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Re-identifying the eco-friendly standards in Budapest hotels

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Contents

List of tables

List of Appendices

List of figures

1.1. Keywords: *green supply chain management, green human resources management, green marketing, green practices, cost, loyalty, satisfaction, Budapest, hotels.*

1.2. Introduction

Over the past few decades, environmental repercussions and negative impacts have created one of the biggest concerns for many organizations, stakeholders, governments, most importantly, consumers, society, and customers (Rhead, Elliot and Upham, 2015; Robertson and Barling, 2017). This created a social awareness, which led to increasing social and legal pressures to protect environmental systems of all kinds (Pratyameteetham and Atthirawong, 2017). While the awareness about the environmental crises increased, the concerns of governments towards the environment translated into many regulations and laws, and have emerged as an aim to reduce and control environmental impacts. Thus, all kinds of establishments and organizations found themselves forced in one way or another to work towards adopting environmental practices more effectively and seriously, besides increasing awareness, gaining more experience, and preparing to deal with different environmental issues that may be encountered (Chan and Hawkins, 2012).

Currently, environmental protection is considered as one of the high priority tasks that countries collectively seek to implement and achieve a state of balance between environmental protection and economic development (Yu and Liu, 2020). Major companies such as Amazon, Virgin Group Microsoft, Alibaba, and others took early steps by adopting and creating plans to develop environmental technologies that are able to produce clean energy to combat and deal with climate change. A study showed that 71% of the members of Tripadvisor, one of the largest travel sites in 2012, would make environmentally friendly choices when they travel (Chan, Okumus and Chan, 2020).

Sustainable tourism occupies a relative importance in the global agendas in order to work to protect the environment and achieve economic and social growth. The tourism industry and the hospitality industry, in particular, are of great importance in many economies around the world (Thomas-Francois, von Massow and Joppe, 2017). It is considered the backbone of the economy of many countries (Gautam, 2021). It contributes significantly to the gross domestic product of countries (Tarigan, Tanuwijaya and Siagian, 2020). It is also working on developing comprehensive long-term and even medium-term policies to develop the tourism sector and activities (Farinha *et al.*, 2021). However, the increasing flow of tourists and the significant increase in their numbers, especially in the last twenty years, have had a negative impact on the environment, i.e., tourism activities worldwide contribute a massive amount of carbon emissions, which have reached 8% of the world's total carbon emissions (Khan *et al.*, 2021). In view of this importance, the General Assembly of the United Nations gave special importance to tourism and

recognized its essential role, so it had its own goals within the 2030 Agenda to achieve sustainable development (Leroux and Pupion, 2018).

Sustainable tourism is defined by the UNWTO World Tourism Organization as tourism that takes into account the various environmental, economic, and social impacts of tourism activities and practices, and it tries to reconcile the needs of the different stakeholders (UNWTO, 2023). Thus, increasing the recognition and importance of sustainable tourism.

With the increase in climate change and people's awareness, the concept of sustainable tourism grew and became a factor of attraction for many tourists. Types of sustainable tourism vary, such as environmental tourism, responsible tourism, and fair tourism, due to the need to contain changes in the preferences of the global market, especially for tourists when they travel individually, not in groups (Diallo *et al.*, 2015).

The hotel industry is one of the largest global industries, it is also considered a main sector regarding the tourism industry, and a main elements that play an essential role in supporting the growth of tourism (Tarigan, Tanuwijaya and Siagian, 2020), since the end of the last millennium, it has begun to pay ascending attention to environmental issues (S.W.Chan and H.C. Hsu, 2016). The hotel industry has witnessed tremendous growth in the past two decades, as direct consequences of increasing the level of urbanization and globalization. This also affected the influx of tourists and increased their number (Prakash *et al.*, 2022). All of that puts hotels under great pressure to take responsibility for the environment and adopt eco-friendly activities, as they are directly responsible for many environmental issues (Nisar *et al.*, 2021). This interest and adoption increased, driven by several factors, most importantly, the adoption of environmental changes as a trend gives the organization a competitive advantage over traditional organizations (López-Gamero *et al.*, 2020). That change affects the awareness and performance of employees and spreads the green culture. Thus, improving the level of economic, environmental, and social performance and customer satisfaction, along with improving financial performance as a result of reducing waste and the planned use of resources such as energy, water, and different materials (Molina-Azorín *et al.*, 2015). The hotel industry has been accused of actively contributing to causing real threats and creating serious negative impacts on the environment, because of its traditional practices (Raid Al-Aomar and Hussain, 2017; Saengchai and Jermsittiparsert, 2020). It is considered energy-intensive; moreover, significant carbon emissions represent 1% of the global emissions. Additionally, its consumption of water is considered highly remarkable, reaching up to 5% of the worldwide consumption (Sorin and Sivarajah, 2021). Not to mention the enormous quantity of different types of waste it produces, not to mention the significant amounts of food consumed (Gautam, 2021). Those quantities have increased to keep up with the intensification of competition and the race to ensure providing the highest levels and the best quality of products and services to guarantee customer satisfaction and maintain the market position (Mohanty and Gahan, 2012).

Many hotels adopted the green transformation in order to deal with the emerging problems which are causing environmental deterioration. Besides, for the service provider or hotel owner, switching to green as a strategic choice can be turned into a success factor and a competitive advantage, and this transformation can also be invested in improving the public image of the hotel (Gountas, Ewing and Gountas, 2007; Khan and Khan, 2009). Moreover, raise the quality of services and the efficiency of operations by improving the operational performance of the hotel (Pertusa-Ortega *et al.*, 2013; Moreno and Suárez, 2014).

Some of the market leaders, such as the Hilton International hotel chain, provide an effective example of environmental and sustainable directions within a strategic plan aimed at reducing its environmental footprint by up to 50% based on the adoption of responsible supply policies and reduce waste production, carbon emissions, energy use, and water consumption by 2030 (2019). Likewise, the Marriott International hotel chain also adopted environmental policies and programs in order to protect the environment, and the results were that it reduced water and energy consumption by up to 14% (Karatepe, Hsieh and Aboramadan, 2022). A more detailed review will be shown in the Literature chapter.

A green hotel is defined as a hotel that undertakes more eco-friendly practices as an ongoing effort to conserve natural resources (Moise, Gil-Saura and Ruiz-Molina, 2018; Yi, Li and Jai, 2018; Anita, Subakti and Pratomo, 2020). This is done through an effective environmental system that works to reduce waste, regulate consumption, recycle, and reduce waste (Chi *et al.*, 2022). Thus, hotels' application of environmental management systems (EMS) will positively affect the level of financial performance of hotels as a result of improvement in operational performance and reduction of costs, waste, and consumption of the resources used (Pereira-Moliner *et al.*, 2012; Becerra-Vicario *et al.*, 2022; Perramon, Oliveras-Villanueva and Llach, 2022). Environmental certificates (EC) are also tangible evidence of the hotel's adoption of an effective EMS based on specific rules (Chi *et al.*, 2022). It is only obtained after examining the activities of the facility by an external party and ensuring that it conforms to a certain level of standards (Bonilla Priego, Najera and Font, 2011; del Mar Alonso-Almeida and Rodríguez-Antón, 2011). Hotels that obtained (EC) achieved better financial results and returns in the stock markets than hotels that did not possess such certificates (Bianco, Bernard and Singal, 2023). Hotels with (EC) or implementing the ISO 14000 (EMS) achieved better and more stable financial results during the 2008 global financial crisis than traditional hotels (Cavero-Rubio and Amorós-Martínez, 2020).

Green hotels have a better image among stakeholders. Green practices enhance customer satisfaction, increase their loyalty to the green hotel, and help achieve a competitive advantage (Moise, Gil-Saura and Ruiz-Molina, 2018; Abdou, Hassan and El Dief, 2020). It also attracts investors more as a result of the lower level of taxes it pays as a result of government pressures to protect the environment through resource

consumption taxes (Rico *et al.*, 2020). Its operational efficiency, which achieves more financial returns (Przychodzen and Przychodzen, 2015; Ramakrishnan, 2018). The size of the segment of customers and guests interested in preserving the environment is also increasing as a result of the continuous increase in awareness of the impact of human activities on the environment (Abdou, Hassan and El Dief, 2020; Bernard and Nicolau, 2022). Moreover, successful companies with good financial performance have the ability to spend more to improve their environmental performance and carry out environmentally friendly activities (Przychodzen and Przychodzen, 2015).

Green standards are designed to provide roles to protect the environment based on researches made by authoritative institutions; these standards are widely accepted and provide comprehensive guidelines to organize the implementation of green practices in order to reach desirable results (del Mar Alonso-Almeida and Rodríguez-Antón, 2011; Xiong *et al.*, 2023). Those standards are presented in an environmental management system followed by an environmental certificate, which makes it costly and difficult to be applied by many hotels. Still, some hotels apply some of the green practices which they are capable of as a flexible solution, which is more suitable to their circumstances (del Mar Alonso-Almeida and Rodríguez-Antón, 2011; Segarra-Oña *et al.*, 2012).

Green practices have no limit or boundaries, and refer to any activities that minimize the environmental impact of a product, service, or operation throughout its entire lifecycle (González-Viralta *et al.*, 2023). The ISO mentioned three main aspects of environmental, i.e., resource conservation like energy, water, raw material, etc., waste reduction including the 4R, and carbon footprint reduction (Smith, 2024). While the GSTC (Global Sustainable Tourism Council) provides a different set, including 4 sections, section D presents the environmental sustainability indicators, 12 groups of indicators are presented, providing a total of 65 environmental practices (GSTC, 2016). Reaching out, green practices could be organized in different ways (Úbeda-García *et al.*, 2021).

Quality, price, and location are some of the main competitive advantages and determinants in tourists' preference for any destination or accommodation facility, such as a hotel, over another one (Siagian, Tarigan and Andreani, 2019). Over the past few years, green or environmental practices in the hospitality industry, including the hotel industry have become one of these basic requirements for tourists (Prakash *et al.*, 2022). Hotels which have adopted green practices were able to achieve more benefits compared with traditional ones (Chen *et al.*, 2021). Green hotels were also able to achieve a better image, reputation, and value among their customers (Gössling and Lund-Durlacher, 2021). Moreover, gaining a greater customer loyalty and satisfaction (Modica *et al.*, 2020). Recently, tourists preferred hotels that adopted and applied eco-friendly practices and the (EMS) as places to stay during their visits and touristic activities (Indrasari and Rosi, 2020), which contributes to raising the competitiveness of the hotel and attracting more customers (Saengchai and Jermsittiparsert, 2020).

On the other hand, stakeholders have been defined as any group or individual that influences or is affected by the organization's goals and achievement (Freeman, 2010; Chauhan and Kularatne, 2021) see figure 1. Thus, achieving environmental sustainability in the tourism industry and its various sectors and activities with success requires the participation and active commitment among all stakeholders (Farinha *et al.*, 2021; Gruchmann, Topp and Seeler, 2022). This does not depend on tourist establishments or facilities only, but extends to include suppliers, merchants, employees, and service companies (Seeler *et al.*, 2021). Above all, tourists' choices and preferences play a pivotal role in promoting environmental trends (Shaikh and Bhautik, 2022). Also, government support, directives, and legislation, whether directly or indirectly, are key players in supporting and achieving environmental trends (Saengchai and Jermsittiparsert, 2020; Chen *et al.*, 2021).

Figure 1. hotel's stakeholders (Chauhan and Kularatne, 2021).

Green human resources management (GHRM) is identified as human resources practices that focus on environmental sustainability through creating green employees, who can recognize and appreciate the organization's environmental initiatives (Shafaei, Nejati and Mohd Yusoff, 2020). It is considered one of the most important indicators of the organization's adoption of eco-friendly directions. It is related to and plays an essential part in the overall greening process. It affects all parts of the organization, from strategies, culture, the supply chain, production, values, and employee behavior, etc. (Benevene and Buonomo, 2020). It is also one of the main directions adopted by hotels to mitigate the negative impacts on the environment that they may cause. It facilitates the implementation of green strategies and policies through its various practices, which are similar to the regular HRM but focus on the green perspective in human resources, e.g., green motivation and green training, thus affects the environmental performance of the whole

organization (Renwick, Redman and Maguire, 2013). It is multidimensional and includes reducing waste of resources, energy consumption, and waste generation, and working to educate employees and customers about the importance of the environment and practices to protect it. This means that the benefit goes beyond the classic goal, i.e., profit, which includes protecting the environment and increasing green human capital (Surya, Budarma and Mudana, 2020). It is also working on influencing employee behavior, creating and achieving emotional organizational commitment, which increases employee loyalty to the organization and makes them feel a sense of belonging and the ability to perceive positively and thus perform their work excellently and beyond their duties (Tsaur and Lin, 2004). Moreover, GHRM practices that enhance organizational commitment enable employees to provide solutions to problems they may encounter and work to help each other to solve those problems, which raises the organization's performance on the financial level, service quality, and customer satisfaction (M. Nielsen, A. Hrivnak and Shaw, 2009). This goes beyond the environmental goal to include the whole organization. It can be considered as one of the most successful organizational means that are in line with the sustainable environmental management strategy, which is important for improving environmental performance and also for maintaining competitive advantage (Molina-Azorín *et al.*, 2015; S.W.Chan and H.C. Hsu, 2016).

Green supply chain management (GSCM) in the hotel industry is one of the most essential organizational strategies in environmental transformation (Al-Aomar and Alshraideh, 2019). It improves efficiency by implementing supply chain management (SCM) in its green form by integrating it with environmental trends (Al-Aomar and Hussain, 2018) and going beyond procurement and logistics management (Modica *et al.*, 2020). In addition, it creates an atmosphere of cooperation, understanding and high-level coordination between all departments and stakeholders in order to achieve the general goals and environmental goals alike (Yu and Liu, 2020).

There is no specific, direct, or precise definition of GSCM in the hotel industry (Tseng *et al.*, 2019). It is mentioned once as green procurement management (Min and Galle, 1997), environmental SCM (Sharfman, Shaft and Anex Jr., 2009), and reverse SCM (Murphy and Poist, 2000), but without a comprehensive definition of all the activities of this management (Ahi and Searcy, 2013). In general, GSCM could be considered as one of the best strategic practices that any hotel may adopt to transform into a green, eco-friendly form (Migdadi, 2022). It works to integrate SCM practices with the environmental dimension by including green practices in its supply chains (Badhotiya *et al.*, 2016). It is also considered a proactive approach in dealing with environmental impacts, as it works to avoid carrying out any activities that may cause and harm towards the environment (Hussain, Al-Aomar and Melhem, 2019). On the other hand, it is considered special as its application is full of challenges and requires several standards and conditions. Starting with the flow of eco-friendly materials and inputs from eco-friendly sources (Al-Aomar and Alshraideh, 2019), and ending with providing eco-friendly products and services after implementing several processes in an eco-friendly

manner (Astawa *et al.*, 2021). In addition, GSCM selects materials carefully in order to reduce waste resulting from the conversion process (Astawa *et al.*, 2021). Along with integrating the 4Rs (reduce, reuse, recycle, return) concepts (Alves, Silva and Soares, 2020; Mak *et al.*, 2021; Basana *et al.*, 2022), which falls and classified under the framework of reverse logistics services (Petljak *et al.*, 2018; Al-Aomar and Alshraideh, 2019; Migdadi, 2022).

In the opposite direction, some studies find it useless to apply environmental practices as this will negatively affect the hotel's financial performance, where some environmental practices demand cost full investments for special devices such as produce and save energy devices, water and air treatment devices. (Zhang and Xie, 2021; Becerra-Vicario *et al.*, 2022). It is reflected in the price level in a way that cannot be accepted by customers, which negatively affects the hotel (Peiró-Signes *et al.*, 2014). Obtaining environmental certifications also entails high costs (Bernard and Nicolau, 2022). Hotels may not be able to cover it as a result of their limited financial capacity and the sensitivity of their customers to the price, and therefore it is not feasible for them (Geerts, 2014).

This study attempts to divide the environmental practices regarding three central management in the hotel industry which have also been defined as a strategic path to become an environmental friendly business in the most efficient way, which are GHRM (Ren, Tang and E. Jackson, 2018; Tang *et al.*, 2018), GSCM (Gould-Williams and Davies, 2005) and G. marketing (Kang *et al.*, 2012; Lee *et al.*, 2023) and analyze their interaction regarding the hotel performance.

1.3. Research problem

Some hotels in the city are distinguished by their characteristics from other hotels which in rural areas or within the city but in a vast location, specifically when it comes to hotels that are in historical cities where most of their attractions are located in ancient streets, narrow markets, crowded surroundings with traffic, pedestrian traffic, and daily life activities. This limits their ability to implement some environmental practices, which require large areas that are not available for hotels in cities of the type mentioned. Budapest is one such city, characterized by its historical attractions, buildings and streets, some streets are narrow and include many attractive places, with no extra space in the hotel buildings. Not to mention that some streets are busy with pedestrians or cars. It is also a historical city with tourists overcrowding that has reached the level of overtourism in recent years (Pinke-Sziva *et al.*, 2019, 2020; Zaninović, Palaiologou and Bojanić Obad Šćitaroci, 2019; Benkő *et al.*, 2021; Pérez Garrido *et al.*, 2022).

On the other hand, the application of many practices and the change to convert into an eco-friendly design is not always applicable, since many of the hotel buildings are old or were previously built without taking into consideration the eco-friendly design, which creates difficulties for renovation (Zaninović, Palaiologou and Bojanić Obad

Šćitaroci, 2019; Benkő *et al.*, 2021). More difficulties would face the application of some environmental practices that require large additional areas, such as water treatment and clean energy generation, and using food waste as fertilizer for gardens, where some city hotels lack the appropriate space to implement such practices. Nor can food handling policies be implemented without the involvement of third parties (Sardianou and E. Kostakis, 2019; K, K and K, 2021; Klára Morvay Karakas, 2021; Amicarelli *et al.*, 2022).

What more is, studies have shown that the application of environmental practices and the transition to a green and environmentally sustainable form have significant costs that many hotels may not be able to provide due to their limited size or funding sources (Geerts, 2014; Zhang and Xie, 2021; Becerra-Vicario *et al.*, 2022). Furthermore, environmental certificates have emerged as one of the most important means of measuring and evaluating the level of environmental practices carried out by establishments, including hotels. However, obtaining them is at a high cost and with complex procedures, which in turn are not available to a large segment of hotels (Bernard and Nicolau, 2022).

Eco-friendly practices are among the topics that overlap each other, with a lot of ambiguity about some practices and the lack of clarity in their implementation mechanism or the extent of their effectiveness, which creates a lot of credibility questions among customers and external parties, and this is what led to the existence of the concept of green washing (Peiró-Signes *et al.*, 2014; Lyon and Montgomery, 2015).

1.4. Research gap

The application of green standards through environmental practices is misunderstood by many customers, as the concept of green practices means that the level of luxury and services provided will be lower than those provided in traditional hotels (Berezan *et al.*, 2013; Alonso-Almeida *et al.*, 2017; Nelson *et al.*, 2021). Also, the services provided by Green Hotels are always associated with additional costs, which makes customers with limited incomes show less interest in these practices, especially in hotels with a low star rating and budget hotels (Moise, Gil-Saura and Ruiz-Molina, 2018; Heras-Saizarbitoria *et al.*, 2020; Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021).

Besides, the transformation to the green form has high costs and is not available to a large segment of hotels, as it is not fully available for application in urban hotels and may be useless (Geerts, 2014; Peiró-Signes *et al.*, 2014). It is necessary to think about a practical method that enables all hotels to transform into green at the lowest possible cost. Also, to work on finding an alternative mechanism for defining environmental practices to ensure that information reaches customers in the correct way to eliminate ambiguity and misunderstanding (Nelson *et al.*, 2021).

Eco-friendly practices are often discussed within their general framework, or as a single group, without dividing them into groups in an effective way that facilitates the decision-maker to implement them or work to improve them. Thus, dividing these

practices among the main departments in the hotel, which shows them in a clearer picture to decision makers and a vision from another angle (Sari and Suslu, 2018; López-Gamero *et al.*, 2020).

