10,388[a]	4	,034	,022[b]	,018	,025
Likelihood Ratio	11,032	4	,026	,037[b]	,032	,042
Fisher's Exact Test	10,139			,021[b]	,017	,025
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Dispõe de um plano de optimização de resíduos]	Discordo totalmente	0	1	1
	Discordo	5	3	8
	Não concordo nem discordo	2	5	7
	Concordo	7	8	15
	Concordo totalmente	7	13	20
Total		21	30	51

Chi-Square Tests

				Monte Carlo Sig. (2-sided)		
					99% Confidence Interval	
	Value	df	Asymp. Sig. (2-sided)	Sig.	Lower Bound	Upper Bound
Pearson Chi-Square	3,163[a]	4	,531	,587[b]	,575	,600
Likelihood Ratio	3,518	4	,475	,596[b]	,584	,609
Fisher's Exact Test	3,070			,590[b]	,578	,603
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is ,41.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração] * No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]

Crosstab

Count

		No seu hotel existe: [Um compromisso por parte da administração/gestão de topo no âmbito da melhoria do desempenho energético da organização]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração]	Discordo totalmente	8	11	19
	Discordo	7	1	8
	Não concordo nem discordo	12	0	12
	Concordo	3	0	3
	Concordo totalmente	6	3	9
Total		36	15	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	14,843[a]	4	,005	,003[b]	,001	,004
Likelihood Ratio	18,442	4	,001	,001[b]	,000	,002
Fisher's Exact Test	14,159			,002[b]	,001	,004
N of Valid Cases	51					

a. 5 cells (50,0%) have expected count less than 5. The minimum expected count is ,88.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração] * No seu hotel existe: [Uma política energética oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Uma política energética oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o	Discordo totalmente	4	15	19

seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração]	Discordo	4	4	8
	Não concordo nem discordo	8	4	12
	Concordo	1	2	3
	Concordo totalmente	4	5	9
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	6,769[a]	4	,149	,149[b]	,140	,158
Likelihood Ratio	6,997	4	,136	,185[b]	,175	,195
Fisher's Exact Test	6,889			,128[b]	,119	,136
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração] * No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]

Crosstab

Count

		No seu hotel existe: [Um manual de boas práticas oficialmente instituída na empresa]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração]	Discordo totalmente	6	13	19
	Discordo	3	5	8
	Não concordo nem discordo	4	8	12
	Concordo	2	1	3
	Concordo totalmente	6	3	9
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,291[a]	4	,368	,402[b]	,389	,414
Likelihood Ratio	4,268	4	,371	,457[b]	,444	,470
Fisher's Exact Test	4,254			,391[b]	,379	,404
N of Valid Cases	51					

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	4,291[a]	4	,368	,402[b]	,389	,414
Likelihood Ratio	4,268	4	,371	,457[b]	,444	,470
Fisher's Exact Test	4,254			,391[b]	,379	,404
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.

Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração] * No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]

Crosstab

Count

		No seu hotel existe: [Um gestor de energia ou um departamento responsável por gerir as questões energéticas e de redução das emissões de CO2]		
		Sim	Não	Total
Em que medida concorda que o seu hotel: [Tem implementado um sistema de aproveitamento de energia por fontes renováveis ou Cogeração]	Discordo totalmente	6	13	19
	Discordo	4	4	8
	Não concordo nem discordo	2	10	12
	Concordo	1	2	3
	Concordo totalmente	8	1	9
Total		21	30	51

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	12,491[a]	4	,014	,008[b]	,006	,010
Likelihood Ratio	13,404	4	,009	,014[b]	,011	,017
Fisher's Exact Test	12,305			,008[b]	,006	,010
N of Valid Cases	51					

a. 6 cells (60,0%) have expected count less than 5. The minimum expected count is 1,24.

b. Based on 10000 sampled tables with starting seed 2000000.