

An Assessment of Hotels and Resorts Use of the ISO 14001 Environmental Management System as a Tool to Achieve Environmentally Sustainable Operations

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Received: 15 October 2021

Revised: 22 December 2021

Accepted: 23 December 2021

Abstract

This study aimed to 1) empirically examine the hotels and resorts located around the world that have implemented an ISO 14001 certified environmental management system (EMS) 2) identify those hotels that have implemented an ISO 14001: 2015 management system and 3) identify whether individual hotels and resorts that are not part of a major global chain have implemented ISO 14001 EMS. An in-depth qualitative instrumental case study research approach was used. The study period was from 1990 to 2021. The qualitative data was analyzed by document analysis. The results showed that hotels located in Australia, throughout Europe, Hong Kong, Japan, Thailand, Vietnam, and the United States have implemented the ISO 14001 based EMS. The earliest adoption of an ISO certified EMS by a case firm dated back to the late 1990s. Over the study period, several major hotel chains, such as Hilton Worldwide, ibis and Swissôtel, have certified their EMS in accordance with the ISO 14001 standards. The case study found that individual hotels have also implemented ISO 14001 certified EMS, this was especially so in Europe. Since the release of the ISO 14001:2015 EMS standard, seven hotels or hotel groups have adopted this standard. The use of an ISO 14001 certified EMS underpins the hotel and resorts environmentally sustainable operations. The case study showed that as part of their environmental management policy, many hotels are focusing on energy optimization, energy saving measures, water consumption minimization, and sustainable waste management. Many hotels are now recycling or re-using wastes.

Keywords: Case study, hotels and resorts, ISO 14001 Environmental Management System, environmentally sustainable hotels operations

Introduction

Over the past twenty years or so, environmental sustainability has gained considerable momentum in the business world (Sartor, Orzes, Touboulic, Culot & Nassimbeni, 2020). Sustainability is important for a variety of reasons. Firstly, a sustainability approach enables a firm to mitigate its impact on the environment. Secondly, it is important to reduce emissions to avoid their impact on climate change. Firms adopting a sustainability approach make a meaningful contribution to society and establish relationships with local communities. Sustainability also enables a firm to create a competitive advantage. Furthermore, firms adopting a sustainability approach will optimize the utilization of resources whilst also reducing the impacts of their operation on the nearby areas (Jauhari, 2014). In recent times, there has been an increasing consciousness of environmental protection which has led to the development of environmental management systems (EMS) (Pun & Hui, 2001). Multinational and domestic firms located all around the world are increasingly adopting environmental management systems (EMS) and certifying them in accordance with international standards (Morrow & Rodinelli, 2002). Many firms are now using an ISO 14001 certified environmental management system (EMS) as a tool for proactive environmental management (Summers Raines, 2002). Indeed, a firm's use of an Environmental Management System (EMS) has increasingly become a critical success factor for it to compete in its chosen target markets (Bravi, Santos, Pagano & Murrura, 2020). Environmental management systems (EMS) have been introduced all around the world to reduce environmental degradation issues arising from industrial development (Sorooshian & Ting, 2018).

The adoption and implementation of ISO 14001 certified environmental management systems (EMS) represents one of the most important elements of corporate sustainability in recent times (Zobel, 2013). The use of an Environmental management system (EMS) has become one of the main tools used by firms to handle the environmental aspects and the impacts that their activities have on the environment (Campos, Aparecida de Melo Heizen, Verdinelli & Cauchick Miguel, 2015). ISO 14001 is an international standard for environmental management systems (EMS) that was first introduced in September 1996 (Bansal & Bogner, 2002; Chin, Chui & Rao Tummala, 1999; Curkovic & Sroufe, 2011). Since its inception, this standard has gained widespread recognition among businesses all around the world, much like its sister standard on quality management systems, ISO 9000 (Bansal & Bogner, 2002). Indeed, the ISO 14001 Environmental Management System (EMS) Standard has gained widespread acceptance as an administrative tool in the field of corporate responses to sustainability (MacDonald, 2005). The ISO 14001 standard is based on the concept that better environmental performance can be achieved by a firm implementing an EMS when environmental aspects are systematically identified and managed giving a major contribution to Sustainability, through pollution prevention, improved

environmental performance and compliance with all applicable laws and regulations (Ciravegna & da Fonseca, 2015). ISO 14001 is now widely considered the most important environmental certification (Sartor, Orzes, Touboullic, Culot & Nassimbeni, 2020). On September 15, 2015, the International Organization for Standardization (ISO) released the ISO 14001: 2015, which had revised previous versions of the system (International Organization for Standardization, 2015).