Regarding GHRM, only one previous study directly mentioned the financial effect of GHRM practices in the hotel industry (López-Gamero *et al.*, 2020), and this was under the name of cost competitive advantage. Achieving a good environmental performance could also be considered as a cost saving due to reducing the use and waste of resources, but still only from the aspect of saving (He, Morrison and Zhang, 2021). Also, the GHRM effects on customers were not discussed previously. The effects and interaction between GSCM and the employees have not been discussed either. (Petljak *et al.*, 2018; Hussain, Al-Aomar and Melhem, 2019; Kerdpitak, 2019) mentioned how applying GSCM would lead to financial savings due to the reduction of resource waste as part of the environmental performance, which could be also considered as financial performance. The effects of GSCM or G. marketing on the employees have not been discussed yet. Moreover, no study has discussed this combination between the three main management before, or their interaction together, and then the effect on the hotel performance regarding financial performance, customers, and employees.

Table (1) presents the most important studies that discussed managements mentioned and their practices or sub-divisions in the hotel industry regarding environmental standards and practices, accompanied by each article's main findings regarding this study topic. These studies' findings were used to build this study and create a starting point to present a new study with an additional scientific benefit.

Table 1. Previous studies and their main findings

NO	study	Main findings
1	(He, Morrison and Zhang, 2021)	G. behavior affects the employee's task performance directly and mediates the effect of GHRM on the employee's task performance.
2	(Úbeda-García *et al.*, 2021)	GHRM affects the environmental outcomes and the hotel performance.
3	(Ahmed *et al.*, 2021)	GHRM affects each of G. motivation, employees' env. Performance.
4	(Munawar *et al.*, 2022a)	GHRM affects the G. innovation and the G. human capital.
5	(Islam *et al.*, 2023)	G. working environment mediates the effect of both G. involvement and G. reward on the turnover intention.

6	(Shafaei, Nejati and Mohd Yusoff, 2020)	GHRM affects both the organization's env. performance and employees' job satisfaction.
7	(Fongtanakit and Suteerachai, 2019)	GHRM affects GSCM.
8	(Pham, Chiappetta Jabbour, *et al.*, 2020)	G. culture moderates the GHRM effects on both the employees' G. performance and OCBE.
9	(Ababneh, 2021)	GHRM affects employees' G. behavior. G. conscientiousness mediates the GHRM effect on the engagement with env. initiatives.
10	(López-Gamero *et al.*, 2020)	GHRM affects the env. Management, which in its turn affects cost-competitive advantage.
11	(Mohd Yusoff, 2019)	OCBE moderates the GHRM effects on the env. performance.
12	(Pham, Vo-Thanh, *et al.*, 2020)	G. training affects employees' env. performance. Employees' env. commitment mediates the effect of G. training on the employees' env. performance.
13	(Elshaer *et al.*, 2021)	GHRM affects both task-related and proactive pro-env. behaviors, where they affect the env. performance. They also mediate GHRM effect on the env. performance.
14	(Kim *et al.*, 2019)	GHRM affects both employees' org. commitment and employees' eco-friendly behavior. The employees' org. commitment affects employees' eco-friendly behavior. Both GHRM and employees' eco-friendly behavior affect the hotel env. performance.
15	(Haldorai, Kim and Garcia, 2022)	GHRM and G. intellectual capital affect the hotel's env. performance.
16	(Srivastava and Shree, 2019)	G. training mediates the effect of CSR on G. involvement.
17	(Mohd Yusoff *et al.*, 2020)	GHRM affects the hotel's env. performance.
18	(Astawa *et al.*, 2021)	GSCM affects each organizational performance and competitive advantage. Competitive advantages affect org. performance
19	(Tarigan,	Supplier collaboration affects G. purchasing and G. performance.

	Tanuwijaya and Siagian, 2020)	G. purchasing affects G. performance. Top management attentiveness affects G. purchasing, supplier collaboration and G. performance.
20	(Siagian, Tarigan and Andreani, 2019)	Information integration affects hotel performance, strategic purchasing and g. operations. Strategic purchasing affects hotel performance and G. operations. G. operation affects the hotel performance.
21	(Hussain, Al-Aomar and Melhem, 2019)	G. practices affect economic performance, social performance and env. performance. Lean techniques affects economic performance, social performance and env. performance.
22	(Kerdpitak, 2019)	Owner manger attitude and GSCM performance are significantly associated. G. consumers have a significant and positive relationship with GSCM performance. There is a significant and positive relationship between regulation and GSCM performance. G. practices have significant and positive effects on GSCM performance. There is a significant and positive relationship with driver pressures such as owner manager attitude, G. consumers, and regulation on GSCM performance while conciliating by G. practices.
23	(Babu, Kaur and Rajendran, 2018)	G. training for employees to deal with customers and suppliers affects the competitive advantages and G. targets. Product recovery affects reduce waste, recycling, reuse and waste management.
24	(Modica *et al.*, 2020)	The env., social and economic dimensions of the SSCM have a positive impact on consumer satisfaction, loyalty and their willingness to pay higher prices. Consumer satisfaction has a significant positive impact on consumer loyalty which in its turn has a significant positive impact on their willingness to pay higher prices.
25	(Piya *et al.*, 2022)	Recycling and reuse, transportation, energy consumption, water efficiency and conservation, commitment to env. practices and G. training and incentives are the best G. management practices.
26	(Cigir, 2017)	CSR is strongly related to GSCM.
27	(Vasilakakis and Sdrali, 2022)	Suppliers as a part of the supply chain are responsible for using alternative energy sources, eco-friendly materials, having a waste management system, and applying quality and safety management systems.

28	(Jiang *et al.*, 2021)	GSCM affects the raising of operational efficiency and minimizing environmental impacts.
29	(Chen *et al.*, 2021)	GSCM affects competitive position, higher profits, and customer loyalty. Customers supporting and demanding G. services and gov. penalties affect the adoption of GSCM.
30	(Alves, Silva and Soares, 2020)	Undifferentiated waste leads to a higher payment and higher VAT.
31	(Budijati and Ramdhoni, 2019)	Env. awareness affects food consumption. Religion affects food waste.
32	(Sari and Suslu, 2018)	Applying G. practices has a positive effect on SCM.
33	(Thomas-Francois, Joppe and von Massow, 2018)	GSCM leads to higher G. productions quality from the suppliers.
34	(Cigir, 2018)	Innovation in GSCM positively affects reuse, recycling, delivery, waste management, procurement, materials management and resources management.
35	(Thomas-Francois, von Massow and Joppe, 2017)	GSCM affects the green production quality of the suppliers.
36	(Masa'deh *et al.*, 2017)	Internal env. management positively, G. information systems, G. purchasing, tourist perceptions, env. legislation and employee emotional behavior affect the hotels' economic performance, which in its turn affects positively the hotels' operational performance.
37	(Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021)	G. procurement affects the firm's financial performance. Tourists' long-term orientation, Tourists' G. perceived risk, Tourists with a high price and G. quality moderate the effect of G. procurement on firms' financial performance.
38	(Alonso-Almeida *et al.*, 2017)	Suppliers' cooperation, customer integration, internal and external reasons and affect GSCM. GSCM affects the image, economic effect, and operational effect.
39	(Mak *et al.*, 2018, 2021)	Economic incentives, logistics & management incentives, administrative incentives & corporate support, perceived behavioral control, subjective norms and moral attitudes affect the

		recycling intention and recycling behavior.
40	(Sardianou and E. Kostakis, 2019)	The obstacles and barriers to adopting some green practices.
41	(Moise, Gil-Saura and Ruiz-Molina, 2018)	Adopting G. practices enhances customer satisfaction. G. practices, guests' intentions to revisit and positive word of mouth are related positively. The trip's purpose mediates the effect of green initiatives on satisfaction.
42	(del Mar Alonso-Almeida and Rodríguez-Antón, 2011)	Adopting a certified management system positively affects the success of hotel businesses.
43	(Peiró-Signes *et al.*, 2014)	Commitment to G. practices positively affects the financial outcomes. Third-party certifications are associated with the env. efforts.
44	(Berezan *et al.*, 2013)	G. practices and guest satisfaction levels have a positive relation. Guests with different nationalities interact differently with the G. practices.
45	(Gao and Mattila, 2014; González-Viralta *et al.*, 2023)	G. services positively affect customers' satisfaction compared to typical ones. G. services failure has had the worst negative effect on the customers' satisfaction compared to typical services. Consumer satisfaction and revisit intentions are associated with the service outcomes.
46	(Nekmahmud and Fekete-Farkas, 2020)	Env. awareness and perceived benefits of green products have positive effects on purchasing decisions, while the perceived quality doesn't.
47	(Rizqiyana and Wahyono, 2020)	Eco-brand and eco-labelling positively affect consumer purchasing behavior. Env. Advertising has a negative impact on purchasing behavior. Brand images mediate the effects of eco-brand, eco-labelling and env. advertisement on purchasing decisions.
48	(Mercade Mele, Molina Gomez and Garay, 2019)	G. marketing mediates the effects of a hotel's sustainable image on consumer behavior. G. marketing affects customers' green trust and their loyalty.
49	(Vafaei, Azmoon and Maria, 2019)	Sustainable marketing positively affects the competitive advantage. sustainable marketing correlates with customer satisfaction. Cultural differences affect sustainable marketing.

50	(Heras-Saizarbitoria *et al.*, 2020)	The real driving of adopting env. Certificates are not always for compliance; a good public image is the main aim.
51	(Bagur-Femenias, Celma and Patau, 2016)	Governments' actions are a key element in promoting to env. practices. A better result will be found when the G. practices are applied voluntarily.
52	(Cheng *et al.*, 2022)	G. image and G. perceived have higher effects than G. innovation on customers' env. intentions. Destinations' image affects customers' env. Intentions.
53	(Nelson *et al.*, 2021)	Customer's willingness to pay extra for local green hotel certification. Env. knowledge affects the willingness to pay more for G. service.
54	(Apostolakis, Jaffry and Kourgiantakis, 2020)	Water management and env. certificate affects the tourists' preferences positively. Automated services have a negative effect on customers' preferences.

Source: author's own editing, 2025

1.5. Research Objectives

The research attempts to study the adoption of environmental standards through green practices by three main management areas (GSCM, GHRM, and green marketing) and how this would affect the hotel's performance regarding financial performance, customers' satisfaction and loyalty, and employees' satisfaction. Furthermore, the interaction between these management areas and how would that also influence the performance. the study is taking into consideration different levels of analysis and relations, the first one includes relations between main management areas, but the second one brakes each area into sub-management which enable to analyze the interaction in more detailed way, that after all shows where is the weaknesses and strength, thus which related green standards and practices should be focused on more, which could be postponed, and which could be modified. That draws a green transformation map, which could be followed by hotels that want to become environmental but struggling with traditional certificates due to their complexity and cost. This could be considered as a first level of environmental certificate, which must be followed with other levels in the future; the next level would include the postponed practices that had negative effects on the performance at the beginning.

1.6. Research questions

Q1. How will the adoption of GSCM, GHRM and G. marketing affect the hotel performance regarding financial performance, employees' satisfaction, and customers' loyalty and satisfaction?

Q2. How will the GHRM moderate the effect of G. marketing on the hotel's performance?

Q3. How will the G. Marketing moderate the effect of GSCM on the hotel's performance?

The main question of the study:

How would the adoption of low-cost green practices in three managements (GSCM, GHRM, Green Marketing) affect the hotel performance regarding finance, employees, and customers. How would the three managements interact?

1.7. Hypotheses of the research

H1- Adopting green supply chain management affects hotels' performance positively.

H2- Adopting green human resources management affects hotels' performance positively.

H3- Green marketing affects hotels' performance positively.

H4- Green marketing moderates the effects of GSCM on hotels' performance.

H5- GHRM moderates the effects of green marketing on hotels' performance.

Note: The hotel's performance refers to: (1) financial performance, the effect on (2) employees and (3) customers.

1.8. Research Limitations

This study is designed for hotels with the same characteristics mentioned in the research problem, hotels in special locations with unique surroundings, and limitations of applying green practices. The results would be applicable to similar hotels in different cities after applying the required modifications.

This research presents only the suggestions and recommendations for environmental transformation at a low level. This transformation comes in two steps, the first one is the practices and related standards, which had positive effects on the performance, where the second step includes the postponed practices, which had negative effects on the hotel's performance before. Still, advanced practices that require heavy financial investments and professional machines and equipment were not discussed, because the main aim of the study is to present a map that facilitates and convinces traditional hotels with the feasibility of adopting environmental direction, and when that is done, further steps require more investigation and expertise to be made.

1.9. The Novelty of the research

The novelty of this research comes from organizing related environmental standards through applicable environmental practices into three management areas, which are GSCM, GHRM, and Green Marketing and included sub- managements, and analyzing how these management areas and sub- managements influence the hotel performance from three aspects i.e., financially, customers and employees. Furthermore, analyze the interaction effects – moderate of some management areas and sub- managements on other ones. Some of the interactions and relations were not studied before, especially in such complicity that generates different results and after all helps to present a better reading of relations and provides more accurate results and view a full image.

1.10. Conceptual Framework of the research

Figure 2. illustrate the research conceptual framework, which presents the latent independent variable and the latent dependent variable, plus the relations between these variables represented by the research's hypotheses. Further detailed figures (for each segment) will be mentioned in the following chapters, where the sub-variables will be included too.

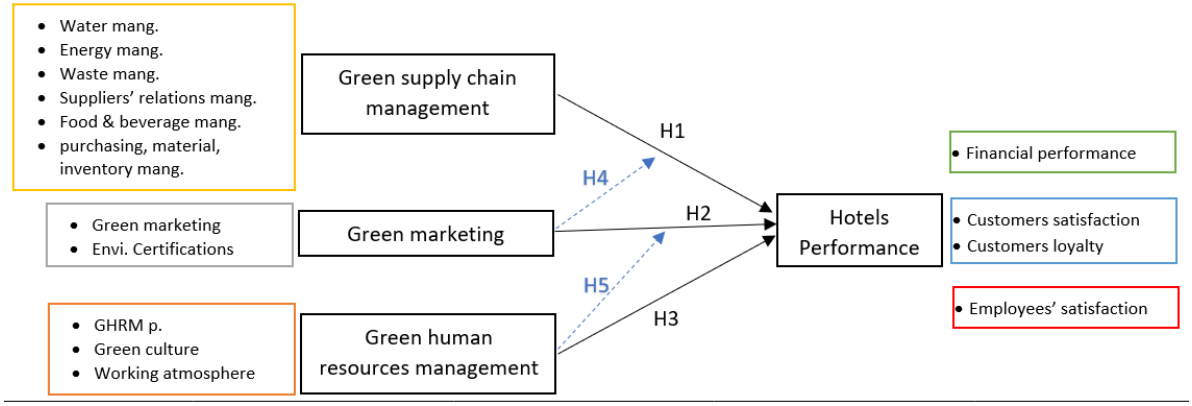

Figure 2. The conceptual framework of the research.

Mang: management, p: practices, Source: Author's own editing, 2023

2. Literature Review

This part attempts to review the importance of the three management (GHRM, GSCM, green marketing) regarding environmental practices in the hotel industry, also customers satisfaction, loyalty, and finally the government support and roles towards the environment.

2.1. Green human resources management

The concept of green human resources management (GHRM) is a relatively recent concept. It was mentioned in 1996 for the first time when the relationship between human resource management and environmental management was explained (Alreahi *et al.*, 2022). However, the concept was not explained in detail until 2008 (E. Jackson *et al.*, 2011). It began to receive more attention in 2016, after the announcement of the Sustainable Development Goals (Fazlurrahman *et al.*, 2021).

The role of human resource management (HRM) in achieving the objectives and supporting the strategic vision of the organization is a pivotal and traditional role (Thomas-Francois, von Massow and Joppe, 2017; Fongtanakit and Suteerachai, 2019). Its function as a basic department is to organize the work of employees and work to maximize it within a strategic approach to achieve the strategic goals of the organization, where HRM is seen as an essential tool for the successful implementation of environmental management practices (Ren, Tang and E. Jackson, 2018). Thus, GHRM is defined as a set of strategies, policies and methods that motivate company's employees to perform green behavior, not to mention its role of creating an environmentally compatible work environment that is efficient in the use of resources and socially responsible applied by HRM (Tang *et al.*, 2018; Srivastava and Shree, 2019).

The importance of GHRM is that it is a decision taken by the organization to transform its employees into a green form by increasing their awareness towards environmental issues and inspiring them to perform environmental performance activities (Fayyazi *et al.*, 2015). It is of an organizational nature that targets all individuals within the organization with their various job grades and the nature of their work, where they are collectively what is known as human capital, which aims GHRM directly to develop related skills and knowledge, increase environmental awareness, and improve behavior and commitment towards the environment (Masri and Jaaron, 2017). Individuals in the organization are one of the most important reasons for its success in applying environmental management, and therefore the organization must know how to influence the eco-friendly behavior of its members and work to direct it until it reaches the desired environmental performance (Kim *et al.*, 2019).

GHRM is also one of the methods of proactive management regarding the environmental aspect (Renwick, Redman and Maguire, 2013). It also works to achieve sustainability at the organizational level by adopting practices that support a proactive and

positive approach in addressing environmental problems (Mohd Yusoff, 2019). These practices aim to enhance the capabilities of employees, raise their awareness towards the environment, and direct and develop their green behavior in order to be able to develop a green culture within the organization (Renwick, Redman and Maguire, 2013). It also works to improve the environmental performance of the organization more effectively by converting the organization's operations into green operations with the aim of enhancing efficiency, reducing environmental damage and more efficient use of resources, which will not only protect the environment but also reduce costs (Mohd Yusoff, 2019).

Thus, the transformation of the organization's operations into a green form and the environmental transformation of organizational practices are major factors in improving financial performance. Therefore, it can be implicitly said that adopting GHRM will bring financial benefits in parallel with improving the environmental and overall performance of the organization (Shafaei, Nejati and Mohd Yusoff, 2020; Nisar *et al.*, 2021).

2.1.1. GHRM practices

GHRM includes some basic practices stemming from traditional HRM, but the aim of these practices is to achieve the environmental goal of the organization, including: green training and development, green recruitment and selection, green compensation and rewards, and green performance appraisal (Karmoker, Zannat and Roy, 2020). These practices can be divided into three axes according to the aspect that it aims to develop, which is developing green capabilities, motivating green employees, and creating green opportunities (Renwick, Redman and Maguire, 2013) based on the theory of ability, motivation, opportunity (AMO):

Green abilities are developed in the organization by providing appropriate green training to employees, as the GHRM makes sure that this training is consistent and integrated with the organization’s environmental goals (Jackson and Seo, 2010). This training must be done in an adequate and integrated manner to be effective (López-Gamero *et al.*, 2020). The effectiveness of training programs on the performance of employees must also be evaluated by observing how they carry out environmental activities (Jabbour *et al.*, 2015). It must be included in the job description of employees, besides the skills required to perform them, and the training and communication necessary to facilitate their achievement (Renwick, Redman and Maguire, 2013). Additionally, the organization attracts new employees with environmental awareness (Renwick, Redman and Maguire, 2013; Guerci *et al.*, 2016). The company clearly announces the existence of vacancies that require prior environmental interest and awareness for applicants (Renwick, Redman and Maguire, 2013), through what is called green recruitment (José Chiappetta Jabbour, César Almada Santos and Seido Nagano, 2010).

Green motivation for employees is done by means of green performance management programs and green rewards. The green performance management program motivates employees in direct proportion to the conformity of their performance and green practices with the goals of the environmental organization (Guerci, Longoni and Luzzini, 2016) through the

green performance management program. It evaluates and motivates employees according to their behavior (Berrone and Gomez-Mejia, 2009; Longoni, Luzzini and Guerci, 2018). Several environmental goals are set that the employee achieves, which reflect the extent of his commitment and implementation of the green environmental practices adopted by the organization (Nejati, Rabiei and Chiappetta Jabbour, 2017). Then, managers and supervisors evaluate performance accordingly (Renwick, Redman and Maguire, 2013).

Green rewards are also presented, which may be material or moral (José Chiappetta Jabbour, César Almada Santos and Seido Nagano, 2010; Tang *et al.*, 2018). It is a direct incentive for the employee who has achieved the required practices, besides being a motivation for other employees with lower performance (Ahmed *et al.*, 2021; He, Morrison and Zhang, 2021). The reward is a formal way to motivate employees to improve their environmental behavior and commitment and to emphasize the importance of this approach to the organization (Nejati, Rabiei and Chiappetta Jabbour, 2017).

A green opportunity is created for employees by allowing them to share their ideas and encouraging them to provide suggestions and solutions to improve the environment (Renwick, Redman and Maguire, 2013; Pinzone *et al.*, 2016). It also forms green initiatives and teams to search for solutions for environmental problems that would be faced by the organization, which after all enhances their commitment to the organization (Govindarajulu and Daily, 2004).

GHRM deals with many cases individually, because the motivations and behavior of some employees may be distinct from others (Mohd Yusoff, 2019). When practicing effective green employment, i.e., hiring people with high environmental performance skills and having prior environmental knowledge, awareness, and behaviors (Mohd Yusoff *et al.*, 2020). These cases are dealt with individually in order to facilitate the employment of environmental experts and raise the environmental performance of the organization faster (E. Jackson *et al.*, 2011). For environmental training, it must be pre-planned personally to identify the weaknesses or the knowledge and skills that trainees need accurately of different grades, in order to support their knowledge and awareness in a systematic manner according to an effective environmental training program (Daily, Bishop and Massoud, 2012), and for the management of environmental performance, employees must be followed up to ensure the level of their work performance and the extent of their knowledge of it, and to provide feedback and consultations to develop and improve their work when necessary (Govindarajulu and Daily, 2004) which ultimately ensures obtaining environmental results within the required environmental performance level (Raineri and Paillé, 2016).

To maintain the required pace of work or to raise the level of performance, GHRM should encourage employees and provide them with appropriate support and motivate them more through the environmental compensation and reward system (Jabbar and Abid, 2014). This can be material or intangible, depending on the case. A well-designed system will motivate employees to engage in Organizational Citizenship Behavior for the Environment (OCBE) and thus achieve the required environmental performance (Raineri and Paillé, 2016).

2.1.2. GHRM effects on the organization

GHRM practices play a major role in creating the organization including employees' green attitude, working atmosphere, and the green culture of the organization. Those relations are very intertwined, and it is not possible to separate any of them. The effect is not only on the formal level but also on the informal level. The next sub-chapters review the most relevant interactions of the GHRM in the organization regarding employees, green culture, and working atmosphere.

2.1.2.1. GHRM and green motive

GHRM works through its practices to create a green internal motivation among employees, which represents the driving force for employees to perform their tasks enthusiastically and in the best way without waiting for a reward or additional compensation. Performing work with passion because of their love for work pushes them for more focus and participate (Ahmed *et al.*, 2021) when carrying out their tasks, which makes them excited and satisfied when finished (Amabile *et al.*, 1994). Thus, the creation of green internal motivation among employees is the driving force for adopting green behavior and eco-friendly activities and concern towards them, which is constantly paid based on personal internal satisfaction and not waiting for a reward or compensation (Li *et al.*, 2020).

Not all employees will have a green internal motivation from the beginning. Here comes the importance of one of the GHRM practices in providing external motivations and incentives, whether material or intangible, as a reward when the employee performs eco-friendly activities, and that is what is called external green motivation (Ahmed *et al.*, 2021). This is considered one of the most important methods used by GHRM in its traditional or green form to reward outstanding employees to create their motivation to continue and also to create motivation for less distinguished employees to become more distinguished as a result of improving work performance (Ahmed *et al.*, 2021).

On the other hand, the green motive applied by the incentive and reward system may lead to a negative direction, according to Roos and Roos, 1997; Arshad *et al.*, 2022, many employees aim only for the reward which in its turn leads to illusory results and that would affect the rest of the employees' performance negatively.

2.1.2.2. GHRM and green abilities

The application of GHRM practices in the organization will lead to the promotion of the organization's green dynamic capabilities, which reflect the green organizational skills. It's formed as a result of exploiting the organization's green capabilities and working to develop them (O'Reilly and Tushman, 2008). This is known as green ingenuity, as it works to find opportunities and take advantage of them, clarify strengths and weaknesses, and reshape

internal activities (Birkinshaw, Zimmermann and Raisch, 2016), which gives the organization a competitive advantage.

Thus, the development of green dynamic capabilities is important to the organization. These capabilities are the mechanism through which management practices are directed to innovate new green products by applying environmental knowledge, processes, and capabilities to improve existing green products (Chen, Chang and Lin, 2014).

Furthermore, green creativity has great importance in achieving the competitive advantage of the organization. It provides new and distinctive ways to provide green services in the organization. Green creativity is the outcome of individual ideas and creations, which provides the main ideas for building and introducing new products or services and even working to solve current problems (Chen, Chang and Lin, 2014). But Ahmed *et al.*, 2021 mentioned that having strict environmental policies leads to lower employees' creativity.

According to Farooq *et al.*, 2022, green training affects the green creativity of employees by providing them with the knowledge and information they need, which after all enables them to participate in environmental activities that enhance their environmental values, which are the main influence on green creativity. On the contrary, (Ahmed *et al.*, 2021) mentioned that green practices increase the workload on employees, which eventually leads to a reduction in their efficiency. Above all, (Yusliza *et al.*, 2019) mentioned that the organization will have different types of employees whether on the educational level, mentality, the acceptance, and preferences which will require more training, time, and cost to shape them environmentally at the desired level. According to Alonso-Almeida *et al.*, 2017, the lack of environmental knowledge and training are one of the main internal factors facing the green practices.

2.1.2.3. GHRM and green culture

Green culture represents a set of principles, beliefs, and values that guide organizational practices to become eco-friendly (AFUM and Amponsah Owusu, 2020). It represents an unofficial guideline for employees that raises their green behavior, commitment, and awareness, especially when the green culture has reached a high level of development.

The organization has a green culture when its employees have eco-friendly thinking, work, and awareness without waiting for incentives or rewards from the organization (Roscoe *et al.*, 2019). GHRM works to spread an organizational culture that enhances its practices and is consistent with it, because organizational culture facilitates the promotion of these policies and ensures their success in the organization (Hueske and Guenther, 2015).

Providing support and appropriate resources to the employee in accordance with clear environmental strategies and policies to practice environmental activities will make him ready to act environmentally in the organization (Paillé *et al.*, 2014). This leads to enhancing the behavior and organizational commitment of employees and improving their awareness towards

the environment (Temminck, Mearns and Fruhen, 2015). Thus, the ability of the organization to translate its green message and share it with its employees and apply policies to make the green organizational climate prevail in the workplace will positively affect OCBE (Zientara and Zamojska, 2018). This can be summarized by the impact of green organizational culture on the organization. It will create opportunities for employees to employ the skills and experiences they have been provided with through green training, thus generating incentives for employees to participate in green tasks on a voluntary basis (Chou, 2014). Motivating employee behavior towards the environment turns by practicing into habits, along with promoting environmental values among employees and improving their way of thinking towards protecting the environment, and this is what is known as the organization culture. Green organizational culture is the values, beliefs, and behavior of employees in the organization (H. Schein, 1992).

In other words, the prevailing organizational culture in the organization is one of the important signs and indicators of GHRM when developing its strategic plans in an organization (DuBois and Dubois, 2012). It provides the needed information to plan its practices to ensure the greatest level of influence on the employees of the organization and to know what they have of behaviors, beliefs, and prior knowledge and what they lack and know how to deal with them. Thus, it can formulate its plans and strategy to make human capital at the required level (Mohd Yusoff *et al.*, 2020).

On the other hand, Gould-Williams and Davies, 2005 mentioned that in order to reach a developed level of green culture to achieve a good environmental performance, a long period of time is required, rather than the needed financial cost due to its complexity. Above all, that cannot be done with the absent of employees' green values, environmental awareness, and green behavior (Deshwal, 2015; Farid and El-Sawalhy, 2016; Likhitkar and Verma, 2017).

2.1.2.4. GHRM and green behavior, consciousness

The success of the company in environmental management depends mainly on the environmental behavior of its employees (Chan, Wong and Lo, 2009; Daily, Bishop and Massoud, 2012). The practices of GHRM are the official means of communication with employees and its practices are what affect the attitudes and behaviors of employees and provide motivation, organization and coordination, and work to achieve the company's goals at the same time (Munawar *et al.*, 2022b). It derives from the strategic vision of the organization and seeks to achieve its goals, including environmental goals, which the organization has adopted starting from its senior management (Gould-Williams and Davies, 2005).

Green individual behavior represents the individual's commitment to and compliance with the environmental policies and initiatives of the organization and the effort he makes to accomplish green tasks (Dumont, Shen and Deng, 2017). But that concept goes beyond the boundaries known by the organization, such as dealing with new incidents of its kind or proactively detection of new risks and situations, never than less, providing new ideas, and this represents the additional role of green individual behavior (Ababneh, 2021).

Stimulating individual green behavior and directing it to implement the organization's goals is only the result of GHRM practices emanating from the organization's belief in environmental orientations, which begins with green employment to attract qualified people as a preference factor for selection (Renwick, Redman and Maguire, 2013). Then it works to enhance skills through green training and find opportunities to activate employee participation, then evaluate performance and green motivation, which recognizes the green behavior of the employee (Grobelna, 2019). This would eventually lead to more motivation for green behavior and motivation, employee satisfaction and a sense of equality with an increase in the pace of commitment and practice of eco-friendly work (E. Jackson *et al.*, 2011).

Motivating employees to adopt and practice green behavior cannot be done through regulations and laws alone, it must also come from internal willingness to adopt that behavior by the employee and carry out eco-friendly actions within the organizational framework of the organization (Paillé, Boiral and Chen, 2013). Here, the importance of GHRM emerges in motivating employees through its various practices of recruitment, training, performance appraisal, and green compensation in the appropriate form and proportions by looking at discretionary behaviors (Jackson and Seo, 2010). It creates an incentive for them, which enhances their voluntary and voluntary behavior to carry out green activities in order to achieve the required environmental performance (Paillé, Boiral and Chen, 2013).

On the other hand, Munawar *et al.*, 2022b mentioned that without positive attitudes by the organization towards the environment, improving employees' green behavior will not be possible. Additionally, according to He, Morrison and Zhang, 2021, employees' green behavior is sensitive and affected by managers and supervisors' environmental attitude.

Environmental consciousness is one of the indirect ways to influence the green performance and behavior of employees (Benevene and Buonomo, 2020). It is a concept with multiple dimensions, as it is considered the basis for understanding and assimilating the importance of carrying out activities to protect the environment, as it affects the attitudes and behaviors of the individual and his attitudes towards the environment (Wan, Chan and Huang, 2017). An environmentally conscious person is one who has positive environmental attitudes, behavior, enjoys a pro-environmental performance, and participates in environmental activities (Yeh, Ma and Huan, 2016). Therefore, hiring people with high environmental awareness and training them appropriately will lead to enhancing environmental awareness in the organization as a whole (Roscoe *et al.*, 2019).

2.1.2.5. GHRM and environmental commitment

The commitment of the environmental service provider when performing his work is one of the indicators of the success of the GHRM system in the organization (Paillé and Mejía-Morelos, 2014). This is reflected through environmental performance (Luu, 2018). The level of environmental commitment of service-providing employees can be raised by providing them with appropriate green training to raise their capabilities and environmental awareness, which

positively affects their environmental standards, thinking and values (Pinzone *et al.*, 2016). Not to mention the need to motivate them through performance appraisal systems and green motivation, which leads them to accept and adopt green activities more positively (Luu, 2018). Afterall, they adopt the company's environmental goals and achieve them by providing services to customers (Jabbour and Santos, 2008).

2.1.2.6 GHRM and working atmosphere (climate), OCBE

The green organization climate reflects the internal conditions in the organization that the company works to create to be able to achieve its environmental goals (Paillé, Boiral and Chen, 2013; Chou, 2014). The green psychological climate is created as a result of the perceptions that employees develop based on the degree of their organization's support for green values and the adoption of environmental policies and procedures, in addition to that, social discussions in the workplace related to the organization's green practices (Dumont, Shen and Deng, 2017). Thus, GHRM practices that increase green awareness of its employees by training, motivating, and appreciating their environmental practices will lead to positively creating a green psychological climate in the organization (Mohd Yusoff *et al.*, 2020).

The green psychological climate works to enhance the environmental behavior of the employees, as the behavior reflects ideas, experiences, skills, and values, which are translated into actions. Thus, this green behavior will be affected and interact with the atmosphere surrounding the individual within the organization, because this will increase the balance of his personal experiences and ideas, which will be reflected in his behavior (Sabokro, Masud and Kayedian, 2021). The existence of a more positive green psychological climate in the organization will lead to a better impact on the green behavior of employees (Dumont, Shen and Deng, 2017; Shafaei, Nejati and Mohd Yusoff, 2020; Islam *et al.*, 2023).

On the other hand, the OCBE is considered an important element to achieve the environmental goals of the organization. According to a study (Ling and Yi-Chun, 2020), OCBE represents the informal dimension in the organization. This element is reinforced through GHRM, which carries out appropriate practices to target the human factor in order to raise the organization's capabilities in order to achieve environmental goals (Mohd Yusoff, 2019; Ling and Yi-Chun, 2020).

OCBE is defined as a set of informal, individual and discretionary social behaviors that have a significant impact on the environment (Raineri and Paillé, 2016). But it is not explicitly recognized by the official reward system in the organization, which is one of the most important incentives to achieve more effective environmental management by organizations (Boiral, 2009).

GHRM through its practices creates behavior and motivation that ultimately constitutes the organizational citizenship behavior (OCB) or the behavior of organizational affiliation to become eco-friendly, which in turn creates a collective and social commitment towards the organization and the environment in what is known as re-exchange according to the theory of

social exchange (Emerson, 1976). This drives employees to a positive reaction towards the organization and the environment as a result of GHRM practices that motivate them and raise their level of awareness (Jiang *et al.*, 2012).

The theory of social identity also indicates that the individual is a member of society, influencing and being influenced by his ideas and dividing society into groups with similar thinking and habits (Ashforth and Mael, 1989). This can help the organization work on developing the ideas of its members to converge with regard to the goals of the environmental organization and also to measure the commitment of individuals during their participation in social environmental activities that reflect their OCB (O'Reilly and Chatman, 1986).

Green training contributes to enhancing the OCBE (Alola, Cop and Tarkang, 2022), ensuring that employees understand the objectives of the EMS in the organization and how their job activities and practices affect the achievement of those objectives (ISO, 2023). Thus, green training enhances the capabilities of employees to solve environmental problems and learn about them (Govindarajulu and Daily, 2004), enhancing their green motives, which motivates them to participate in environmental initiatives and understand the important role they could be played (Pham, Tučková and Chiappetta Jabbour, 2019). Training also makes employees more aware and develops their behavior to take a proactive approach (Pinzone *et al.*, 2016). Thus, green training plays an important role in improving the OCBE of employees (Cop, Alola and Alola, 2020).

2.2. Green supply chain management

The traditional supply chain in the hotel industry (SC) consists of clients, customers, suppliers, and related sub-departments and departments in the hotel (Espino-Rodríguez and Taha, 2022). It aims to provide a service to customers based on the materials obtained from the suppliers after applying needed modifications which transform them into the appropriate form and increase the value (Kothari, Hu and Roehl, 2005). But when it comes to green supply chain management (GSCM), there is a noticeable difference, see figure 3.

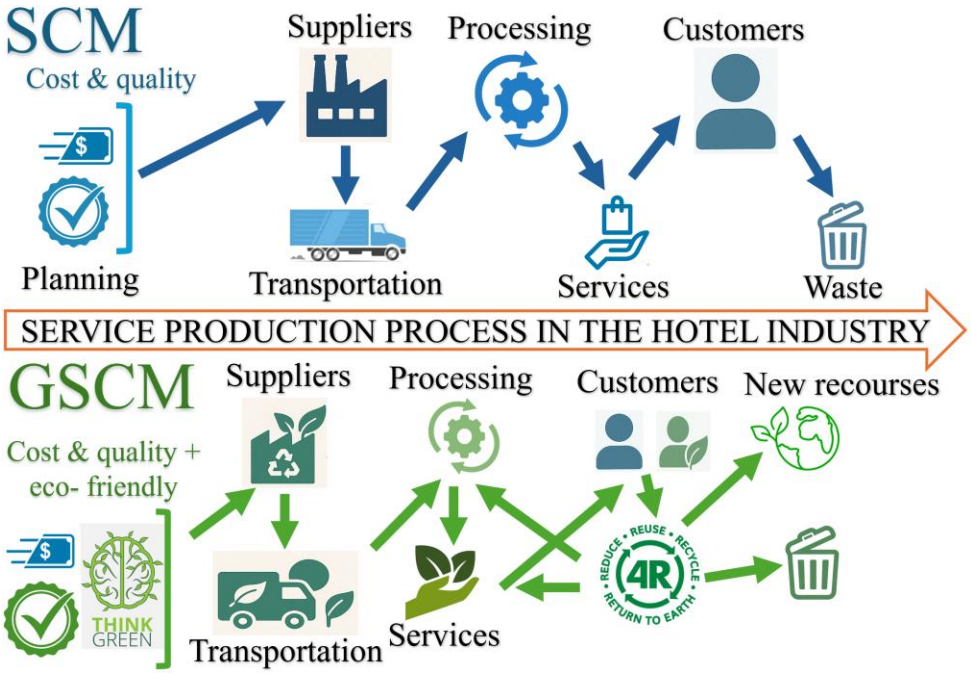

Figure 3. SCM vs GSCM.
Source: Author's own editing, 2025

It's obvious now that the implementation of green supply chains (GSC) is associated with more parties than traditional supply chain management (SCM) (Basana *et al.*, 2022). GSCM organizes the interrelationships with all stakeholders (Al-Aomar and Alshraideh, 2019) starting with internal departments in the hotel (Fongtanakit and Suteerachai, 2019), employees, managers, owners and direct external parties such as clients, customers, suppliers, recycling and waste disposal companies. Not to mention the indirect external parties from government legislation and the pressures of parties that appeal to environmental protection and charities (Mak *et al.*, 2021). Therefore, the success of GSCM in its work to achieve the goals of the organization and the desired environmental performance within the framework of the hotel industry requires access to a formula that guarantees establishing a high level of positive interaction and cooperation between the various parties to the relationship. Additionally, the ability to manage internally in an appropriate way, in order to ultimately ensure a higher level of environmental protection and operational performance (Sari and Suslu, 2018; Jiang *et al.*, 2021). Moreover, applying GCSM appropriately results to obtain the competitive ability which

enables the hotel to compete and survive in the market (Vasilakakis and Sdrali, 2022).

GSCM concept was presented in 1996 and 1998 for the first time as an effective method of environmental management. The interest in GSCM started to grow after setting and identifying the ISO 14000 (Sarkis, 1998) also after sitting the SDGs (sustainability development goals) (Tseng *et al.*, 2019).

Accordingly, GSCM has complicated relations and effects within any organization and industry, including the hotel industry. That will be classified as follows to understand the GSCM role clearly.

2.2.1. GSCM and external stakeholders

GSCM in the hotel industry interacts with a few external stakeholders directly that cannot be ignored. Three main categories of external stakeholders are the most important regarding to the hotel industry, which are suppliers, customers, and governments (Sigala, 2014; Cigir, 2018; Saengchai and Jermsittiparsert, 2020; Chen *et al.*, 2021).

One of the most important decisions taken by GSCM is the selection of suppliers regarding the hotel industry (Vasilakakis and Sdrali, 2022). Besides its direct traditional effects of improving profits, reducing procurement costs, and enhancing competitiveness (Taherdoost and Brard, 2019). Therefore, adopting environmental standards and how it was applied will be part of the main criteria when selecting suppliers based on their products which are supplied and how they are produced it until reaching the hotel (Saengchai and Jermsittiparsert, 2020; Khan *et al.*, 2021). Thus, GSCM in the hotel industry affects suppliers directly, so that the center of gravity and influence forces, direct and transform the way suppliers and producers move towards an eco-friendly form (Thomas-Francois, von Massow and Joppe, 2017; Espino-Rodríguez and Taha, 2022). Some international chain hotels have established so-called supplier clubs (Alonso-Almeida *et al.*, 2017), with the aim of working on developing better, more eco-friendly products. The collective work strengthens cooperation between the parties, improves relations between them, and leads to the development of ideal and sustainable products (Stock, 2006; Alonso-Almeida *et al.*, 2017). Not to mention the benefit from economies of scale and quality assurance along the value chain (Mihalič, Žabkar and Cvelbar, 2012).