In recent times, the hotel industry, not only the Global major chains hotels but also the individual hotel owners have introduced various initiatives for the sake of the environment, for economic reasons, or to build a positive image. Some hotels have adopted the internationally recognized ISO 14001 Environmental Management System (EMS) standard (Chan, 2009; Chan & Hawkins, 2012; Chang & Wong, 2006; del-Val Segarra-Oña, Peiró-Signes, Verma & Miret-Pastor, 2012). Sustainability measures are an important strategy for attracting new clients. In addition, sustainability in the hotel sector is important because it can create a connection with the local population, whilst at the same time protecting the surrounding natural environment and biodiversity (Lacalle, 2021). This study therefore aimed to empirically examine the hotels and resorts located around the world that have implemented an ISO 14001 certified environmental management system (EMS) as a tool to manage their operations in an environmentally sustainable manner. A second objective is to identify those hotels that have implemented an ISO 14001: 2015 management system. A final objective is to identify whether individual hotels and resorts that are not part of a major global chain have implemented ISO 14001 environmental management systems.

The remainder of the paper is organized as follows: The literature review is presented in Section 2. The research method that underpinned the study is outlined in Section 3. The case study is presented in Section 4. Section 5 presents the key findings of the study.

Literature Review

Environmental impact of hotels.

Despite their vital role played in the tourism industry value chain, hotels and resorts have an adverse impact on the environment (Baxter & Srisaeng, 2020; Chen, Legrand & Sloan, 2005; Koe & Chia, 2010). In providing services to their guests, hotels consume large amounts of resources. The principal areas of environmental impact of hotels and resorts are energy consumption, water consumption, greenhouse gas (GHG) emissions (Bohdanowicz, Zientara, & Novotna, 2011), congestion and noise (Florido, Jacob & Payeras, 2019), and waste (Parambil, 2020). In addition, hotels produce carbon dioxide (CO₂) emissions as a byproduct of their operations. Furthermore, carbon dioxide (CO₂) emissions are regarded as being the largest contributor to long-term climate change (Peters, Andrew, Boden, Canadell, Ciais, Le Quéré, Marland, Raupach & Wilson, 2013).

Severe degradation of the environment can occur when there is inappropriate infrastructure and systems in place at destinations to manage the environmental impact of the hotel (Parambil, 2020).

If not done carefully then the way, its grounds are managed can have an adverse impact on the environment. A further environmental impact is the direct impacts of their guests on the environment. The regular renovation and replacement of furniture, appliances and facilities can also result in adverse environmental impacts through purchasing decisions and increased waste generation. The disposal of materials which are removed from the hotel to refurbish it, convert it for other uses, or through the demolition, and from the work performed during these activities can also materially impact the environment (International Union for Conservation of Nature and Natural Resources, 2012; Parambil, 2020). Also, there potentially could be some toxic materials present at the property. In such an event, the chemicals would require careful handling and management (Parambil, 2020).

ISO 14001 Environmental Management Systems (EMS)

Management system standards, also referred to as meta-standards, have been adopted by an increasing number of firms across the world (Heras-Saizarbitoria & Boiral, 2013). The International Organization for Standardization (ISO) has developed a series of voluntary standards and guidelines in the field of environmental management, which are referred to as the EN ISO 14000 series. These standards have been designed to provide an internationally recognized framework for environmental management, measurement, evaluation, and auditing (Škurla, Kolar & Takač, 2002). The International Organization for Standardization (ISO) has developed the ISO 14000 series of standards for environmental management as a response to the concerns that were raised about sustainable development, and which were expressed at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. The most important standard is ISO 14001, which as previously noted was implemented in 1996 and slightly modified again in 2004, which specifies requirements for environmental management systems (de Vries, Bayramoglu, & van der Wiele, 2012). The ISO 14001 standard describes the requirements for a certifiable Environmental Management System (EMS) (Sartor, Orzes & Moras, 2019). ISO 14001 is a global meta-standard for implementing Environmental Management Systems (EMS) (Heras-Saizarbitoria, Landín & Molina-Azorín., 2011; Laskurain, Ibarloza, Larrea & Allur, 2017; Liu, Yuan, Hafeez & Li, 2020).

The ISO 14001 Environmental Management System (EMS) has developed over time into one of the most widely used systems for managing corporate environmental aspects (Oliveira, Oliveira, Ometto, Ferraudo & Salgado, 2011). Environmental management systems (EMSs) are intended to formalize procedures for managing and reducing environmental impacts of a firm's

operations (Christini, Fetsko & Hendrickson, 2004). The ISO 14001 environmental management system (EMS) standard has been designed to assist firms in the creation of structured mechanisms for continuous improvement in their environmental performance (Kitazawa & Sarkis, 2000).

The basic elements of an environment management system (EMS) include the following:

- Reviewing the organization's environmental goals.
- Analyzing the firm's environmental impacts and compliance obligations (or legal and other requirements).
- Setting environmental objectives and targets to reduce environmental impacts and conform with compliance obligations.
- Establishing programs to meet these objectives and targets.
- Monitoring and measuring progress in achieving the objectives.
- Ensuring employees' environmental awareness and competence; and
- Reviewing progress of the EMS and achieving improvements (United States Environmental Protection Agency, 2021).