Farmers are also considered one of the important types of suppliers for hotels (Ling-Feng Hsieh and Chih-Pin Su, 2010; Ling-Feng Hsieh, Li-Hsin Wang, and Chih-Pin Su, 2011). GSCM in hotels contributes directly to determining the way farmers work, especially with regard to local farmers in modest economies (Thomas-Francois, von Massow and Joppe, 2017). They also play an important and influential role in the success of the GSCM's mission through providing the needed level of quality of the materials they supply (Thomas-Francois, Joppe and von Massow, 2018).

On the other hand, Vasilakakis and Sdrali, 2022 mentioned one of the main obstacles that the GSCM would face is the lack of confidence in suppliers, which leads to a reduction in

the level of collaboration. Besides, some suppliers may have a low level of environmental awareness as Alonso-Almeida *et al.*, 2017 mentioned.

Customers' preferences play a pivotal role in influencing and directing hotel practices, especially as customers' environmental awareness is constantly increasing (Budijati and Ramdhoni, 2019; Khan *et al.*, 2021). Consumer satisfaction is affected by the eco-friendly procedures applied in the hotel (Berezan *et al.*, 2013). Additionally, their awareness towards environmental impacts of the hotel industry (Acampora *et al.*, 2022). Customers' environmental culture has also reached a high level. They can evaluate and understand that environmental practices are an integrated chain that starts from suppliers and the ways they use to produce materials used by hotels (Modica *et al.*, 2020). This forces GSCM to focus more and study suppliers well and make sure that they follow environmental standards in order to ensure the highest satisfaction level among customers, reduce or even remove their environmental concerns (Saengchai and Jermsittiparsert, 2020). Moreover, the way in which hotels purchase, supply, manage waste and consume natural resources (Farinha *et al.*, 2021). Thus, the task of GSCM is responding to customers' environmental pressures and their satisfaction is no longer an easy task (Kerdpitak, 2019), especially since their role has gone beyond purchasing a product or service and benefiting from it (Sigala, 2014).

On the contrary, according to (Berezan *et al.*, 2013), some customers look at some green practices as a low-quality practice, the most frequent one is the low consumption of water, and they might feel embarrassed to participate in some practices like recycling and reusing due to culture differences. Besides, the same study mentioned that for some customers, local products are an indicator of low-quality materials instead of well-known brands (Berezan *et al.*, 2013). Above all, (Cigir, 2018) mentioned that some resources are provided with monopolies such as water and electricity which are mostly provided by the government or big companies, that give them the upper hand to control the resource type and quality.

Governments play the role of influencing the hotel industry using many tools (Masa'deh *et al.*, 2017; Pratyameteetham and Atthirawong, 2017). Taxes on resource and energy consumption, environmental taxes, and the amount of waste are among the common and most important tools that create pressure on SCM in hotels (Chen *et al.*, 2021). It forces hotels to apply environmental management methods for (SC) to reduce the proportion of these taxes (Kerdpitak, 2019; Saengchai and Jermsittiparsert, 2020). The adoption of environmental trends is less costly than imposed taxes (De Fátima León, González-Morales and Díaz Pérez, 2022). Also, laws and regulations imposed by governments which aim to support, facilitate, and guide the adoption of green practices have a positive impact on motivating hotels to adopt environmental changes. This includes GSCM (Saengchai and Jermsittiparsert, 2020) as one of the most important components of the (EMC) and its important role to reduce consumption of resources and waste, moreover, protect the environment (Kerdpitak, 2019; De Fátima León, González-Morales and Díaz Pérez, 2022).

2.2.2. GSCM departments and sub-managements

GSCM includes and is related to many departments and sub- departments regarding the hotel industry.

The quality of green services and products provided by hotels and achieving the aspirations of customers is a prerequisite (McKercher and Prideaux, 2011). Greening products and services has a strategic importance to hotels but that isn't a simple issue (Boström *et al.*, 2015). Designing these products and services requires a high cooperation between all parties, especially among the management of products, services, and GSCM in hotels (Sigala, 2014; Cigir, 2018). The Products and Services Department works mainly on developing and drawing an initial scheme for the green products and services in order to help the competent departments to provide and identify the necessary resources and materials in an eco-friendly way (Babu, Kaur and Rajendran, 2018; Al-Aomar and Alshraideh, 2019).

As part of GSCM, the role of materials management in the hotel industry comes in determining and analyzing the most effective environmental materials which will be used to produce and manufacture green services and products (Boström *et al.*, 2015). Moreover, ensure the quality of the materials which will be involved in the process (Thomas-Francois, Joppe and von Massow, 2018). It must be ensured that selected materials are eco-friendly materials in the first place (Al-Aomar and Alshraideh, 2019; Migdadi, 2022) and doesn't need lots of energy or resources to be transformed into their final usable form which presented to customers to ensure that the production process was eco-friendly as much as possible (Boström *et al.*, 2015; Gruchmann, Topp and Seeler, 2022), above all, being available to be provided by eco-friendly sources (R. Al-Aomar and Hussain, 2017). Also, the materials used are reusable, recyclable, and generate the least or no amount of waste and have a low carbon footprint (Wenming Li, 2010).

The primary role of green procurement management or low-carbon procurement (Wenming Li, 2010) in the hotel industry and in other industries is to search and find the appropriate green suppliers and agree with them on the hotel's needs in terms of equipment, materials, resources, and various elements (Vasilakakis and Sdrali, 2022). This is very important because the environmental dimension can play the most important role for GHRM in hotels to select suppliers (Sigala, 2014; Vasilakakis and Sdrali, 2022). This, if done properly, will ensure reducing and lowering procurement costs of products by appropriate quality with right price in the right time and required quantities, thus enhancing competitiveness (Nair, Jayaram and Das, 2015; Taherdoost and Brard, 2019). Additionally, reducing and encouraging the recycle of the generated waste (Tarigan, Tanuwijaya and Siagian, 2020). Moreover, in order to achieve that in the aimed level will not take a place without the appropriate cooperation of suppliers and their adoption of green trends (Boström *et al.*, 2015).

This will be followed by the green purchasing process, where its activities aim to implement the purchasing process and ensure the delivery of the required materials meeting conditions which have been previously determined, including environmental terms and

conditions (Morales-Contreras *et al.*, 2019; Siagian, Tarigan and Andreani, 2019; Migdadi, 2022). The Green purchasing Department is also working on developing a long-term action plan within the so-called purchasing strategy (Paulraj, Chen and Flynn, 2006). This strategy ensures to reduce environmental impacts and waste as much as possible within the organization using purchasing processes (Masa'deh *et al.*, 2017; Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021) in coordination with other related departments through the information integration system, to make sure that purchasing of needed quantities is happening without expiration or damage (Hussain, Al-Aomar and Melhem, 2019; Siagian, Tarigan and Andreani, 2019). Moreover, ensuring that the delivery and transportation of these materials and shipping methods from the supplier to the hotel are done in an eco-friendly way (Migdadi, 2022), as it is one of the sub-tasks along the GSC in the hotel industry (Piya *et al.*, 2022).

Green food management is one of the departments associated with GSCM in the hotel industry and is of exceptional importance. Food represents one of the most important elements for hotel services (Ruiz Molina *et al.*, 2022). Food products, as well as the materials included in their composition, are highly perishable and expire in record time, and waste regarding the food industry in hotels exceeds 20% (Amicarelli *et al.*, 2022).], even though what the world suffers from food crises (Mak *et al.*, 2021). Choosing basic materials for the food industry, time of request, the right quantity, and sources to be eco-friendly is one of the sensitive points that green management should work to take into consideration, besides the associated waste of other resources such as energy, water, and waste disposal costs (Ling-Feng Hsieh, Li-Hsin Wang, and Chih-Pin Su, 2011; Mak *et al.*, 2018). It also examines customers' preferences and tries to predict their demands using sophisticated methods, whether psychological (Klára Morvay Karakas, 2021) or scientific (Mukherjee and Chittipaka, 2022), in order to reach the best level of performance, including environmental performance.

Waste management also has its exceptional importance as part of GSCM in the hotel industry (Al-Aomar and Hussain, 2018; Alves, Silva and Soares, 2020; Shaikh and Bhautik, 2022). It can be considered as the last procedure which could be followed before the environmental impacts of the waste posed by the production processes inside hotels are reflected on the environment and requires the intervention of external parties (Raid Al-Aomar and Hussain, 2017; Migdadi, 2022). It must be noted that its success requires a high level of cooperation of all departments and customers within the hotel for the success of such a mission (Babu, Kaur and Rajendran, 2018; Budijati and Ramdhoni, 2019). This department is responsible for dealing with the generated waste of different types, working on sorting that waste and recycling what is suitable for that (Sorin and Sivarajah, 2021), or using the waste generated from the production process as inputs to another production process where the hotel plays the role of producer or supplier within a SC starting from the hotel (Ling-Feng Hsieh and Chih-Pin Su, 2010; Ling-Feng Hsieh, Li-Hsin Wang, and Chih-Pin Su, 2011; Alves, Silva and Soares, 2020). This is evident in food waste, which can be re-sorted and used in several ways (Ling-Feng Hsieh and Chih-Pin Su, 2010; Ling-Feng Hsieh, Li-Hsin Wang, and Chih-Pin Su, 2011; Mak *et al.*, 2018) such as animal feeding, fertilizer and even energy production (Prakash *et al.*, 2022; Shaikh and Bhautik, 2022). The largest amount of waste generated by hotels is

food and paper waste (Al-Aomar and Hussain, 2018). Waste management also contributes to saving costs resulting from waste treatment and transportation, along with reducing taxes imposed based on the volume of waste produced (Alves, Silva and Soares, 2020; Sorin and Sivarajah, 2021).

The hotel industry is characterized by its heavy consumption and use of energy resources (Jackson, 2010), which is considered one of the essential resources to provide services meeting the required levels (Migdadi, 2022). GSCM through energy management in the hotel industry is seeking to provide this resource from eco-friendly energy sources (Gruchmann, Topp and Seeler, 2022; Shaikh and Bhautik, 2022), in order to reduce the harmful effects of power generation using traditional methods on the environment, especially emissions and toxic gases (Migdadi, 2022; Prakash *et al.*, 2022). This may include distinctive and sometimes unconventional methods (Alves, Silva and Soares, 2020; Prakash *et al.*, 2022; Shaikh and Bhautik, 2022). It is also keen to ensure that all departments in the hotel in general and those affiliated to it in particular are following policies which preserve energy and reduce its depletion, including choosing the quality of materials, inputs, and equipment so that operations on them have the lowest consumption level of energy while ensuring the same level of quality at the same time (Michailidou *et al.*, 2016).

Water management is also one of the main departments associated with GSCM in the hotel industry (Migdadi, 2022; Piya *et al.*, 2022; Prakash *et al.*, 2022). Hotels consume a huge amount of water; it is a fact that the consumption per person in the hotel exceeds three times the consumption of the average person (Tirado *et al.*, 2019). Water management in hotels is working on rationalizing water usage and reducing its waste (Shaikh and Bhautik, 2022). In addition, reduce the usage and excretion of industrial pollutants through water and replace them with less or non-toxic substances. It also intervenes in structuring services and selecting products to ensure that water consumption will be at the lowest possible level while ensuring that the same quality is maintained (Jackson, 2010; Berezan *et al.*, 2013).

2.2.3. GSCM and internal stakeholders

GSCM in the hotel industry is affected by the internal stakeholders, as this is evident through the analysis of this relationship between managers, employees, and owners, not to mention GHRM and the nature of the work environment and its effects on GSCM in the hotel industry.

The attitude of managers and their understanding of environmental problems is one of the most important internal factors to guarantee the success of GSCM work in the hotel industry (Al-Aomar and Hussain, 2018; Kerdpitak, 2019). The success of the work of this department along the chain requires supervision, careful control, monitoring, and a deep understanding of environmental procedures due to the multiplicity of internal and external parties and the complexity of the situation (Raid Al-Aomar and Hussain, 2017; Gruchmann, Topp and Seeler, 2022). The support of the owners and their willingness to finance activities and requirements

of the environmental transformation (Rhead, Elliot and Upham, 2015; Robertson and Barling, 2017) along with the support of the senior management and their commitment to the environment is pivotal to the success, as this commitment is reflected on the staff, employees, and the hotel as a whole (Tarigan, Tanuwijaya and Siagian, 2020). It also stimulates the promotion and leadership of environmental activities and policies to include GSCM (Mak *et al.*, 2018; Morales-Contreras *et al.*, 2019) and the introduction of new technology and provision of the necessary resources to improve the performance of those departments associated with it (Mukherjee and Chittipaka, 2022), along with setting environmental goals and coordinating initiatives, including GSCM in the hotel industry (Gruchmann, Topp and Seeler, 2022).

Employees play an important role in the hotel industry and service establishments (Fongtanakit and Suteerachai, 2019). They are the actual implementers of activities that produce services, thus, employees directly affect the success of the performance and implementation of GSCM goals in the organization (Gruchmann, Topp and Seeler, 2022; Mukherjee and Chittipaka, 2022). Also, the presence of well-qualified and environmentally aware employees is a critical factor in creating the competitive advantage of the organization and achieving performance levels, including environmental performance (Alsetoohy *et al.*, 2019; Fongtanakit and Suteerachai, 2019). Additionally, employees have the direct contact with external stakeholders, whether suppliers or customers, thus, the role they play actually creates the green image of the hotel through their external dealings with suppliers and even through their personal attitude and actions, which cannot be denied or ignored (Sigala, 2014; Saengchai and Jermsittiparsert, 2020; Gruchmann, Topp and Seeler, 2022).

GHRM pivotally affects the success of GSCM in the hotel industry (Fongtanakit and Suteerachai, 2019). GSCM needs employees who have related skills, specific specializations, and possess specific expertise (Li *et al.*, 2020). Moreover, ensuring that they have environmental awareness, appropriate environmental incentives, besides being appropriately trained for the tasks they will perform (Alreahi *et al.*, 2022), in order to ultimately ensure the implementation of the tasks assigned to them and the achievement of the environmental and strategic goals of GSCM in the hotel (Renwick, Redman and Maguire, 2013). This can only be done through the right formula of GHRM practices, starting with green recruitment, followed by green training, then moving to performance management and green evaluation, which will lead to preparing an employee who is highly motivated to work and environmentally educated appropriately (A. Zaid, Talib Bon and A.M. Jaaron, 2018).

The success of GSCM in the hotel industry is also linked to the level of coordination, cooperation, internal integration and information flow between all departments and managements in order to achieve the best possible performance (Astawa *et al.*, 2021; Basana *et al.*, 2022; Espino-Rodríguez and Taha, 2022), e.g. knowing the number of potential customers on a particular day will direct the food management to know what is the amount of food required, and knowing the nationalities of customers, the quantity and quality of their food's orders can be predicted (Abdou, Hassan and El Dief, 2020; Amicarelli *et al.*, 2022), along with the need to involve GSCM in decision-making, product development, and coordination with

external partners (Cigir, 2017; Siagian, Tarigan and Andreani, 2019). External integration with suppliers is also considered an important factor in GSCM because this facilitates the method of supply and improves the level of agreement and understanding. In addition, the activities of GSCM in the hotel industry influence and are affected by CSR of the hotel (Cigir, 2017). The nature of the relationships that SCM has with all stakeholders (Dubey *et al.*, 2015) translates the hotel's CSR performance (Cigir, 2018). Hotel's CSR also contributes to setting limits and controls for GSCM practices in the hotel industry and directs them (Cigir, 2017).

2.2.4. GSCM and hotel performance and competition

GSCM affects the hotel's financial performance positively (Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021). Cost savings are achieved along the SC, starting from reducing resource waste and energy consumption (Pratyameteetham and Atthirawong, 2017; Basana *et al.*, 2022). Besides the impact on sales as a result of relying on a high-quality resource base (Wenming Li, 2010), besides attracting more customers, which will lead to rise the demand and increase the revenues, which in turn creates a desirable competitive position (Basana *et al.*, 2022).

GSCM promotes cooperation along the SC, whether internal or external (Gold, Seuring and Beske, 2010). Information is exchanged between hotel's departments and suppliers, which leads to gaining more knowledge and increasing capabilities (Yu and Liu, 2020), which ultimately leads to reaching a high level of understanding among all parties about the different needs (Wenming Li, 2010). This eliminates waste, saves time, and raises the quality and nature of products to match what the hotel needs to manufacture its own services and products, which in turn ultimately creates an advantage that is difficult to compete with and raises the level of environmental, financial, and general performance of the hotel (Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021; Jiang *et al.*, 2021).

Furthermore, ensuring the quality of materials provided by suppliers and presenting services and products which meet high quality and eco-friendly standards leads to reducing the costs of environmental waste treatment and tax burdens (Alves, Silva and Soares, 2020; Yu and Liu, 2020), reducing potential risks and accidents (Tamayo-Torres, Gutierrez-Gutierrez and Ruiz-Moreno, 2019). This leads to improving the public image of the hotel and its green image in particular (Pratyameteetham and Atthirawong, 2017; Aboelmaged, 2018), and thus attracting more customers (Modica *et al.*, 2020).

2.2.5. GSCM and 4Rs: reduce; reuse; recycle; and return

Environmental protection methods can be summarized in 4 basic processes for dealing with resources and materials, which are reduce, reuse, recycle, and return (4Rs). This deals with the inputs and outputs of any production process, whether for a product or a service. GSCM in the hotel industry takes these processes into account in all its departments and working steps.

The mission of GSCM begins with mitigating the negative environmental impacts of the hotel industry by reducing resource consumption and cutting out non-essential resources (Migdadi, 2022). Starting from the design of the service and the selection of its constituent sources and materials, this is taken into consideration (R. Al-Aomar and Hussain, 2017). Therefore, equipment with high energy efficiency is chosen, plus materials that doesn't need much treatment with water or energy consumption, or have a negative impact on the environment, such as cleaning materials (Migdadi, 2022). In addition to that, choosing more sustainable alternatives, such as replacing traditional paper and wood with recycled alternatives in an eco-friendly way (Migdadi, 2022; Shaikh and Bhautik, 2022). Reusable products such as refillable water bottles could also be chosen (Piya *et al.*, 2022). This will be followed by the role of the purchasing and procurement department in reducing waste resulting from the delivery and transportation of materials (Font *et al.*, 2008) and purchase quantities, taking into account their consumption of resources to ensure that they are stored in the ideal way (R. Al-Aomar and Hussain, 2017; Al-Aomar and Alshraideh, 2019) besides services that save the consumption of resources, e.g., the policy of towels on the floor (Berezan *et al.*, 2013).

GSCM in the hotel industry through waste management deals with the inability or failure to apply waste prevention or mitigation (Piya *et al.*, 2022). This is done by reusing it or transferring it to other parties that can use it to generate value in an eco-friendly way (Mak *et al.*, 2021). E.g., food can be used, such as donating it as food for human consumption, converting it to feed animals, or as organic fertilizer (Prakash *et al.*, 2022). Where a policy of reuse or recycling is used, and upon failure to do so, it is sent to the places designated for dealing with it (HOTREC, 2017). In the case of solid waste, it can also be reused or recycled, and even have an agreement with its supplier to return the resulted waste, or dealing with it by an external waste management body remains as a last solution (Erdogan and Baris, 2007).

On the other direction, Alonso-Almeida *et al.*, 2017 mentioned that waste management has many obstacles from external parties, the collaboration is missing, and the infrastructure may not be enough. According to Morales-Contreras *et al.*, 2019, there are a lot of relations to manage and an enormous amount of inputs and outputs to be controlled, including sources and final destinations.

2.2.6. GSCM and I.T, i.e., Innovation, Information Integration, and technology adoption

Information integration is one of the key elements in the success of GSCM in the hotel industry to properly perform its tasks (Cigir, 2018; Siagian, Tarigan and Andreani, 2019). The Service Design Department builds new products based on feedback from customers (Masa'deh *et al.*, 2017) or market research received from related departments in the hotel. GSCM business chain begins based on the information transferred from one department to the next, and ends with producing a service that meets the needs and fills the gaps of outdated products (Raid Al-Aomar and Hussain, 2017). The success of this depends on the validity and level of quality of information received from one department to another. Materials cannot be purchased without

knowing their type, quality, and conditions based on the information from materials management, etc. (C. -J. Chen, 2007).

Relying on information systems and the Internet greatly facilitates the work of GSCM in hotels (Masa'deh *et al.*, 2017; Siagian, Tarigan and Andreani, 2019). It enables GSCM to conduct analyses and comparisons between suppliers and manage the relationship between them in a more meaningful way (Oltean, Gabor and Conţiu, 2014). That also provides the ability to monitor and analyze all stages of work carried out along the departments of GSCM (Meacham *et al.*, 2013), to improve results, including environmental results (Raid Al-Aomar and Hussain, 2017).

As for environmental innovation in GSCM in the hotel industry, it has become common (Mukherjee and Chittipaka, 2022). New environmental products and services are developed to create value for both customers and businesses by reducing environmental impacts (Aboelmaged, 2018). This environmental innovation is affected by many factors, as these innovations must be dependable and provide added value (Siddik *et al.*, 2021). Moreover, the cost of its application should be acceptable to receive the support of senior management and be approved (Stjepić, Pejić Bach and Bosilj Vukšić, 2021). Besides, its compatibility with the information systems approved by the hotel and the presence of qualified human resources to implement and deal with it (Alsetoohy *et al.*, 2019).

On the other hand, Mak *et al.*, 2018; Morales-Contreras *et al.*, 2019; Gruchmann, Topp and Seeler, 2022 highlighted that the complicated relation of GSCM with the organization's environment, including the internal and the external one raises the level of challenges and expected obstacles. According to (Richards and Font, 2019), the absence of clear standards for the working flow due to the long line of services delivering makes this issue more noticeable.

2.3. Green marketing

As a response of the hotel industry to the increasing awareness of the environmental issues and the progressing costumers' demand of green services, green marketing has emerged as a necessary tool the hotel must use to fortify its position, and this importance increased to adopt green marketing as a serious strategy regarding its remarkable benefits, different tools in order to achieve a competitive advantage for the organization in a predator market. According to (Kang *et al.*, 2012), green marketing is a successful strategy the hotel can follow in order to differentiate its services in a competitive market. Implementing a green marketing strategy plays a significant role in enhancing the hotel's reputation and image, as responsibility and trustworthiness are more perceived when the hotel is eco-friendly from the customers' perspective (Lee *et al.*, 2023). Moreover, the eco-consciousness of customers increased with the marketing tools that work to repeat the fact that the hotel is genuinely committed to the environment (Han, Hsu and Sheu, 2010).

Green marketing was first defined by the American Marketing Association in 1975 as the process of marketing safe and eco-friendly products (Nekmahmud and Fekete-Farkas, 2020). In another definition, it is the organization's efforts to design products that do not harm the environment and work on promoting, pricing, and distributing them (Chan, 2014). Green marketing is associated with product life cycle analysis, product responsibility, resource flow mechanism, material utilization and environmental efficiency (Rehber and Turhan, 2002). Moreover, green marketing generates many environmental benefits through consumer awareness (Fliegelman, 2010). Customers are increasingly demanding sustainability and transparency from hotels (Alyahia *et al.*, 2024). Rizqiyana and Wahyono, 2020 mentioned the summarized ultimate goal of green marketing by achieving profits and the corporate social responsibility (CSR) towards the environment.

The success of the green purchasing process by customers is related to the presence of environmental awareness and the willingness to purchase and pay the price for green products, which are more expensive than conventional products (Nekmahmud and Fekete-Farkas, 2020). Thus, the importance of the green marketing function lies in carrying out the appropriate marketing of green products, raising awareness of their importance, and informing them of their existence and how they are produced, in order to create a positive perception that creates a positive value for consumers in the event that they consume green products, and thus generates a positive willingness to buy green products (Morel and Kwakye, 2012).

Green marketing has many tools, the most important of which are environmental advertising, the environmental label, and the environmental brand, plus environmental certificates and social responsibility (Rizqiyana and Wahyono, 2020). The importance of these tools lies in informing consumers about the availability of environmental products and promoting them in order to attract their interest and create demand for them (Mercade Mele, Molina Gomez and Garay, 2019; Patwary *et al.*, 2022). As successful communication is the decisive factor in the success of the green marketing process for environmental products offered by the hotel to introduce its environmental products and services and explain their benefits to

customers, which creates their desire and stimulates their behavior and increases their environmental awareness and directs them towards these products (Vafaei, Azmoon and Maria, 2019).

Many customers are unaware of the existence of environmental practices and products carried out by hotels, due to the unsuccessful green marketing policy pursued by hotels, which leads to a negative evaluation of hotels as a result of using green services in the wrong way, which leads to an incomplete or a hamble experience (Heras-Saizarbitoria *et al.*, 2020). That is one of the challenges that would be faced when the green marketing strategy is implemented. Greenwashing is also one of the serious challenges any hotel will face, it happens when the hotel exaggerates the image of the applied environmental practices, without a clear flow of actual actions, this can lead to an undesirable effect on the hotel's reputation regarding environmental aspects (Lyon and Montgomery, 2015).

The hotel's employees are one of the main parts in the marketing system, trained employees are the hotel device to successfully communicate with customers (Mohd Yusoff *et al.*, 2020). They play their own role in explaining and informing customers about the green services the hotel provides (Abdou, Hassan and El Dief, 2020). Customers may need more clarification about a green service, or which practices the hotel follows, when that information is fuzzy on the official websites or documents, employees' role is irreplaceable, according to (Moise, Gil-Saura and Ruiz-Molina, 2018), many tourists do not know that the hotel has an environmental certificate before booking.

Additionally, employees reflect the green image of the hotel not only in a direct way, but also through doing their normal tasks, customers can observe and evaluate how strong the green culture of the hotel is (López-Gamero *et al.*, 2020; Haldorai, Kim and Garcia, 2022) and how satisfied employees are with doing their tasks regarding environmental protection. Furthermore, Mercade Mele, Molina Gomez and Garay, 2019 mentioned that the word-of-mouth marketing practiced by employees through direct communication channels with customers plays an important role in recommending green products and increasing confidence in them, which increases loyalty and recommendation of the hotel or product.

On the other hand, Mercade Mele, Molina Gomez and Garay, 2019 mentioned that a green marketing strategy may cost a lot and that the cost would surpass the profit made by the hotel. Above all, according to (Rizqiyana and Wahyono, 2020), there is a contradiction about the efficiency of green labels and environmental advertising and their effects on the customers' purchasing behavior.

2.3.1. Environmental certification

Environmental certification (EC) is one of the most prominent and effective ways to transform into green, as it is a way to improve the hotel's public image and to announce the transformation that has taken place. It is also issued by a third party, as it is highly reliable, and the certificate is not obtained without the hotel achieving predetermined standards that reflect

a certain level of environmental performance (Bonilla Priego, Najera and Font, 2011; del Mar Alonso-Almeida and Rodríguez-Antón, 2011). Thus, the benefit of obtaining the EC has multiple dimensions (Bagur-Femenias, Celma and Patau, 2016).

An environmental certificate can be defined as a set of assurances issued by an independent third-party auditor that a facility, product, process, or service has achieved a set of environmental standards previously specified by the party issuing the certificate, where compliance and application of these standards is voluntary and voluntary (Geerts, 2014).

2.3.2. Hotels' interests in obtaining environmental certificates

EC improve the overall image of the hotel, as they are issued by a neutral third party after auditing the operations carried out by the hotel and ensuring that they comply with the standards of the EC, and the adoption of EC standards leads to cost savings as a result of reducing waste and the planned and thoughtful use of various resources (Chan, 2009; Segarra-Oña *et al.*, 2012). This in turn achieves a competitive advantage for the hotel in general and on the economic level in particular (Chan, 2009).

Segarra-Oña *et al.*, 2012 indicated that hotels that had EC (ISO 14001) enjoyed better financial performance than their non-certified counterparts, but that was the subject of criticism. As the study addressed the costs of obtaining these certificates, which is considered as a large initial investment that major hotel chains, hotels and international hotels are able to secure easily compared to smaller hotels owned by families (Geerts, 2014).

The importance of obtaining EC may vary between hotels according to their size and level of star rating. Small hotels do not care about that because of the type of customers and their sensitivity to price increases. In addition, customers of luxury hotels may translate the application of environmental practices into a negative impact on the level of well-being (Peiró-Signes *et al.*, 2014).

Geerts, 2014 also indicated that hotels with a higher star level apply environmental practices more. Whereas, international hotel chains adopt unified management standards (Geerts, 2014).

2.3.3. Image of hotels that have environmental certificates

Adherence to environmental practices leads to an improvement in the financial performance of hotels (Segarra-Oña *et al.*, 2012; Zhang, Joglekar and Verma, 2012). Despite the progress in adopting environmentally friendly practices in hotels, the most effective ways to promote environmental practices are still not directly clear, which has increased the importance of obtaining EC as a way to prove the hotel's commitment to clear and specific standards, and that commitment is evaluated by a third party (Peiró-Signes *et al.*, 2014).

Obtaining EC gives the hotel several basic advantages. By following the standards and requirements of the certificate, this leads to improvements on the internal and operational levels (Chan, 2009), Moreover, improving marketing and the hotel's public image (Zeng *et al.*, 2011). It also improves the financial performance of the hotel as a result of reducing waste and the planned use of resources (Segarra-Oña *et al.*, 2012). Along with the fact that the audit is carried out by a third party, which removes doubts among customers about greenwashing, which also strengthens the image of the hotel and enhances the credibility of the work it does to protect the environment and sustainability (Peiró-Signes *et al.*, 2014). ECs are one of the most important methods that customers resort to in evaluating the environmental performance of hotels and comparing them (Millar, 2009). EC has become more influential and accepted by customers after it was a source of suspicion, and it is one of the positive signs that reflect the level of hotel performance (Peiró-Signes *et al.*, 2014). D'Souza, Taghian and Lamb, 2006 mentioned that customers prefer hotels that include environmental protection when planning their operations over other hotels that plan in a traditional way.

The adoption of green practices in hotels reflects a positive image among customers about the performance of the hotel, which increases customer satisfaction and encourages them to come back to the hotel that applies green practices (Kassinis and Soteriou, 2009).

Also, ECs are not only a source of distinction among hotels, but also can be considered as a means of raising customers' awareness towards the environment and highlighting the efforts made by hotels to protect the environment (Zhang, Joglekar and Verma, 2012). Moreover, it is one of the means of marketing and informing customers that the hotel is carrying out its operations on an eco-friendly basis (Peiró-Signes *et al.*, 2014).

But Nelson *et al.*, 2021 mentioned that the value of environmental certifications is still not understandable by many customers, that is because of the absence of an appropriate environmental culture (Nekmahmud and Fekete-Farkas, 2020). Furthermore, according to (López-Gamero *et al.*, 2020), environmental management in the hotel industry lacks a unified theoretical framework, there are a lot of certifications and sets of standards, but no unified strategy to improve environmental performance (Sari and Suslu, 2018).

2.3.4. Environmental certificates in the hotel industry

There are many environmental certificates and their donors, some of the most recognizable certificates regarding he hotel industries are (earthcheck (EarthCheck., 2023), green globe (Green Globe Ltd, 2024), green key (Green Key, 2023), green seal (green seal, 2024), GSTC (GSTC, 2016), Sustainable Hospitality Alliance (World Sustainable Hospitality Alliance, 2024), travel life (Travelife sustainability certification, 2024), ISO 14000 (ISO, 2023)). Certificates are granted when the facility achieves a set of standards that reflect the level of adoption of green practices, which has made many hotels unable to fully achieve the standards, as some of them entail high costs and investments that hotels are not able to secure easily and do not find feasible. Also, these standards have an international and general nature,

as they are general and cannot be customized to consider the reality and characteristics of all regions and cities.

In case of Hungary, there are many ECs and programs followed by hotels. Few have adopted international certificates. While several local programs and certificates emerged, they were also general, covering all types of industries and buildings. Among the most prominent of these certificates and programs regarding to the hotel industry (Danubius Care program (Danubius Care program, 2024), Hungarian Tourism Agency Qualified Partner (Hungarian Tourism Agency, 2022)).

Some pioneer hotel chains have also developed their own certifications and working plans (Serve360 by Marriott (Marriott International, 2023), Hilton Standards and frameworks (Hilton Hotels, 2024), Mellow Mood Hotels Environmental Certification (Mellow Mood Hotels, 2023), The Planet 21 Program by Accor (Ministry of Foreign Affairs and Trade of Hungary, 2024). Despite this, the number of green hotels in Budapest did not exceed 40%.

The Danubius Care program (Danubius Care program, 2024) presents a set of five groups of practices in order to take an addition step toward sustainability, three of those groups are about the environmental sustainability, titled with energy, water consumption and waste management. The "Serve360" (Marriott International, 2023) presents a working plan that will be achieved by following a set of four main sustainable practices group, this working plan ends with the end of 2025, "Sustain responsible operations" is the title of the environmentally sustainable part of the program, it includes a targeted goals to be achieved, including water, waste, carbon, renewable energy, responsible sourcing, animal welfare, and reducing the environmental footprint.

Accor program "The Planet 21" (Ministry of Foreign Affairs and Trade of Hungary, 2024) present a set of 21 environmental principles divided into seven groups which is: Health, Nature, carbon, innovation, local, employment, dialogue. As for Mellow Mood Hotels it presents its environmental certification (Mellow Mood Hotels, 2023), which consists of 25 environmental practices, including energy saving, waste management, water management, printing elimination, equipment and devices selection, in addition to that, provides information and education for both customers and employees.

The Hilton also presents three frameworks toward environmental sustainability (Hilton Hotels, 2024), the first one called "Roadmap to emissions intensity reduction" which represents a plan till 2030 to become completely dependent on renewable energy (see figure 4.). The second framework is "Building and Operating Sustainable "Green" Hotels" which includes 27 conditions for the future green hotels' construction. The last one is the following practices divided into eight main categories which are: energy, carbon, water, waste, sustainable sourcing, supply chain logistics, animal welfare, and biodiversity. The importance of this frameworks comes from showing that reaching an advance level of environment protection depending on heavy equipment and intensive investments is a long term strategy and that is not possible to be achieved instantly even for big hotels.

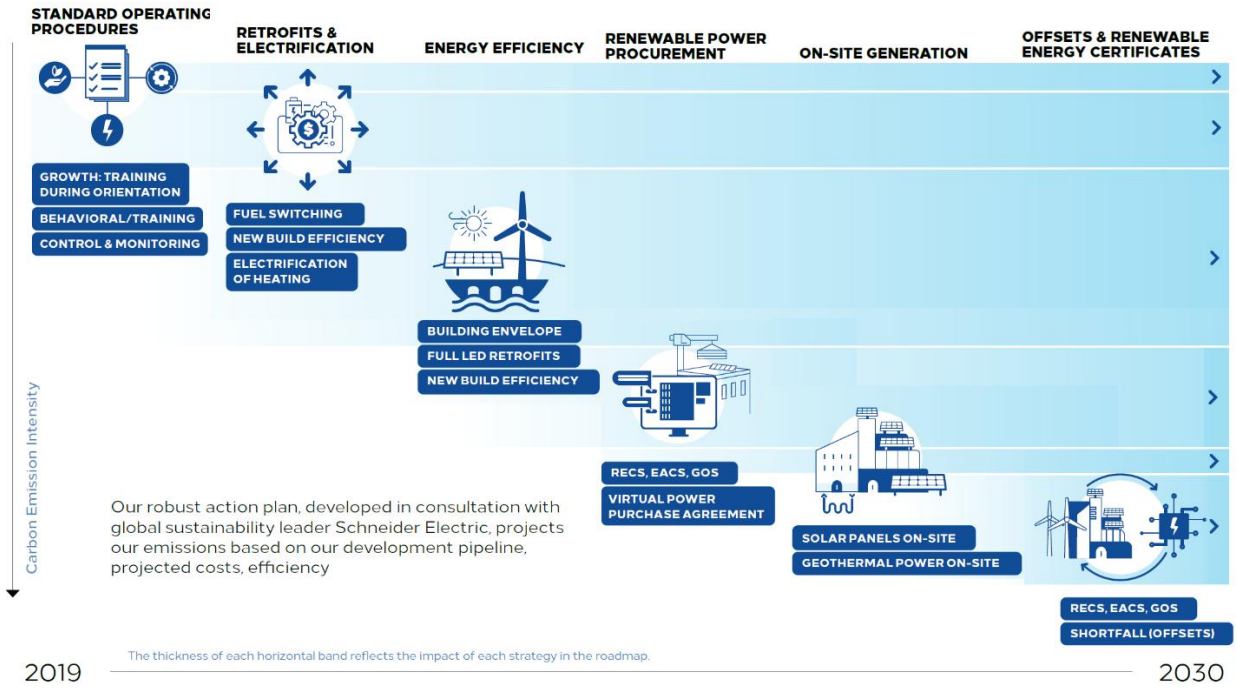

Figure 4. Hilton Roadmap to emissions intensity reduction *(Hilton Hotels, 2024)*.

2.4. Customer satisfaction and loyalty

Customer satisfaction and loyalty is affected by the perceived value they get from the experience of green services compared to the perceived value they already have or with what has been formed in their minds by the hotel's green marketing operations (Cheng *et al.*, 2022). Also, the adoption of green practices in hotels reflects a positive image among customers about the performance of the hotel, which increases customer satisfaction and loyalty to the hotel that applies green practices (Kassinis and Soteriou, 2009).

2.4.1. Customer satisfaction

Eco-hotels achieve a higher level of customer satisfaction, as hotels that have environmental certificates (EC) have achieved higher evaluation results for the hotel services provided and available amenities (Peiró-Signes *et al.*, 2014). The existence of environmental certifications or the adoption of an environmental management system and practices is also important to guide the purchase decisions of customers interested in environmental issues (Millar, 2009).

Hotels with EC show a higher level of services, comfort, cleanliness, and a higher evaluation by customers, which reflects satisfaction with the experience, even with the fact that room rates in green hotels are higher than those in other hotels (Peiró-Signes *et al.*, 2014). This means that the application of green practices and the adoption of EC created value that exceeded the price cost that customers did not regret paying to experience eco-hotels. Thus, hotels that

obtain EC achieve a competitive advantage that traditional hotels do not achieve. Tourists expressed a desire to pay more to contribute to environmental protection in hotels that have EC (Nelson *et al.*, 2021; González-Viralta *et al.*, 2023), and this implicitly reflected tourists' satisfaction with the implementation of environmental activities and obtaining green certificates.

Tourists show their willingness to pay additional amounts when hotels follow eco-friendly operational procedures instead of traditional methods. On the other hand, they expressed a dissatisfaction with traditional hotels that don't apply any eco-friendly practices (Apostolakis, Jaffry and Kourgiantakis, 2020). Tourisits prefer hotels that implement waste management and recycling systems in response to their environmental concerns, as well as hotels that use energy-saving devices such as smart windows, and that they are willing to pay extra for.

Water management policy is also considered as one of the environmental management policies that has been of great importance as tourists are willing to pay more for staying in hotels that implement a water management system, as tourists are aware of the special importance of this resource (Berezan *et al.*, 2013). On the contrary, (Berezan *et al.*, 2013) mentioned that some customers with no environmental background would see that as a low-quality service.

On the other hand, according to Moise, Gil-Saura and Ruiz-Molina, 2018; Heras-Saizarbitoria *et al.*, 2020, the environmental element was not a main reason to choose the hotel for customers who are spending their vacation, and that was the opposite of customers who had a business trip. Also, the nationalities and educational levels played a major role in directing the preferences. Additionally, Galeazzo, Ortiz-de-Mandojana and Delgado-Ceballos, 2021 mentioned that the price of green services and the length of staying in the hotel also affect visitors' preferences.

2.4.2. Customer loyalty

Interest in activities and events related to environmental protection is increasing, as this is highlighted by the preference for buying green products and services (S.W. Chan, 2013). Obtaining an EC enhances customer preferences in choosing hotels that have obtained it (Constantin, Ispas and Candrea, 2013). Environmentally conscious customers also support hotels that adopt eco-friendly practices (Manaktola and Jauhari, 2007) and environmental initiatives are an important attraction for hotels that implement them (Kim, Palakurthi and Hancer, 2012).

The success and continuity of the hotel business is achieved by customer satisfaction, as customers place value on a certain level of service that customers can measure through experience (Chitty, Ward and Chua, 2007). Customer satisfaction with hotels that follow EMS is achieved if the concept of green service is accompanied by providing good quality service even if it is at slightly higher costs, or by providing services at a lower cost within a certain

level. Customers come to green hotels in the belief that the green initiatives undertaken by these hotels will reduce the negative effects of human activities on the environment and that they will be part of that (Berezan *et al.*, 2013; Gao and Mattila, 2014).