An environmental management system (EMS) helps firms identify, manage, monitor, and control their environmental issues in a 'holistic' way. It requires that the firm considers all environmental issues relevant to its operations (Susanto & Mulyono, 2017). Firms can achieve a number of very important environmental-related benefits from the use of an ISO 14001 EMS. These benefits include:

- Enhanced environmental awareness and accountability at all levels throughout the firm.
- Improved regulatory compliance.
- Enhanced operational procedures and controls.
- A reduced environmental footprint (lower emissions, discharges, and wastes).
- Continual system improvements resulting from the EMS objectives, goals, programs, periodic audits, and management reviews (Briggs, 2007, p. 67).
- Pollution prevention.
- Resource conservation
- New customers/markets
- Increased efficiency/reduced costs
- Enhanced employee morale
- Enhanced image with public, regulators, lenders, investors

- Employee awareness of environmental issues and responsibilities (United States Environmental Protection Agency, 2021)

The ISO 14001:2015 standard is applicable to any firm, regardless of type, size, and their nature of business. As previously noted, the ISO 14001 environmental management system (EMS) applies to the environmental aspects of its operations, products, and services that the firms sets and for which it can control and or influence (International Organization for Standardization, 2021; Shehabi, 2016).

Sustainable hotels management and operations

Sustainability has become a vital issue in the global hotel industry (Jones, Hillier & Comfort, 2014). As noted earlier, environmental management has been embraced by managers of most hotels located all around the world (Mensah, 2007). Accordingly, an increasing number of hotels have proactively altered their operations to include more environmentally friendly practices (Choi, Jang & Kandampully, 2015). Furthermore, confronting the rise of environmental awareness and carbon reduction trends, green hotels have increasingly developed into an important business direction for the hospitality industry (Lee & Cheng, 2018). Indeed, green, or sustainable development, has become an especially important concept and an effective means to sustainably develop the tourism industry (Chengcai, Qianqian, Nana, Yan, Shushu & Ling, 2017). In addition, green management has quite quickly become a strategic tool that can be used to enhance a hotel's competitive advantage (Lee, Hsu, Han & Kim, 2010). Thus, many of the world's major hotel chains are now identifying ways to integrate "green" into their hotels (Peršić-Živadinov, 2009).

The assessment concept of using ISO 14001 in hotel management

In today's hotel industry, sustainable practices respect the environment in hotel design, development, and operation. Hotel companies and individual hotel owners are increasingly adopting sustainable solutions for the day-to-day operations of their hotels. These sustainable practices include reducing water usage, lowering waste, energy savings, and/or using renewable energy sources. Furthermore, hotel policies are normally aimed to either minimize the impact on the environment or contribute to nature preservation and regeneration. Hotel sustainability decisions and policies are made to combat climate change. Sustainable practices in hotel operations are employed to maintain the qualities that are valued in the physical environment within the means of natural systems (environment) and without causing an adverse impact on other people (society and culture). Thus, hotel design and development are being focused on environmental protection and sustainable hotel operations to reduce the associated climate risk, whilst also providing a satisfying guest experience (Autin, 2020).

The goal of sustainability is to minimize the hotel's impact on the region. This can be achieved through reductions in the unnecessary use of energy, supporting the use of alternative energy, and reducing greenhouse gases (GHGs). In recent times, a number of the sustainability trends and initiatives being implemented by hotels have been in following areas:

- Energy conservation
- Amenities
- Waste reduction and efficiency
- Promoting sustainable means of transportation
- Choosing cleaning products wisely with minimum impact on the environment
- Careful selection of local food products at the hotel restaurant
- Encouraging guests to make sustainable decisions
- Promoting ecotourism
- Water conservation
- Operational changes (Lacalle, 2021)

Sustainable buildings and hotels have an important role to play in reducing their negative impact on the environment since they use significant amounts of energy and water, generate waste and materials, and use land much more efficiently than buildings simply built to a building code (Peršić-Živadinov & Blažević, 2010). Sustainable hotels are designed, constructed, and operated on a sustainable basis. They use water, energy, materials, and land more efficiently and effectively than hotel buildings that are constructed in accordance with a building code (Peršić-Živadinov, 2009). These design, construction, and operational practices help to preserve the environment (Ahn & Pearce, 2013).

Sustainability measures are an important strategy for attracting new clients. In addition, sustainability in the hotel sector is important because it can create a connection with the local population, whilst at the same time protecting the surrounding natural environment and biodiversity (Lacalle, 2021).