Customers expect green hotels to provide services or perform certain environmental procedures, and in the event of their absence, this may reduce customer satisfaction, as the presence of these procedures will greatly affect the positive evaluation of the green practices of the hotel. They may not see that the hotel depends on its energy resources on clean energy sources, so this does not increase customer satisfaction because it is not tangible to them (Robinot and Giannelloni, 2010).

Customer satisfaction with the services provided creates loyalty for them. Satisfaction is a positive factor for achieving customer loyalty, as the customer's experience and their satisfaction with it prompts them to repeat the experience if it meets the level of their expectations. They also spread their experience in their surroundings and provide positive recommendations that drive their knowledge to experience as well (Rauyruen and Miller, 2007). Thus, the relationship between environmental practices and loyalty is positive (Gao and Mattila, 2014).

Some green practices affect the customers' intention to return and recommend others to book and come to the green hotel (Gao and Mattila, 2014). These practices changed the way services are provided and reached directly to customers, such as using devices with low energy consumption or participating in the implementation of the recycling and waste management policy (Gao and Mattila, 2014), While there are some initiatives and practices that only lead to achieving satisfaction, the role of creating a desire to repeat the experience or recommend it to others (Berezan *et al.*, 2013; González-Viralta *et al.*, 2023).

In a study conducted by (Moise, Gil-Saura and Ruiz-Molina, 2018) on several three- and four-star hotels in Valencia, Spain, it was concluded that green practices and environmental measures in hotels increase customer satisfaction and loyalty (Gao and Mattila, 2014). In addition, the application of green practices must be accompanied by a level of service and quality that is not less than the level of services in hotels that do not apply environmental measures.

According to (Gao and Mattila, 2014), the basic service is what customers are looking for, then comes the environmental factor as an added value, if the basic service fails, the green factor becomes meaningless, and this is how consumers' preconceptions influence value and judgment are created. Additionally, (López-Gamero *et al.*, 2020) highlighted that environmental practices alone are not enough as an attraction element.

2.5. The government's role towards the environment

Tax plays a main role in GDP components, it's a one of the main factors which affecting consumption, investment, imports, and exports, and it is a main part in injections and leakages

equilibrium, on the other hand Tourism plays an important role in countries economic situation, and when it comes to a touristic country. This role becomes significant, and as an important player in tourism domain, this can be obvious throw its facilities starting with hotels which occupy an unusual place in this equation, because neither domestic nor international tourists will be attracted with hotels facilities, because it will provide the required services to make the tourists' experience worth remembering.

No one can ignore the impact of taxes on the competitiveness of the tourism sector, but those taxes are an important source of government revenue. It will be used to finance the building and maintenance of tourism infrastructure (Tovmasyan, 2021), ensure the safety and security of tourists, maintain tourist attractions and landmarks, and provide other services essential to a healthy and vibrant tourism sector (Pole and Grizane, 2021).

In the same direction, the European Commission gave some recommendations about lowering the taxes to support tourism businesses, and at the same time, this lowering should be balanced in a carefully studied (Cetin *et al.*, 2017), because the income from taxes will be used to enhance that sector, and that will affect related businesses and industries (European Commission and Directorate-General for Internal Market, 2017; Pole and Grizane, 2021). Also, the price elasticity of demand for tourist services can be high, and in these cases, taxes and other levies may have a disproportionate impact on consumption patterns (Rotaris and Carrozzo, 2019). Furthermore, the tourism sector is characterized by a large number of small and micro-sized businesses that often operate at low profit margins and lack significant capital buffers, meaning small changes in the tax system can mean the difference between viability and bankruptcy (European Commission and Directorate-General for Internal Market, 2017).

Going green is a good way to legally lower all these taxes, through the Sustainable Development Goals SDGs, some goals can save a lot and give the tourism sector a competitive position. Actually, UNWTO believes in the role that tourism can play and it offers leadership and support to the tourism sector in advancing knowledge and tourism policies worldwide, advocating for responsible tourism and promoting tourism as a driving force towards economic growth, inclusive development and environmental sustainability (2018).

Taxes can play a major role in implementing environmental protection. in Hungary, there are several types of taxes, and environmental taxes are one of them, which include: energy taxes, pollution taxes, resource taxes, transport taxes (see Table 2) (KSH, 2021). Those taxes applied to everyone, even hotels and tourism facilities.

Table 2. Environmental taxes in Hungary 2016-2022

Environmental taxes [at current prices, million HUF]						
Year	Energy taxes	Pollution taxes	Resource taxes	Transport taxes	Total	Ratio of environmental taxes to total tax revenue (%)
2016	710,863	84,912	5,450	161,738	962,963	10.45
2017	733,008	87,385	8,771	172,625	1,001,788	10.13
2018	755,777	91,973	7,555	174,179	1,029,484	9.55
2019	815,574	95,482	8,331	151,236	1,070,624	9.10
2020	880,626	89,137	5,776	239,817	1,135,356	9.41
2021	841,728	98,122	7,368	260,122	1,207,341	9.36
2022	760,203	101,492	8,327	344,003	1,214,025	7.27

Source: Hungarian Central Statistical Office, 2025 (KSH, 2021)

The table shows the environmental taxes, and how much they represent from total taxes, and how they decreased every year before COVID-19 hit in 2020 and 2021, and how the decrease happened again in 2022. The main reason could be summarized in two main points, the first one is depending more on environmental solutions like electrical cars, renewable and natural sources energy, and the other reason is becoming more wise with consumption, because, there are consumption fees for resources like energy (electricity, fuel), water, and sewers, and some chemical materials, as you consume more, you the fee will become progressive.

Hungarian Development Bank with the Ministry of Finance presented Subsidized loan for renewable energy using in buildings, the beneficiaries were micro, small and medium-sized enterprises located in Pest county and Budapest, and in the scoop of energy efficiency renovations, Ministry of Finance since 2017 started giving tax credits in case of the taxpayers, made renovation or investments resulting in the reduction of final energy consumption, and this effected for the next five years and this credits could rich 70% of taxes, and the beneficiaries were Enterprises subject to corporate income tax making energy efficiency investments, in short, it was a great opportunity for hotels to follow this path (ÁKK, 2021). After the end of 2022, the Hungarian Development Bank focused more on green housing loans, but the national bank introduced a new green financial product called “Hungary Green Bond” as a new method to support the environment (AKK, 2023).

That may justify how the gross electricity production from solar increased through the last years (349 gigawatt/hours in 2017, 629 in 2018, 1,497 in 2019, and 2,450 in 2020, and 3793 in 2021) which represents 7% of total energy production in Hungary (KSH, 2022).

In another step of the active participation of the Hungarian government in contributing to environmental protection, Parliament approved Law No. 44 of 2020 related to climate protection by implementing large-scale environmental policies to transform the Hungarian economy into a low-carbon and environmentally friendly one. Green bonds and green sukuk are considered one of the main and most effective tools as the first steps in transforming the

country's economy into an environmentally neutral form by 2050 (ÁKK, 2021).

The proceeds of these bonds are used to fund eco-friendly development operations, the most important of which is clean transport projects, which account for 89.5% of the total bond proceeds. Additionally, renewable energy projects, energy efficiency, water and waste management, and agricultural activities (ÁKK, 2022).

The Hungarian government also provides more facilities to protect the environment. Starting in 2016, taxes and fees for electric or hybrid cars have been abolished, likewise the abolition of fees for these cars when using parking on the roads to become free (ÁKK, 2021).

Hungary has the highest value-added tax (VAT) among other EU countries with rate of 27%, but some activities were excluded. As a tax of 4% was applied only to tourism activities carried out by tourists, after it was 18% before 2020 (Attila, 2016). The taxes imposed on commercial accommodation are only 5%, to encourage these businesses and their importance for tourism (National Tax and Customs Administration, 2023).

The Hungarian government has been taking serious steps to protect the environment in the past few years, as the “innovation at work” plan, under the supervision of the Ministry for Innovation and Technology aims to achieve many goals in the field of environmental protection This includes waste management and disposal, as the Waste Management Authority was established in 2020. Not to mention converting energy facilities to become eco-friendly, such as the Matra power plant (Ministry for innovation and technology, 2020). Encouraging the various entities to use clean energy generation methods. The plan also includes improving public transportation from an environmental point of view as well. Besides the government green years, the proceeds of which are attributed to environmental protection activities (Ministry for innovation and technology, 2020).

3. Material and Methodology

This chapter presents details of the research, including research design, approach, and model(s). Additionally, a detailed explanation of the case study, the data collection process, the measurement used, the improved questionnaire steps, and finally, the analyses used and a justification of the use of each analysis method.

3.1. Research Design

This study is considered a quantitative study. In addition to that, it presents a qualitative approach as an exploratory method for future studies (Creswell and Creswell, 2018; Khoo-Lattimore, Mura and Yung, 2019; Yeşiltaş, Gürlek and Kenar, 2022).

The quantitative method of data collecting depends on questionnaires for Budapest green hotels' employees and customers, which were distributed. For the exploratory qualitative methods, it depends on three meetings with hotels' managers, where this method needs to be expanded with additional meetings to fulfil the requirements of a qualitative study.

3.2. Research Approach

As mentioned above, this study will mainly adopt the quantitative methods, with the qualitative method used only as an exploratory tool because it needs more expansion. Figure 5 illustrates the study's research methods in a clear and meaningful way.

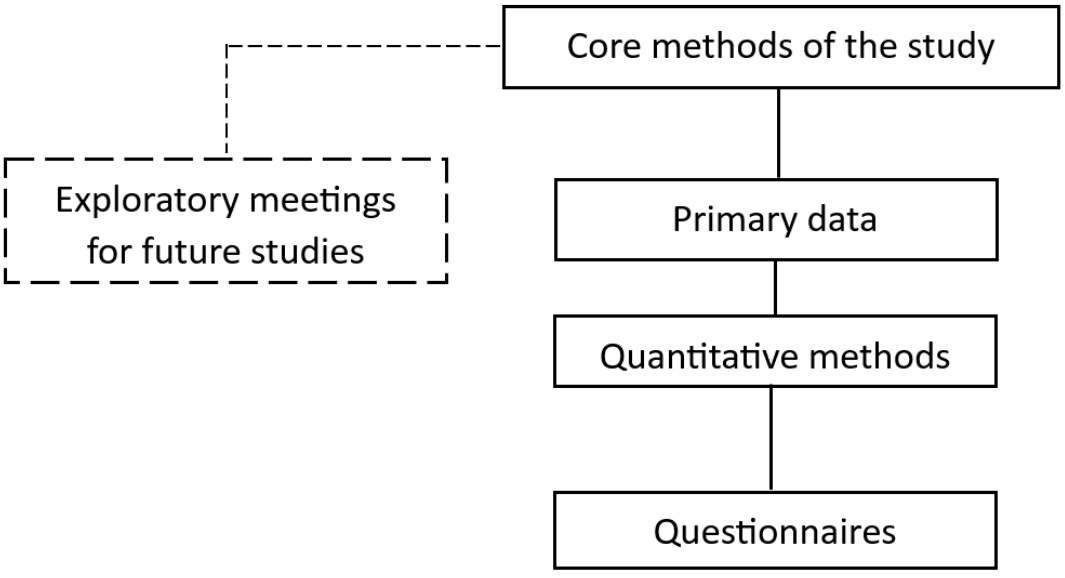

Figure 5. Research Methods

Source: author's own editing, 2025

3.3. Research Model

To analyze the relationships between variables, the research model is illustrated in Figure 2. presents the methods and data used in this study.

In this study, two main segments will be studied i.e., hotels' employees, and hotels' customers. Each of these segments will have its own questions. Some of these questions are united, but others are different. Due to these differences, two research models have been developed based on the study's main conceptual framework (see Figure 2. page 21).

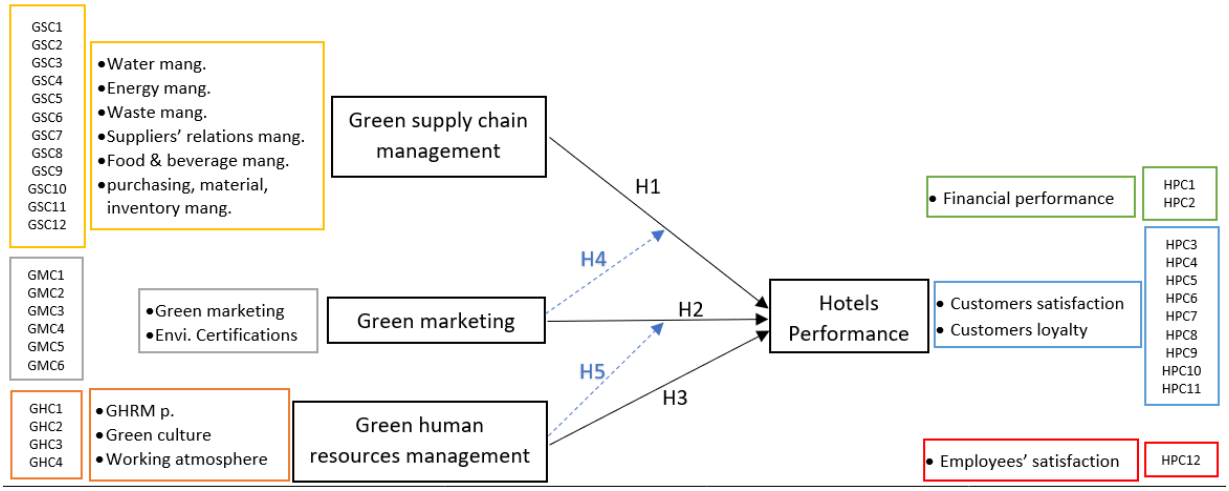

Figure 6. Research model of hotels' customers

Source: Author's own editing, 2024

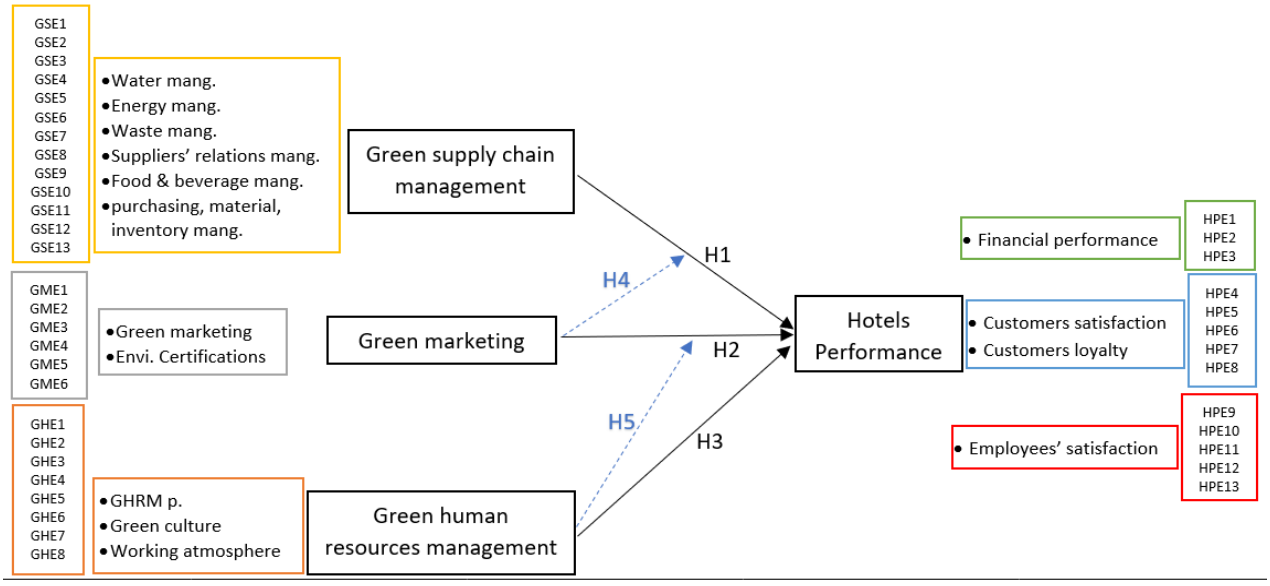

Figure 7. Research model of hotels' employees

Source: Author's own editing, 2024

3.4. Case study

This study investigates the effect of green practices applied by GHRM, GSCM, and green marketing within hotels and the effects on customers, employees, and the financial performance in a sample of hotels in Budapest, the Hungarian capital. Selecting Budapest as the main case study in this research was based on four main reasons. Firstly, although many studies addressed the effect of environmental practices on hotels in developed countries, this topic has not received sufficient attention in countries that witnessed a noticeable level of development and updating (Dumbrovská and Fialová, 2014; Pinke-Sziva *et al.*, 2019; Pérez Garrido *et al.*, 2022) such as Hungary.

Secondly, Budapest has unique tourism features and standards that make it a relevant case study for this type of research. Budapest is one of the world's tourist destinations that has been declared the best European destination of 2019 (Pérez Garrido *et al.*, 2022, no date). Additionally, Budapest was ranked as the second-best value-for-money travel destination globally (no date). In 2019, the Hungarian capital was visited by 5.7 million tourists, which represented approximately 36% of the total number of tourists in Hungary (KSH, 2023). Budapest's accommodation and restaurant sector accounts for around 2% of the GDP (KSH, 2023). Also, Budapest has many hotels with different star categories, including several international luxury hotels such as Marriott Hotel, Four Seasons, Hilton Hotel and others. According to The Hungarian Hotels and Restaurants Association website, at the end of 2024, the classified 5-star hotels in Budapest are (20) hotels, (76) 4-star hotels, and (30) 3-star hotels. This number is changing constantly, new hotels open, such as Al Habtoor Palace, which opened at the beginning of 2025, some hotels upgrade their level, or change their name.

Thirdly, Budapest is distinguished by its similarity to many European cities in terms of organization (Dumbrovská and Fialová, 2014; Pinke-Sziva *et al.*, 2019). It is an old city and has dense urban construction without empty urban spaces in many areas, which reflects on hotels and limits their ability to adopt green practices appropriately. Budapest’s buildings are historical and old in many areas of the city center, there are no natural resources for generating energy in the hotels, and limited urban spaces have limited the possibility of recycling and using resources such as water and food (K, K and K, 2021; Klára Morvay Karakas, 2021; Amicarelli *et al.*, 2022). In addition to that, the Hungarian government is presenting many serious steps to support green transformation, such as environmental taxes and financial facilities to support environmental upgrading.

Finally, the ability to get information and data from the authors was one of these criteria that catalyzed the authors to select Budapest as a main case study for this research.

Meetings with the hotels’ managers were planned to be held with three green hotels’ managers, five-star, four-star and three-star hotels. The reason for those meetings is not just for the future research as an exploratory meeting, but also to enhance questionnaires that were distributed after the meetings on green hotels in Budapest with the same star rating adopted in the meetings.

The researcher identified green hotels in Budapest based on three recognized main sources, starting with "The Hungarian Hotels and Restaurants Association" website, which classifies hotels based on star level, and on the location too. Then the results were expanded using "Booking.com & TripAdvisor" databases. The results retrieved 235 hotels in Budapest, including 5- 4- 3-star hotels (by the end of June 2023). These hotels are considered to provide typical hotel services. Some hotels provide flats or apartments which have been excluded.

With a deeper search into those hotels' websites searching for any environmental certifications or green practices. Not to mention searching into global environmental certification for those hotels. The result concludes that 94 of the 235 hotels are green hotels (Alreahi, Bujdosó, Lakner, *et al.*, 2023), table 3. shows the distribution and numbers of those hotels that were divided based on star rating.

Table 3. Green and non-green hotels in Budapest

The star level of the hotel	three stars	four stars	five stars
have environmental certification- practices	25	57	12
percentage of green hotels of the same level	27%	45%	67%
total number of hotels	91	126	18

Source: Bokkong.com & TripAdvisor, by the end of June/2023.

In short, questionnaires have been distributed on each of the 94 green hotels in Budapest.