Research Methodology

Research approach

The present study used a qualitative instrumental case study research approach to address three objectives. (Baxter, 2021; Holland, Grant & Donthamsetty, 2018; Laframboise & Shea, 2009; Pedersen, Landheim, Møller & Lien, 2018). An instrumental case study is the study of a case, for instance, a firm, that provides insights into a specific issue, redraws generalizations, or builds theory (Stake, 1995, 2005). The instrumental case study research approach enables researchers to gain a

greater understanding of a specific phenomenon. An instrumental case study is designed around established theory of the phenomenon under study (Grandy, 2010). The present study was designed around the established theory of ISO 14001 Environmental Management Systems (EMS) (Dentch, 2016; Grover & Grover, 2017; Imtiaz Haider, 2010; Whitelaw, 2004), and environmentally sustainable hotel operations (Glynn, Lockwood & Raffaelli, 2015; Sloan, Legrand & Chen, 2013; Rezaee & Choi, 2017).

Data collection

The data used in the study was obtained from a range of documents, company annual reports, company materials available on the internet and records as sources of case evidence. An extensive search of the leading tourism journals and magazines was also conducted in the study.

This study used secondary data. The three principles of data collection as recommended by Yin (2018) were followed: the use of multiple sources of case evidence, creation of a database on the subject and the establishment of a chain of evidence.

Data analysis

The data collected for the case study was examined using document analysis. Document analysis is quite commonly used in case studies. Document analysis focuses on the information and data from formal documents, textbooks and a firm's records that are collected by a researcher(s) when conducting their study (Andrew et al., 2011; Yin, 2018). Following the guidance of Scott (2004, 2014) and Scott and Marshall (2009), the documents gathered in the present study were examined according to four criteria: authenticity, credibility, representativeness and meaning.

The document analysis was undertaken in six distinct stages:

- Phase 1: The first phase involved planning the types and required documentation and their availability for the study.
- Phase 2: The data collection phase involved sourcing the documents and developing and implementing a scheme for the document management.
- Phase 3: The collected Documents were examined to assess their authenticity, credibility and to identify any potential bias.
- Phase 4: The content of the collected documents was carefully examined, and the key themes and issues were identified.
- Phase 5: This phase involved the deliberation and refinement to identify any difficulties associated with the documents, reviewing sources, as well as exploring the documents content.
- Phase 6: In this phase the analysis of the data was completed (O'Leary, 2004, p. 179).

Following the guidance of Yin (2018), the study's documents were downloaded and stored in a case study database. All the documents gathered for the study were all written in English. Each document was carefully read, and key themes were coded and recorded in the case study research framework (Baxter, 2021; Baxter & Srisaeng, 2020).

Results

Al Bustan Rotana Dubai become the Rotana Group's first hotel to be awarded the ISO 14001 certification for environmental management systems in August 2014. To attain this certification, the hotel implemented a number of strategic changes in its operations, which included reducing and saving on energy consumption in the hotel premises, reducing noise pollution, monitoring and reducing mixed waste and recyclables, as well as waste separation (Thomas, 2014).

All Swissotel properties and Corporate Office environmental management systems (EMS) have been certified in accordance with the ISO 14001 standard since 2010 (Swissôtel, 2021b). Swissôtel's compliance with the ISO standards dates back to the late 1990s, when Swissôtel The Bosphorus, Istanbul received the company's first ISO 14001 certification (Swissôtel, 2021c). The Swissôtel brand was founded in 1980 and at the time of the present study the company had more than 30 hotels operating around the world. Swissôtel is part of AccorHotels group (Swissôtel, 2021a). For Swissôtel, the ISO 14001 certification demonstrates that its properties consistently meet the high standards expected by our international clientele and stakeholders by applying a systematic management approach (Swissôtel, 2021c).

Altis Avenida Hotel, located in the historic centre of Lisbon in Portugal, obtained, for the second consecutive year, its ISO 14001 certification in environmental management in 2014. Together with the recovery of a building of architectural interest, the Altis Hotels group has paid particular attention to sustainability issues by adopting an environmental liability perspective of continuous improvement of the quality of its services, greater efficiency and rationalization of resources and the associated costs (Altis Avenida Hotel, 2014).

Balearic Islands-based Hotels Viva and Resorts has adopted a sustainable development model and as such its properties are fully compliant with the ISO 14001 environmental management system. The company has introduced measures to reduce its impact on the environment. These measures include the minimization of emissions, reductions in noise, and the management of resources and materials (Hotels Viva and Resorts, 2020).

Dunas Hotels & Resorts and its hotels Dunas Suites & Villas and Bungalows Dunas Maspalomas was awarded ISO 14001:2004 certification in July 2016. The Group operates in accordance with a stringent Environmental and Quality Management System, and it periodically

reviews its products and services which may affect the environment or level of satisfaction of its customers. To mitigate its impact on the environment, the firm has made Investments in energy and water savings measures, and using materials that are recyclable, which minimize the impact of its wastes on the environment (Dunas Hotels & Resorts, 2021).

Fuerte Group Hotels, based in Spain, has received its ISO 14001 environmental management system (EMS) certification. In compliance with the system, the company continuously monitors all its environmental aspects: measurement of emissions, waste management, noise, and the consumption of natural resources, for example, water, propane, petrol, and electricity (Fuerte Group Hotels, 2021).