3.5. Data Collection

The meetings with the hotels' managers were represented in three meetings. The first meeting is with one of the five-star hotel managers. The second one is with four-star hotel managers, and the third one with three-star hotel green hotel managers. All three of the selected hotels are green and located in Budapest. Meetings questions consist of a set of questions that were used to enhance the questionnaires. More details were revealed by the managers based on their opinions and points of view based on their experiences. Some questions were formed in "how & why" questions (Morales-Contreras *et al.*, 2019). One important result of these meetings was to build a first step for future research, with more expansion through meetings to fulfill the level of qualitative study. Besides that, more questions were extracted from the GSTC (Global Sustainable Tourism Council) (GSTC, 2016) Hotel industry criteria to meet environmental practices. GSTC provides Performance indicators for hotels and corresponding SDGs. Its criteria and indicators have been designed to provide guidance to measure the compliance of hotels with the SDGs. Moreover, its criteria are designed to be modified to meet local conditions and needs. The GSTC is already recognized by 376 members, including many types of organizations i.e., Certification Body, Consultancy, Association, Academic or Educational Organization, Destination Management Organization (DMO), Non-Profit Organization, Government Agency. Some of these

members are globally well-known and recognized e.g.:

- Booking websites: Agoda, Booking.com, EcoHotels.com.
- Environmental certifying body: Earth-Check, Eco-stars Ecological Hotel Rating, Global Destination Sustainability Movement, Go Green Sustainability, Green Destinations, Green Globe, Green Growth 2050, Green Key, Sustainable Hospitality Alliance, Travel Life.
- Leading hotels: Accor, Hilton, IHG, Radisson Hotel Group.

The five-star hotel manager the researcher interviewed was Kempinski Hotel, with two managers, i.e., Mrs Ildikó Dudás (Public Relations Director) and Mr István Schmél (Director of Engineering, and responsible for sustainable updating). The four-star hotel was with the general manager of Mercure Budapest City Center - Accor Hotels, who is Mr. Róbert Kovács. Finally, the last meeting was with Mr Zoltán Tóth, the deputy general manager of the IBIS Style Airport Hotel.

Organising those meetings weren't too easy due to the lack of free time for those managers, also each manager got a draft of the questionnaires to review and give feedback and notes to enhance them. During each interview a set of detailed questions was presented (please see Appendix 1) as an answer for the research questions based on those top managers experiences and points of view.

Generally, each meeting took 45 minutes, and it was recorded, with direct hand notes. Moreover, each manager gave their feedback via email. This procedure took about 5 months from the beginning of September 2023 when the researcher started to contact with Budapest hotels, till the end of December when the last feedback was received via email.

The managers' feedback was remarkable and helped to enhance the content and the questionnaires too much.

Regarding the quantitative methods, two questionnaires were distributed online and as hard copies targeting Budapest Green Hotels' employees and customers to reflect their experiences and opinions about green hotels and certain green practices.

In the beginning, the online distribution via email started in January 2024. The responses from the hotels were too poor; only five hotels gave their feedback within two months (end of February). Another way had to be adopted to distribute questionnaires, a printed cover letter with QR-codes that enabled online access to each email. These were distributed during a personal visit to the targeted hotels. During each visit, an email was sent to each hotel that included all details in soft copy, and the researcher made sure that this email was received by the hotel from the office or the reception, and also, he explained the idea and the questionnaire's aims and the purpose of his study. Those visits started from the first of March 2024 till the end of May 2024.

In total, two hotels were closed due to maintenance, two hotels did not have any employees, so only emails were sent, three hotels rejected any chance to collaborate and distribute the questionnaires. For email feedback, some hotels apologized due to their policy, which is against distributing questionnaires, but they filled it out personally and distributed it among their close circles. Some hotels were very interested in helping and liked the idea of the research. In general, it was not possible to count how many hotels participated in this study, because one of the conditions is to keep the participants anonymous.

Moreover, questionnaires consisted of two parts, i.e., demographic questions and hypotheses-related questions. A seven-point Likert scale was used to collect the responses.

Questions formulated based on used items and questions in older literature regarding green practices in the hotel industry, some studies use five-point Likert questions, but on the other hand, many other studies also use seven-point Likert (Molina-Azorín *et al.*, 2015; Mercade Mele, Molina Gomez and Garay, 2019; Cheng *et al.*, 2022).

The data collection period ended by the end of August 2024. During this period, two reminders were sent to all hotels, to remind them of the questionnaires and to re-distribute them as much as possible. As a result, a total of 545 customers filled the questionnaire, including Hungarian and international tourists, and 222 employees filled it.

3.6. Measurement methodology

This section presents the main (latent) variables and the sub-variables for each segment and management.

3.6.1. Variables:

The aim of this study is to analyze the effects of three main green managements on hotels' performance. These three managements are: green supply chain management, green marketing, and green human resources management. Each of these managements is considered a first step and a basic foundation for any organization, especially hotels, to become green. Additionally, the study will focus on these managements' eco-friendly practices, which are supposed to require low costs to be applied compared with some high-cost eco-friendly practices and methods. The three main managements mentioned will be the study's main independent variables, and hotel performance will be the main dependent variable.

Starting with the first independent variable, i.e., green supply chain management, many studies have tried to study GSCM in hotels from different aspects and points of view. In the same direction, other studies studied the sub-management of GSCM in hotels, e.g., waste management, food management, water management, procurement management, etc.

Each study used different indicators for measurement depending on the study's target and the relations that needed to be approved or tested. In this study, the researcher did a systematic literature review in order to understand the full current image of GSCM in the hotel industry (Alreahi, Bujdosó, Dávid, et al., 2023). Then, a set of measurement items has been

reformed based on measurements of previous studies. Costly practices measurements have been eliminated because they are not the subjects that this paper is arguing about. The study reformed measurement items, or in different words, "latent variables," and focused on six main sub-management areas in GSCM, i.e., water management, energy management, waste management, suppliers' relations management, food& beverage management, and purchasing materials inventory management (See tables 4,5.).

Regarding green human resources management, another systematic review has been done to study and recognize the full image of GHRM in the hotel industry, and what would be the most important and effective practices this management performs in the hotel (Alreahi *et al.*, 2022). Measurement items "latent variables" for GHRM will focus on three main points in this management i.e., GHRM practices, green culture, working atmosphere (See tables 4,5.).

Regarding green marketing, another study has been made (Alreahi, Bujdosó, Lakner, *et al.*, 2023) to study the difference between green and non-green hotels regarding customers evaluations. The study indicates that customers' information should be charged with environmental issues and be educated about green practices to understand what type of services they will get and why to be able to evaluate in a proper way. Measurement items "latent variables" for green marketing will be focusing on green marketing and environmental certifications (See tables 4,5.).

Hotel performance will be the dependent variable, measurement items "latent variables" will be focusing on three main aspects i.e., cost, or financial performance (environmental taxes, reducing and saving, financial facilities), customers (satisfaction, loyalty), and employees' attitude and satisfaction.

GHRM will also play the role as a moderating variable in the relation between green marketing & hotel performance. Green marketing will be studied as a moderator for the relation between GSCM and hotel performance.

Tables 4 and 5. will address measurement items "latent variables" which this study will use, and which previous studies have based on and used to formulate these measurements. Moreover, Appendix (2) will present these indicators and related questions for each of them. It is important to mention that some measures are the same for each targeted segment, employees (table 4), customers (table 5). Furthermore, each sub-variable represents one or more environmental standards or indicators of the Global Sustainable Tourism Council (GSTC) industry criteria for hotels (GSTC, 2016).

Table 4. Study variables and measurement items "sub-variables" for green hotels' employees

Variables	Latent variables		Ref. (sources)
GSCM	Water mang	GSE1	(Nisar *et al.*, 2021) (Molina-Azorín *et al.*, 2015) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Tirado *et al.*, 2019) (Raid Al-Aomar and Hussain, 2017) (Vasilakakis and Sdrali, 2022)
		GSE2	(Nisar *et al.*, 2021) (Molina-Azorín *et al.*, 2015) (Hussain, Al-Aomar and Melhem, 2019) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Tirado

			et al., 2019) (Raid Al-Aomar and Hussain, 2017) (Vasilakakis and Sdrali, 2022) (Ahmed *et al.*, 2021)
	Energy mang	GSE3	(Nisar *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Molina-Azorín *et al.*, 2015) (Hussain, Al-Aomar and Melhem, 2019) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Salama and Abdelsalam, 2021) (Raid Al-Aomar and Hussain, 2017) (Vasilakakis and Sdrali, 2022)
	Waste mang	GSE4	(Nisar *et al.*, 2021) (Molina-Azorín *et al.*, 2015) (Hussain, Al-Aomar and Melhem, 2019) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Raid Al-Aomar and Hussain, 2017) (Ahmed *et al.*, 2021)
		GSE5	(Nisar *et al.*, 2021) (Molina-Azorín *et al.*, 2015) (Tarigan, Tanuwijaya and Siagian, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Raid Al-Aomar and Hussain, 2017)
	Suppliers' relations mang	GSE6	(Nisar *et al.*, 2021) (Yeşiltaş, Gürlek and Kenar, 2022) (Úbeda-García *et al.*, 2021) (Chan, 2014) (Vasilakakis and Sdrali, 2022) (Raid Al-Aomar and Hussain, 2017)
		GSE7	(Nisar *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Babu, Kaur and Rajendran, 2018) (Haldorai, Kim and Garcia, 2022) (Cigir, 2017) (Chan, 2014)
		GSE8	(Nisar *et al.*, 2021) (Amicarelli *et al.*, 2022) (Klára Morvay Karakas, 2021)
	Food & beverage mang	GSE9	(K, K and K, 2021) (Amicarelli *et al.*, 2022) (Mak *et al.*, 2021) (Salama and Abdelsalam, 2021) (Klára Morvay Karakas, 2021)
		GSE10	(Mak *et al.*, 2021) (Amicarelli *et al.*, 2022) (Salama and Abdelsalam, 2021) (Klára Morvay Karakas, 2021)
	Purchasing, material, inventory mang.	GSE11	(Nisar *et al.*, 2021) (Bagur-Femenias, Celma and Patau, 2016) ('The Influence of Information Integration on Hotel Performance through the Green Operation and Strategic Purchasing', 2019) (Hussain, Al-Aomar and Melhem, 2019) (Yeşiltaş, Gürlek and Kenar, 2022) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Raid Al-Aomar and Hussain, 2017) (Ahmed *et al.*, 2021)
		GSE12	(Sobaih, Hasanein and Elshaer, 2020) (Modica *et al.*, 2020) (Vasilakakis and Sdrali, 2022) (Klára Morvay Karakas, 2021)
		GSE13	(Nisar *et al.*, 2021) (Bagur-Femenias, Celma and Patau, 2016) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Vasilakakis and Sdrali, 2022) (Ahmed *et al.*, 2021)
G. Marketing	G. marketing practices	GME1	(Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Vasilakakis and Sdrali, 2022)
		GME2	(Molina-Azorín *et al.*, 2015) (López-Gamero *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021)
		GME3	(López-Gamero *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021)
		GME4	(Leroux and Pupion, 2018) (Haldorai, Kim and Garcia, 2022) (López-Gamero *et al.*, 2020) (Modica *et al.*, 2020) (Salama and Abdelsalam, 2021)
	Envi. Certifications	GME5	(Hussain, Al-Aomar and Melhem, 2019) (Chan, 2014) (Raid Al-Aomar and Hussain, 2017)
		GME6	(Helm, Eggert and Garnefeld, 2010) (Chan, 2014) (Raid Al-Aomar and Hussain, 2017)
GHRM	GHRM practices	GHE1	(Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Tuan, 2022)
		GHE2	(Yeşiltaş, Gürlek and Kenar, 2022) (Cop, Alola and Alola, 2020) (Tuan, 2022) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Tučková and Chiappetta Jabbour, 2019) (Piya *et al.*, 2022) (Kim *et al.*, 2019) (Ahmed *et al.*, 2021)
		ghE3	(Tuan, 2022) (Xu *et al.*, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Yeşiltaş, Gürlek and Kenar, 2022)
	Green culture	GHE4	(Nisar *et al.*, 2021) (Molina-Azorín *et al.*, 2015) (Pham, Tučková and Chiappetta Jabbour, 2019) (López-Gamero *et al.*, 2020) (Pham, Vo-Thanh, *et al.*, 2020) (Yeşiltaş, Gürlek and Kenar, 2022) (Cop, Alola and Alola, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Modica *et al.*, 2020) (Piya *et al.*, 2022)
		GHE5	(Haldorai, Kim and Garcia, 2022) (Espino-Rodríguez and Taha, 2022)

		GHE6	(Molina-Azorín *et al.*, 2015) (Nisar *et al.*, 2021) (Cop, Alola and Alola, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Pham, Vo-Thanh, *et al.*, 2020) (López-Gamero *et al.*, 2020) (Yeşiltaş, Gürlek and Kenar, 2022) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Kim *et al.*, 2019) (Bagur-Femenias, Celma and Patau, 2016)
	Working atmosphere	GHE7	(Molina-Azorín *et al.*, 2015) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Munawar *et al.*, 2022a) (Pham *et al.*, 2018) (López-Gamero *et al.*, 2020) (Tarigan, Tanuwijaya and Siagian, 2020)
		GHE8	(Leroux and Pupion, 2018) (Molina-Azorín *et al.*, 2015) (Úbeda-García *et al.*, 2021) (Munawar *et al.*, 2022a) (Cop, Alola and Alola, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Siagian, Tarigan and Andreani, 2019) (Modica *et al.*, 2020)
Hotels Performance	Cost- Environmental tax	HPE1	(Zhang, Song and Huang, 2009) (Ageron, Gunasekaran and Spalanzani, 2012) (Kerdpitak, 2019)
	Cost- reducing & saving	HPE2	(Úbeda-García *et al.*, 2021) (Haldorai, Kim and Garcia, 2022) (López-Gamero *et al.*, 2020) (Modica *et al.*, 2020) (Bagur-Femenias, Celma and Patau, 2016)
	Cost- Financial facilities	HPE3	(Bagur-Femenias, Celma and Patau, 2016)
	Customers satisfaction	HPE4	(Nisar *et al.*, 2021) (Leroux and Pupion, 2018) (Molina-Azorín *et al.*, 2015) (Bagur-Femenias, Celma and Patau, 2016) (Hussain, Al-Aomar and Melhem, 2019) (Mbasera *et al.*, 2018) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Pham *et al.*, 2018)
		HPE5	(Molina-Azorín *et al.*, 2015) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Astawa *et al.*, 2021)
	Customers loyalty	HPE6	(Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Mercade Mele, Molina Gomez and Garay, 2019)
		HPE7	(Chan, 2013)
		HPE8	(Pham, Chiappetta Jabbour, *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (López-Gamero *et al.*, 2020)
	Employee's satisfaction	HPE9	(Bagur-Femenias, Celma and Patau, 2016) (Cop, Alola and Alola, 2020) (Xu *et al.*, 2020) (Úbeda-García *et al.*, 2021)
		HPE10	(Cop, Alola and Alola, 2020) (Tuan, 2022) (Xu *et al.*, 2020) (Elshaer *et al.*, 2021) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Vo-Thanh, *et al.*, 2020) (Bagur-Femenias, Celma and Patau, 2016) (Ahmed *et al.*, 2021)
		HPE11	(Cop, Alola and Alola, 2020) (Tuan, 2022) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Vo-Thanh, *et al.*, 2020) (Ahmed *et al.*, 2021)
		HPE12	(Cop, Alola and Alola, 2020) (Tuan, 2022) (Xu *et al.*, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Vo-Thanh, *et al.*, 2020)
		HPE13	(Cop, Alola and Alola, 2020) (Tuan, 2022) (Xu *et al.*, 2020) (Pham, Vo-Thanh, *et al.*, 2020)

Source: Author's own editing based on related previous researches, 2024. *mang: management.

Table 5. Study variables and measurement items "sub-variables" for green hotels' customers

Variables	Latent variables		Ref. (sources)
GSCM	Water mang	GSC1	(Nisar *et al.*, 2021) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Molina-Azorín *et al.*, 2015) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Tirado *et al.*, 2019) (Raid Al-Aomar and Hussain, 2017) (Vasilakakis and Sdrali, 2022)
	Energy mang	GSC2	(Nisar *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Hussain, Al-Aomar and Melhem, 2019) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Molina-Azorín *et al.*, 2015) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Salama and Abdelsalam, 2021) (Raid Al-Aomar and Hussain, 2017) (Vasilakakis and Sdrali, 2022)

	Waste mang	GSC3	(Nisar *et al.*, 2021) (Hussain, Al-Aomar and Melhem, 2019) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Molina-Azorín *et al.*, 2015) (Raid Al-Aomar and Hussain, 2017) (Ahmed *et al.*, 2021)
		GSC4	(Nisar *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Molina-Azorín *et al.*, 2015) (Apostolakis, Jaffry and Kourgiantakis, 2020) (Raid Al-Aomar and Hussain, 2017)
	Suppliers' relations mang	GSC5	(Nisar *et al.*, 2021) (Yeşiltaş, Gürlek and Kenar, 2022) (Úbeda-García *et al.*, 2021) (Chan, 2014) (Vasilakakis and Sdrali, 2022) (Raid Al-Aomar and Hussain, 2017)
		GSC6	(Nisar *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Babu, Kaur and Rajendran, 2018) (Haldorai, Kim and Garcia, 2022) (Cigir, 2017) (Chan, 2014)
	Food & beverage mang	GSC7	(K, K and K, 2021) (Amicarelli *et al.*, 2022) (Mak *et al.*, 2021) (Salama and Abdelsalam, 2021) (Klára Morvay Karakas, 2021)
		GSC8	(Salama and Abdelsalam, 2021) (Amicarelli *et al.*, 2022) (Mak *et al.*, 2021) (Klára Morvay Karakas, 2021)
	Purchasing, material, inventory mang.	GSC9	(Bagur-Femenias, Celma and Patau, 2016) (Nisar *et al.*, 2021) (Siagian, Tarigan and Andreani, 2019) (Hussain, Al-Aomar and Melhem, 2019) (Yeşiltaş, Gürlek and Kenar, 2022) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Raid Al-Aomar and Hussain, 2017) (Ahmed *et al.*, 2021)
		GSC10	(Sobaih, Hasanein and Elshaer, 2020) (Modica *et al.*, 2020) (Vasilakakis and Sdrali, 2022) (Klára Morvay Karakas, 2021)
		GSC11	(Bagur-Femenias, Celma and Patau, 2016) (Nisar *et al.*, 2021) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Vasilakakis and Sdrali, 2022) (Ahmed *et al.*, 2021)
G. Marketing	G. marketing practices	GMC1	(Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Vasilakakis and Sdrali, 2022)
		GMC2	(López-Gamero *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021) (Molina-Azorín *et al.*, 2015)
		GMC3	(López-Gamero *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Úbeda-García *et al.*, 2021)
		GMC4	(Leroux and Pupion, 2018) (Salama and Abdelsalam, 2021) (Nekmahmud and Fekete-Farkas, 2020) (Haldorai, Kim and Garcia, 2022) (López-Gamero *et al.*, 2020) (Modica *et al.*, 2020)
	Envi. Certifications	GMC5	(Hussain, Al-Aomar and Melhem, 2019) (Chan, 2014) (Raid Al-Aomar and Hussain, 2017)
		GMC6	(Helm, Eggert and Garnefeld, 2010) (Chan, 2014) (Raid Al-Aomar and Hussain, 2017)
GHRM	GHRM	GHC1	(Pham, Chiappetta Jabbour, *et al.*, 2020) (Pham, Tučková and Chiappetta Jabbour, 2019) (Sobaih, Hasanein and Elshaer, 2020) (Haldorai, Kim and Garcia, 2022) (Tuan, 2022)
	Green culture	GHC2	(Nisar *et al.*, 2021) (Pham, Tučková and Chiappetta Jabbour, 2019) (López-Gamero *et al.*, 2020) (Pham, Vo-Thanh, *et al.*, 2020) (Yeşiltaş, Gürlek and Kenar, 2022) (Cop, Alola and Alola, 2020) (Sobaih, Hasanein and Elshaer, 2020) (Modica *et al.*, 2020) (Piya *et al.*, 2022) (Molina-Azorín *et al.*, 2015)
		GHC3	(Haldorai, Kim and Garcia, 2022) (Espino-Rodríguez and Taha, 2022)
	Working atmosphere	GHC4	(Haldorai, Kim and Garcia, 2022) (Yeşiltaş, Gürlek and Kenar, 2022) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Siagian, Tarigan and Andreani, 2019) (Modica *et al.*, 2020)
Hotels Performance	Cost- Environmental tax Cost- Financial facilities	HPC1	(Zhang, Song and Huang, 2009) (Ageron, Gunasekaran and Spalanzani, 2012) (Kerdpitak, 2019)
		HPC2	(Bagur-Femenias, Celma and Patau, 2016)
	Customers satisfaction	HPC3	(Leroux and Pupion, 2018) (Molina-Azorín *et al.*, 2015) (Mbasera *et al.*, 2018) (Haldorai, Kim and Garcia, 2022) (Sobaih, Hasanein and Elshaer, 2020) (López-Gamero *et al.*, 2020) (Nisar *et al.*, 2021) (Pham *et al.*, 2018) (Úbeda-García *et al.*, 2021) (Hussain, Al-Aomar and Melhem, 2019)
		HPC4	(Haldorai, Kim and Garcia, 2022) (López-Gamero *et al.*, 2020) (Modica *et al.*, 2020)
		HPC5	(Nekmahmud and Fekete-Farkas, 2020) (Chan, 2013) (Helm, Eggert and Garnefeld, 2010)
		HPC6	(Mbasera *et al.*, 2018) (Mercade Mele, Molina Gomez and Garay, 2019;

		Nekmahmud and Fekete-Farkas, 2020) (Chan, 2013) (Haldorai, Kim and Garcia, 2022) (Astawa *et al.*, 2021) (Tarigan, Tanuwijaya and Siagian, 2020) (Hussain, Al-Aomar and Melhem, 2019) (Modica *et al.*, 2020)
	HPC7	(Molina-Azorín *et al.*, 2015) (Haldorai, Kim and Garcia, 2022) (Pham, Chiappetta Jabbour, *et al.*, 2020) (Astawa *et al.*, 2021)
Customers loyalty	HPC8	(Mercade Mele, Molina Gomez and Garay, 2019; Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020)
	HPC9	(Mercade Mele, Molina Gomez and Garay, 2019) (Nekmahmud and Fekete-Farkas, 2020) (López-Gamero *et al.*, 2020) (Modica *et al.*, 2020)
	HPC10	(Mercade Mele, Molina Gomez and Garay, 2019) (Nekmahmud and Fekete-Farkas, 2020) (Chan, 2013) (Modica *et al.*, 2020)
	HPC11	(Pham, Chiappetta Jabbour, *et al.*, 2020) (Haldorai, Kim and Garcia, 2022) (Modica *et al.*, 2020) (Espino-Rodríguez and Taha, 2022)
Employees' satisfaction	HPC12	(Bagur-Femenias, Celma and Patau, 2016) (Cop, Alola and Alola, 2020) (Xu *et al.*, 2020) (Úbeda-García *et al.*, 2021)

Source: Author's own editing, based on related previous researches, 2024. *mang: management.