Hilton Worldwide and its portfolio of 10 hotel brands was awarded ISO 14001 certification for Environmental Management Systems in October 2011. Hilton Worldwide thus became one of the first multi-national organizations to certify its entire system globally – more than 3,750 properties in 85 countries. Hilton Worldwide and its portfolio of 10 hotel brands earned ISO 14001 certification for Environmental Management Systems (Hospitality News, 2011).

Hong Kong based Cordis Hotels and Resorts has been ISO 14001 certified since 2008. At the time of the current study, the company had been awarded ISO14001:2015 certification. As part of its sustainable operations the company has focused on energy optimization, recycling of wastes, and reducing water consumption where possible (Cordis Hotels and Resorts, 2021).

Host Hotels & Resorts, Inc. (HST) is a S&P 500 company and is the largest lodging real estate investment trust (REIT). The company is one of the largest owners of luxury and upper-upscale hotels. The company was incorporated as a Maryland corporation in 1998 and operates as a self-managed and self-administered REIT (Host Hotels & Resorts, 2021a). The Company is headquartered in Bethesda, Maryland in the United States. On January 25, 2017, Host Hotels & Resorts' Environmental Management System (EMS) officially became ISO 14001 certified. The company's environmental management system (EMS) provides Host with a systematic approach to managing environmental impacts whilst also improving operating efficiencies (Host Hotels & Resorts, 2021b).

Hotel Berlin, Berlin, was awarded its ISO 14001: 2015 environmental management system (EMS) on July 28, 2020. The hotel has maintained its full responsibility towards the environment and have been aware that it is important to save on resources. The introduction of an environmental management system certified according to the ISO 14001: 2015 standard was an important milestone for the hotel and will assist the hotel further develop its sustainable policies (Hotel Berlin, 2021).

HPG International Middle East & Africa (HPGI MEA) achieved its ISO 14001: 2015 certification in February 2019. The ISO 14001: 2015 accreditation demonstrated its commitment to promote a

healthy environment. The company's project portfolio includes the Queen Elizabeth II, The Edition Hotel & Apartments, and the Fairmont Fujairah Beach resort (Top Hotel News, 2019).

Ibis Hotels was awarded ISO 14001 certification for four ibis hotels in Budapest, one in Bratislava, two in Madrid and one hotel in Zurich in July 2008. With its ISO 14001 certification, ibis hotels are committed to providing proof of their compliance with the national and international environmental regulations that apply to their hotel and restaurant activities. In addition, the hotels focus on water consumption and water saving measures, energy consumption reductions, and waste management (Hoteliers Hotel, Travel & Hospitality News, 2008). The ibis Ambassador Seoul and ibis Ambassador Myeongdong properties became the first economy hotels in Korea to receive ISO 14001 for Environmental Management Systems in 2013. In 2004, ibis became the world's first hotel chain to secure the ISO 14001 environmental certification. Since 2011, ibis has built an integrated management system to manage both its quality and environmental procedures across its ibis network of more than 950 ibis hotels worldwide (Redmond, 2013).

Interglobe Hotels, a joint venture established in 2004, between Interglobal Enterprises and Accor Asia Pacific, operates hotels throughout Bangladesh, India, Nepal, and Sri Lanka. The company has been awarded ISO 14001 certification and this guides their environment policy (Interglobe Hotels, 2021).

Italy based The Roscioli Hotels Group, which has hotels in Milan and Rome sustainable hotel operations are underpinned by the ISO 14001:2015 environmental management system (EMS). In addition, the company aims to improve the efficiency of the environmental and energy management system (The Roscioli Hotels Group, 2021).

Pattaya Exhibition and Convention Hall (PEACH) was one of the first convention hotels in Thailand. The resort first received the certification in 2000. The certification was initially awarded for a period of three years and, in doing so, became the first resort hotel in Thailand to be recognized with ISO 14001 accreditation. The Royal Cliff Hotels Group recently received a three-year extension to its ISO 14001 certification. The factors which enabled the hotel to achieve ISO 14001 certification included the regular environmental awareness training for staff, a system of waste management, recycling, and disposal, a "save water/energy" campaign involving both staff and guests, the use of environmentally friendly cleaning agents and products, the establishment of an environmental committee within the resort, and daily beach-cleaning exercises. Through the ISO 14001 Environmental Management System (EMS), the Royal Cliff Hotels Group has refined its existing environmental policies, redeveloped / added new environmental programs and increased awareness among staff at all levels of the importance of being environmentally conscious (Pattaya Exhibition and Convention Hall, 2021).

Radisson Hotels is one of the world's largest hotel chains. At the time of the present study, Some of Radisson Blu Hotels had been ISO 14001 certified. More than 220 of the company's hotels have eco-labels, committing them to work on saving water and using fewer chemical products in their operations (Radisson Blu, 2018).

Sheraton Hanoi Hotel attained ISO 14001:2004 certificate on environmental management in June 2010. This certification enabled the hotel to become a "green destination" (Sheraton Hanoi Hotel, 2010), and thus, underpins its environmentally friendly or green hotel operations.

Sheraton Hua Hin Resort & Spa attained its ISO 14001:2004 environmental management system (EMS) certifications in January 2012. The Sheraton Hua Hin Resort & Spa has placed environmental management in a foremost place in its management systems (Rokou, 2012).

Sixteen of Rotana Hotels in the United Arab Emirates (UAE), representing nearly 50% of the company's portfolio, obtained the ISO 14001 environmental management system certification in June 2016. The independent, third-party certification audit was conducted for Rotana Hotels by Bureau Veritas. Rotana hotels around the world are taking various environment-related initiatives under the company's global sustainability platform Rotana Earth. A performance monitoring system has been implemented and every property is assigned a set of key performance indicators (KPIs) for energy, water, waste reduction, waste segregation, and migration towards more responsible products (Divecha, 2016; Elliot, 2016).

Scandinavia based Nordic Choice Hotels group has implemented the ISO 14001 environmental management system (EMS) in all its two hundred hotels (Nordic Choice Hotels). Nordic Choice Hotels focuses on 5 sustainability areas: sustainable hotel operations, diversity, local social responsibility, ethical trade, and food management (Nordic Choice Hotels). In 2018/2019, the company implemented a major redesign of its Environmental Management System (EMS) to bring it inline accordance with the updated ISO 14001:2015 standard (Nordic Choice Hotels, 2020).

Shangri-La Hotel, Tokyo was awarded its ISO 14001 (Environment Management System) certification in July 2012. The hotel places a major focus on environmental management and has focused on providing reliable effective responses to waste management, energy consumption and sustainable ecology (Shangri-La Hotel, Tokyo, 2012).

South Africa based Sun City was awarded ISO 14001 certification in September 2015 by the South African Bureau of Standards (SABS). Sun International commenced this initiative in 2013, producing the very first report which detailed the measures that the hotel could control - from electricity consumption to water usage - and these data were used as a baseline. Since then, efforts have been implemented across the hotel to minimize its environmental impact. As part of its environmental policy the hotel has committed to not to impede on the nearby Pilansberg

National Park, thus preserving the space for wildlife, recycling wastes wherever possible and optimizing water usage (Sun International, 2021).

Spain based THB Hotels has implemented an ISO 14001 environmental management system (EMS) that is used at its hotels in Ibiza, Lanzarote, and Majorca (THB Hotels, 2021).

Spain based Zafiro Hotels have implemented the ISO 14001 environmental management system (EMS) and this system forms a key part of its sustainable operations (Zafiro Hotels, 2021).

Sri Lanka based Jetwing Hotels were awarded ISO 14001 certification for six of their properties in 2015. The hotels that were awarded the ISO 14001 environmental management system (EMS) certification were Jetwing Blue, Jetwing St. Andrew's, Jetwing Ayurveda Pavilions, Jetwing Lighthouse, Jetwing Sea and Jetwing Vil Uyana. The company's Jetwing Beach was ISO 14001 certified in 2011 (Business Today, 2015).

Steigenberger Hotels AG is one of Europe's leading hotel companies. InterCityHotel is a medium-price brand that offers 38 hotels located in city centers and at airports. All 36 Steigenberger hotels in Europe have achieved ISO 14001 certification Steigenberger Hotels takes a holistic approach to using resources in a responsible manner and to achieving ongoing improvement in environmental management. The Steigenberger Hotel Group is the only company in Germany to have had all its European outlets ISO 14001 certified. Environmental management is an essential component of Steigenberger Hotels AG strategy, and the company has optimized its resource efficiency by making very large savings in the areas of electricity, water, and waste (Steigenberger Hotels Europe, 2018).

The Dusit Princess Srinakarin Bangkok was awarded ISO 14001:2015 certification for its Environmental Management Systems, which ensures the hotel meets international standards and remains committed to quality in all aspects of its operations, in February 2018. As part of the hotel certification process, SGS (Thailand) Limited performed a series of audits and will continue these ongoing assessments to monitor the hotel's compliance with the applicable standards (Karantzavelou, 2018).

The Grand Hotel Excelsior Vittoria located in Sorrento in Italy has been granted ISO 14001 environmental management system (EMS) certification. As such, the hotel is committed to sustainability and green initiatives. These initiatives include the use of renewable energy sources, the use of electric cars and tools, energy optimization, and waste conservation (Grand Hotel Excelsior Vittoria, 2021).

The Gran Meliá Victoria Hotel located in Paseo Marítimo, in Palma Bay, Majorca, Spain was granted its ISO 14001 certification for the implementation of its Environmental Management System in December 2002. In 1995, the Sol Meliá created its own Environmental Protection Manual containing measures which have gradually been implemented in company hotels. In 2002,

there were seven Sol Meliá hotels that had achieved ISO 14001 certification: the Meliá Confort Montevideo (Montevideo, Uruguay), the Sol Magalluf Park (Majorca, Spain), the Sol Milanos-Pingüinos (Menorca, Spain), the Sol Pelicanos-Ocas (Benidorm, Spain), the Sol Falcó (Menorca, Spain), the Gran Meliá Don Pepe (Malaga, Spain) and the Gran Meliá Victoria (Palma de Majorca, Spain) (Hotel News Resource, 2002).

The Gran Meliá Don Pepe Hotel, located in the center of Marbella (Malaga), Spain, was awarded ISO 14001 environmental management certification for the implementation in the hotel of an Environmental Management system in line with both European Community Regulations 761/2001 on environmental management and audits, together with the international ISO 14001 standards. This certification was awarded in February 2002 (Hotel Online, 2002).

The integrated management system of Switzerland based Sorell Hotels has been certified in accordance with the environmental management standard ISO 14001. All the points prescribed in the ISO 14001 standard are in use and cover the entire value creation chain of the Genossenschaft ZFV companies. In the Sorell Hotel Group, this includes services in the fields of hospitality, restaurants, and catering, as well as the management and support processes. In line with the company's environmental management policy, environmental targets are set annually for every hotel and for the whole group. This ensures continuous improvement when it comes to environmental management (Sorell Hotel Group, 2021).

The New World Millennium Hong Kong Hotel was awarded its ISO 14001 certification in 1999. To ensure compliance with its ISO 14001 Environmental Management System (EMS) the hotel aims to improve its environmental performance. Furthermore, the environmental management system (EMS) provides an independent and objective measure of the hotel's effectiveness and achievement in continual environmental improvement through energy and waste management. Importantly, an audit and inspection by an external, registered EMS auditor is conducted twice a year to ensure the hotel's compliance with the ISO 14001 environmental management system (EMS) regulatory requirements (New World Millennium Hong Kong Hotel, 2021).

The Majestic Hotel & Spa in Barcelona has developed and implemented an Environmental and Quality Management System that subscribes to the directives of UNE-EN ISO 9001:2015, UNE-EN ISO14001:2015 and the European Regulation 1221/2009 EMAS. The hotel has been awarded its ISO 14001 environmental management system certification. In line with its environment policy, the hotel has implemented action plans, as well as control, prevention/correction plans to diminish any negative environmental impact. The hotel aims to minimize the use of natural resources and raw materials and manages all environmental aspects (visual impact, generation of residues, atmospheric emissions, noise, and wastewater) (Majestic Hotel & Spa, 2019).

The Mira Hong Kong was the first Hong Kong-based member property of the Design Hotels™ network. Headquartered in Berlin, Design Hotels™ represents and markets a curated selection of 280 independent hotels in over 50 countries around the world (The Mira Hong Kong, 2021a). The Mira Hong Kong implemented an ISO 14001:2004 environmental management system (EMS) in 2013. As of September 2018, the hotel's environmental management system was recertified to the ISO 14001:2015 Environmental Management standard. The ISO 14001:2015 environmental management system (EMS) is used by the hotel to identify and control the environmental impact of hotel activities, products, or services, as well as make continual improvements in its environmental performance, be it by energy-saving initiatives, proper waste management, and offsite green projects which offset the hotel's overall carbon footprint (The Mira Hong Kong, 2021b).

The NH Hotel Group commenced operations in 1978. Today, the NH Hotel Group hotels is one of the world's 25 largest hotel chains. The company operates hotels in Africa, Europe, and the United States (NH Hotel Group, 2021b). The NH Hotel Group hotels have an ISO 14001 environmental management system. At the end of 2020, 47.4% of the company's hotels located in Germany, Spain and Italy were ISO 14001 certified. This equated to a total of 100 hotels. In 2020, 10 hotels obtained a sustainability recognition for the first time, bringing the total number of certified hotels to 157 out of the group's 361 hotels portfolio (NH Hotel Group, 2021a).

The Novotel Monte-Carlo was awarded ISO 14001 Environmental Management Certification in December 2014. A year of preparation and 12 months of monitoring and evaluating performance were necessary to introduce the daily management of sustainable development by the hotel. The hotel's ISO 14001 certification was part of Accor's sustainable development program, PLANET 21 (Visit Monaco, 2014).

The Shangri-La Hotel, Singapore received the certificate of approval from Lloyd's Register Quality Assurance for its compliance with the International Organization for Standardization 14001 (ISO 14001) in February 2008. This was the first of its kind to be conferred upon a Singapore-based hotel. Environmentally friendly and cost-efficient practices that were assessed included the use of energy saving light bulbs, biodegradable cleaning materials, water restrictors and sewage treatment facilities to prevent water pollution. Since the late 1990s, The Shangri-La Hotel, Singapore, have conscientiously adopted environmentally responsible practices. At the time of its ISO 14001 environmental management system (EMS) certification, the Shangri-La Hotel, Singapore joined 23 sister hotels including a private members' club that have already achieved the same certification (Travel News Asia, 2008).

The Sofitel Brisbane Central Hotel was awarded its ISO 14001 accreditation in March 2015. The ISO 14001 certification project focused on the hotel achieving an overall reduction in energy

consumption, waste minimization, as well as strategies for reducing gas and water usage throughout the property (Sofitel Brisbane Central Hotel, 2015).

Table 1: Hotels ISO 140001 awarded details

Hotel	Awarded	Date
Al Bustan Rotana Dubai	ISO 14001	August 2014
The Bosphorus, Istanbul	ISO 14001	Late 1990s
Altis Avenida Hotel, Portugal	ISO 14001	2014
Balearic Islands-based Hotels Viva and Resorts	ISO 14001	
Dunas Hotels & Resorts	ISO 14001:2004	July 2016
Fuerte Group Hotels, Spain	ISO 14001	
Hilton Worldwide and its portfolio of 10 hotel brands	ISO 14001	October 2011
Cordis Hotels and Resorts Hong Kong	ISO 14001	2008
	ISO 14001:2015	2021
Host Hotels & Resorts, United States	ISO 14001	January 25,2017
Hotel Berlin, Berlin	ISO 14001: 2015	July 28, 2020
HPG International Middle East & Africa	ISO 14001: 2015	February 2019
Ibis Hotels Budapest Bratislava, Madrid Zurich	ISO 14001	July 2008
Interglobe Hotels	ISO 14001	
The Roscioli Hotels Group	ISO 14001:2015	
Pattaya Exhibition and Convention Hall (PEACH) Thailand	ISO 14001	2000
Radisson Hotels	ISO 14001	2021
Sheraton Hanoi Hotel	ISO 14001:2004	June 2010
Sheraton Hua Hin Resort & Spa	ISO 14001:2004	January 2012
Rotana Hotels ,United Arab Emirates	ISO 14001	June 2016
Nordic Choice Hotels group	ISO 14001:2015	2018/2019
Shangri-La Hotel, Tokyo	ISO 14001	July 2012
THB Hotels, Spain	ISO 14001	
Zafiro Hotels , Spain	ISO 14001	
Jetwing Hotels, SriLanka	ISO 14001	2015
Steigenberger Hotels AG	ISO 14001	
The Dusit Princess Srinakarin Bangkok	ISO 14001:2015	February 2018
The Grand Hotel Excelsior Vittoria	ISO 14001	
The Gran Meliá Victoria	ISO 14001	December 2002
The Gran Meliá Don Pepe Hotel	ISO 14001	February 2002
Sorell Hotels	ISO 14001	

Hotel	Awarded	Date
The New World Millennium Hong Kong	ISO 14001	1999
The Majestic Hotel & Spa in Barcelona	ISO14001:2015	
The Mira Hong Kong	ISO 14001:2004	2013
	ISO14001:2015	2018
The NH Hotel Group	ISO 14001	2020
The Novotel Monte-Carlo	ISO 14001	2014
The Shangri-La Hotel, Singapore	ISO 14001	2008
The Sofitel Brisbane Central Hotel	ISO 14001	2015

Conclusions and Discussions

This study has used an in-depth qualitative instrumental case study research approach to empirically examine the hotels and resorts located around the world that have implemented an ISO 14001 certified environmental management system (EMS) as a tool to manage their operations in an environmentally sustainable manner. The study period was from 1990 to 2021. The qualitative data was analyzed by document analysis. The case study revealed that hotels located in Australia, throughout Europe, Hong Kong, Japan, Thailand, Vietnam, and the United States have implemented the ISO 14001 based environmental management system. The earliest adoption of such a system date back to the late 1990s, when the Swissôtel The Bosphorus, Istanbul first received ISO 14001 certification. Over the study period, a number of the major hotel chains, such as Hilton Worldwide, ibis and Swissôtel, have certified their environmental management systems in accordance with the ISO 14001 standards. The case study found that individual hotels too have embraced the use of ISO 14001 certified environmental management systems, this was especially so in Europe.

The case study also revealed that since the release of the ISO 14001:2015 environmental management system standard, seven hotels or hotel groups have adopted this standard. These include Cordis Hotels and Resorts, Dusit Princess Srinakarin Bangkok Hotel, Hotel Berlin, HPG International Middle East and Africa, Majestic Hotel and Spa, Nordic Choice Hotels Group, and the Roscioli Hotels Group.

Importantly, the use of an ISO 14001 certified environmental management system underpins the hotel and resorts environmentally sustainable operations. The case study showed that as part of their environmental management policy, many hotels are focusing on energy optimization, energy saving measures, water consumption minimization, and sustainable waste management. Many hotels are now recycling or re-using wastes which is more environmentally

friendly than disposal of wastes to landfill. Future research may focus on the advantage of ISO 14001 implementation to provide more insights for hotel industry.

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