The following table (6) presents the environmental standards this study focused on, those standards were formed based on previous studies which mentioned in tables (4-5), in addition to GSTC standards. Those standards are represented by the sub-variables and divided into three main groups; each group represents one management this study focused on.

Table 6. Study's environmental standards

Latent variables			related questions
Group	Cus.	Emp.	
Water management		GSE1	The hotel applies responsible water consumption methods.
	GSC1		
		GSE2	The hotel re-use water in different areas.
Energy management		GSE3	The hotel applies responsible energy consumption methods.
	GSC2		
Waste management	GSC3	GSE4	The hotel reduces solid waste.
	GSC4		The hotel applies waste management policy.
		GSE5	
Suppliers' relations management	GSC5	GSE6	The hotel uses eco-friendly products from eco-friendly providers.
	GSC6	GSE7	The collaborate with suppliers to protect the environment (supplier integration).
		GSE8	The hotel depending on local suppliers.
	GSC7	GSE9	The hotel applies food management polices to reduce food waste.
		GSE14	The hotel is depending on certified eco-friendly providers.
	GSC8		The hotel applies food waste management.
		GSE10	
purchasing, material, inventory management	GSC9	GSE11	The hotel uses ecological products.
	GSC10	GSE12	Environmental products and Materials of a good quality.
	GSC11	GSE13	The hotel reduces the use of harmful effect materials on the environment.

	GSC12		The hotel gets the required materials and products from certified environmentally friendly service providers.
Envi. Certifications	GMC1	GME1	The hotel follows and applies clear environmental protocols and green practices.
	GMC5	GME5	The hotel focuses on environmental certifications more.
	GMC6	GME6	The hotel focuses on Environmental practices and performance more.
G. marketing practices	GMC2	GME2	The hotel announces for update on environmental practices and environmental certifications.
	GMC3	GME3	The hotel created formal or informal communication channels regarding environmental protection.
	GMC4	GME4	inform the guest about environmental practices, and the importance of protecting the environment.
GHRM practices	GHC1	GHE1	The hotel has an environmental reward system.
		GHE2	The hotel motivates tis employees towards environmental protection.
		GHE3	The hotel provides the required environmental training.
Green culture	GHC2	GHE4	Employees must be able to do their job in a professional style.
	GHC3	GHE5	Employees are on a highly importance to achieve the hotels environmental targets.
		GHE6	Employees are enthusiastic to participate in environmental protection and be rewarded.
Working atmosphere		GHE7	There is an internal integration and active communication in the hotel.
		GHE8	The hotel provides the required support to the employees.
	GHC4		Employees are qualified regarding environmental practices.

Source: Author's own editing, based on previous studies and GSTC criteria, 2025

3.6.2. Demographic measurements

Demographic information will be very helpful to understand and justify questionnaires answers. Age, level of education, income, experience, gender, etc. All those demographic factors may affect and play a main role in creating and orienting people's points of view and opinions (see Table 6.).

This study will use a set of demographic measurements based on previous studies regarding green practices and the hotel industry. Some measurements will be the same for all targeted segments in this study, but some measurements will be used for one segment or two only. In total, there will be two demographic measurements groups, the first one will be for Green Hotel's managers and employees, and the second one will be for Green Hotel's customers.

Starting with the shared demographic measurements, gender is one of the most recognized and used demographic items in any questionnaire; this study will not be based on binary gender (male or female); there will be a third option, which is "other". Age is also a

general demographic item. The dividing of age scales varies in number and range. This study will use a 10-year range for each age group (Chan, 2014; Modica *et al.*, 2020; Astawa *et al.*, 2021; Khan *et al.*, 2021; Munawar *et al.*, 2022a).

The level of education is also an important factor, especially when it comes to a subject such as environmental protection. A number of studies used educational level items, but they also varied from one study to another. This study will use a detailed educational measurement which will includes six levels (Modica *et al.*, 2020; Nekmahmud and Fekete-Farkas, 2020; Patwary *et al.*, 2022).

For customers' demographics factors, marital status is also used by many studies. It affects their decision and points of view. seven options will be included in this section in order to present all logical options (Apostolakis, Jaffry and Kourgiantakis, 2020; Modica *et al.*, 2020; Patwary *et al.*, 2022). Customers' nationality is also an important demographic factor (Chan, 2014; Cetin *et al.*, 2017; Apostolakis, Jaffry and Kourgiantakis, 2020; Modica *et al.*, 2020). The study will focus only on domestic or international cases.

Working status would also play an effective role in customers' preferences. Eight choices will be presented to cover all options (Apostolakis, Jaffry and Kourgiantakis, 2020; Modica *et al.*, 2020; Nekmahmud and Fekete-Farkas, 2020; Patwary *et al.*, 2022). Financial situation or income is also an important factor that affects customers' preferences (Chan, 2014; Patwary *et al.*, 2022) five income levels will be used in this study. Moreover, hotel experience or visiting frequency is very important too (Chan, 2014; Cetin *et al.*, 2017) four options will be presented for this factor.

Regarding employees questions' factors, job title or level is considered as one of the most important factors (Chan, 2014; Astawa *et al.*, 2021) five levels will be presented in this study. Additionally, the nature of employment or working contract should be taken into consideration (Munawar *et al.*, 2022a) whether it is contractual, length of service, full-time employee, part-time, training, or student work. Moreover, working experience in the hotel industry must be presented (Fongtanakit and Suteerachai, 2019; Astawa *et al.*, 2021; Munawar *et al.*, 2022a) six levels of experience will be presented.

Table 7 . Demographic measurements factors

Factor	levels/ options		
For employees & customers			
Gender	Male	Female	Other
Age	18-25	26-35	36-45
	46-55	56-65	x>65
level of education	High school or below	undergraduate	BA/BS
	MA/MS	postgraduate	PhD
For employees			
Job title/ level	supervisor	employee	
Nature of employment or working contract	full time	part time	Contractual
	Length of Services	student	training
Working experience	x<1	1-3	4-9
	10-15	16-20	x>20
For customers			
Marital status	Single	married	in relationship
	divorced	widow	
Nationality	Hungarian	international	
Working status	full-time employee	free lancer	business owner
	part-time employee	retired	student
	household	doesn't work	
Income/ monthly ($)	<1000$	1000-2500	2500-5000
	5000-10000	x>10000	
Hotel experience/ visiting	First time visiting	2-5	6-10
	>10		

Source: Author's own editing, based on related previous research, 2024

In addition to the demographic measurements' factors, respondents were asked about the hotel's star level, whether a three, four, or five-star hotel.

3.7. Questionnaires enhancing and upgrading

To improve the questionnaires, a pilot test was applied to test the customers' questionnaire, and an online distribution through social media was adopted to target customers with previous experience staying in hotels. The data collection for this pilot questionnaire started in June 2023 and lasted till August 2023. A total of 82 participants' answers were collected. Those answers got a 0.936, as Cronbach's Alpha results are a test of reliability, which refers to a high level of reliability. Furthermore, the customers' questionnaire questions were also presented to the hotel managers before the meetings so that they could review the questionnaire and give their feedback about the clarity of the questions.

For the employees' questionnaires, it was not possible to distribute them online and get useful and sufficient answers. Only five employees replied to the online questionnaire. To solve this issue, employees' questionnaires were presented to the hotel managers before the meetings, and asked them to highlight, provide, and correct any questions in order to make it better and enhance it. The fact is that managers with their working experience may see things from different points of view, where academic knowledge is not always enough to make things in the best shape.

The managers' feedback was remarkable, they modified some questions, rephrased some, added or divided some. On the other hand, by them reviewing those questionnaires, it was the most practical solution as an alternative to a pilot questionnaire for the employees' segment.

Due to this update, some items were added, one additional sub- variable for the customers (GSCM- Suppliers' relations management) with code GSC12, and three for the employees (GSCM- Suppliers' relations management) with code GSE14, (hotel performance-customers loyalty) with code HPE14, and (hotel performance - employees satisfaction) with code HPE15. Due to that, a small update happened to the extended research models. The next research models are the extended research models after the modification. In addition, the updated questionnaires' questions are available in Appendix 3. Moreover, the evaluation of the financial performance of the hotel has been excluded from the customers' results, even the data has been collected but all managers questioned the ability of customers to evaluate the financial performance and to have enough information about environmental taxes regarding hotel industry, based on that, HPC1, HPC2, HPC3 were excluded from customers during the analysis.

Research Models after modification:

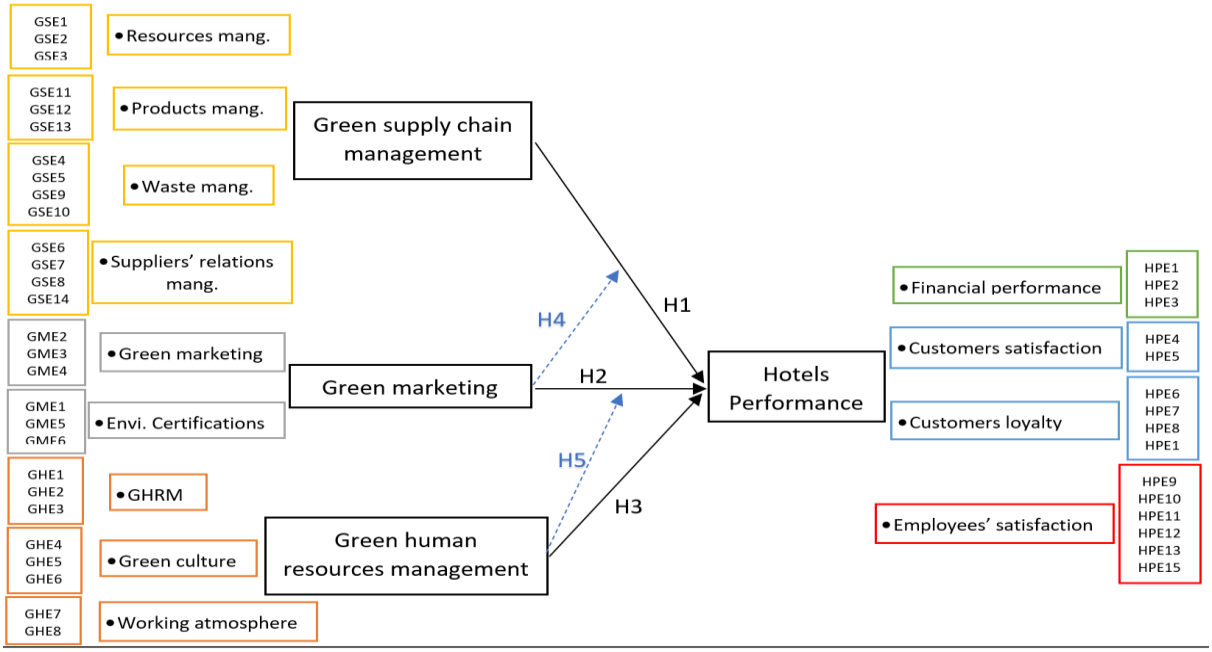

Figure 8. Research model of hotels' employees after modification

Source: Author's own editing, 2024

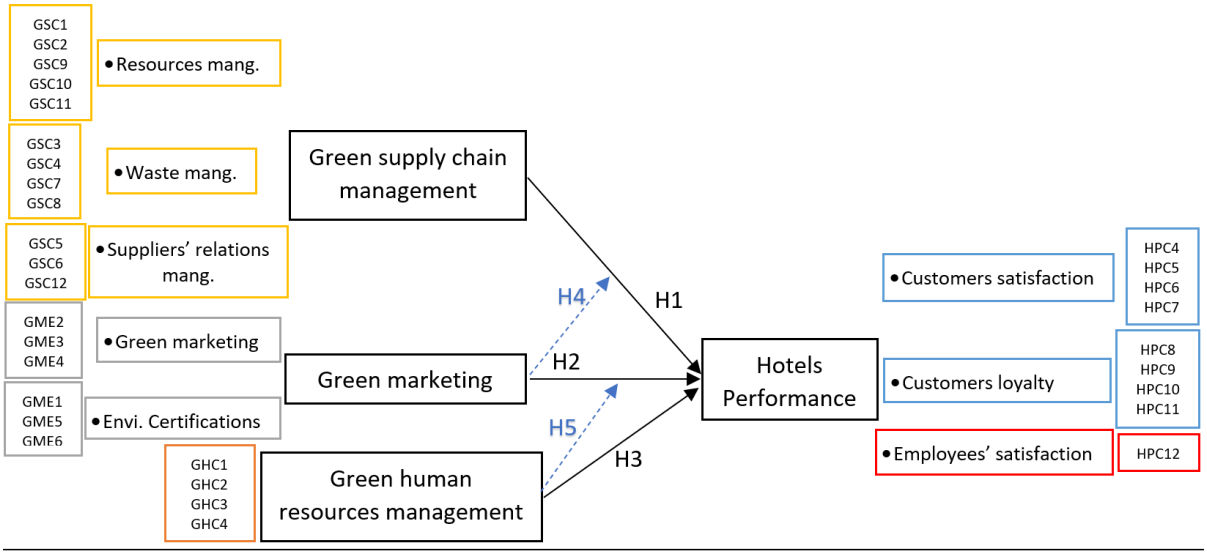

Figure 9. Research model of hotels' customers after modification

Source: Author's own editing, 2024

3.8. Data analysis

This study depended on two statistical analysis methods, the first of which is the multiple regression analysis, which is convenient for analyzing the relations between the main independent variables and the dependent variable. Moreover, showing the effects of the moderator variable in a clear way. This analysis not only tests the type of relations between variables, but it also evaluates the strength of the model used and estimates the direction of the relations. SPSS program was used to conduct this analysis. Also, the SPSS has been used to do demographic analysis.

On the other hand, the Structural equations model is a good statistical method for the study model when more detailed analyses are applied, where this study did not stop by analyzing the main variable only, it also divided the main variables, whether independent or dependent, into more sub-variables to show a more detailed relationship between those variables. The (SEM) using SmartPLS software has been used widely to analyze such relations, especially to analyze the GHRM domain (Ahmed *et al.*, 2021; Munawar *et al.*, 2022a; Nisar *et al.*, 2022) and GSCM (Astawa *et al.*, 2021; Khan *et al.*, 2021; Mak *et al.*, 2021). In the SEM analysis, the nature of variables and indicators was reflected in relations.

The modified research's models show the latent variables and the sub-variables. Appendix 4 summarizes this study variables. The main variables were divided to add more value to the study, and that also was based on the managers' recommendation, because even though each variable represents management, each sub-variable may act differently. One of the study targets is to show more detailed results. For this analysis, SmartPLS 3 software was employed as an effective method to discover the relations between the study variables in a more detailed way. Unfortunately, the latest version of the program (V.4) is still under development (Beta version).

4. Results and discussions

This chapter presents two main parts of the dissertation, which are the results part and the discussion part. Each part in its turn contains sub-parts.

4.1 Results

The results section starts with the data preparation section, which presents important information about the data that is related. In addition to that, the results of the analyses are presented in three main sub-chapters, starting with the descriptive statistical results, followed by the results of regression analysis, and then the path analysis.

4.1.1 Data preparation

The answers were extracted on 16 of September 2024 from Google Forms as a CSV file. This data sheet was divided into three sheets: customers, employees, and managers. Then all answers were organized and unified in one language which is English. Each question was shortened with a code which in its place will make the analysis easier. There was no missing data, because the design of the questionnaires would not let you move to the next question unless you answered the previous one. The only field or answers which required manual organizing was the question related to the country/nationality of the customer, some of customers wrote their country name and some of them the nationality. All answers have been modified to mention the country of the participants. Moreover, some participants mentioned their country name in their own language, such as Austria (Österreich) and Germany (Deutschland).

The data validity has been tested using SPSS software. Only four answers from the customer segment were duplicated. The duplication has been eliminated, and 541 customers' answers were valid for the analysis.

4.1.2. Descriptive statistics

The descriptive statistics reflected were conducted in two segments with a total of 541 participants of customers after the cleaning, and 222 participants of employees. The descriptive statistics were calculated using SPSS software as well. Some of the results will be shown in the same figure or table for both segments which are the gender, the ages, the level of education, and the stars-level of the visited hotel or the place of work, in order to prevent the duplication, while the rest of demographic characteristics will be presented separately.

4.1.2.1. Similar descriptive statistics between customers and employees

The final sample of participants of employees was (N=541). However, the answers of four participants have been eliminated due to duplication. The following tables and charts provide detailed information on the respondents' characteristics based on their answers. Regarding the participants of employees, it was (N=222), no answers have been eliminated.

Gender:

Regarding customers, three genders were recorded based on the answers i.e. Female (N=264), Male (N=272), and I prefer not to say (N=5). Where no answers were recorded to (other) gender. For employees, three genders were recorded based on the answers i.e. Female (N=128), Male (N=93). Where only one preferred not to say. No answers were recorded to (other) gender see table 8.

Table 8. Gender distribution of both customers and employees' segments

	Customer		Employee	
Gender	No	Percent	No	Percent
Female	264	48.8	128	57.7
Male	272	50.3	93	41.9
I prefer not to say	5	0.9	1	0.5
Total	541	100.0	222	100.0

Source: extracted from SPSS, 2024

Age:

The age of customers ranged from 18 years old to +65 years old. Most participants were 26-35 and 36-45 years old. The age of employees ranged from 18 to 55 years old. None of the employees was older than 55, but of course, some of the employees may reach 65 years old, which is the retirement age in Hungary. Most employees were between 26-35, see table 9.

Table 9. The distribution of age among customers and employees.

	Customer		Employees	
Age	No	Percent	No	Percent
18 - 25	83	15.3	81	36.5
26 - 35	208	38.4	118	53.2
36 - 45	145	26.8	22	9.9
46 - 55	72	13.3	1	0.5
56 - 65	18	3.3	0	0
More than 65	15	2.8	-	-
Total	541	100.0	222	100.0

Source: extracted from SPSS, 2024

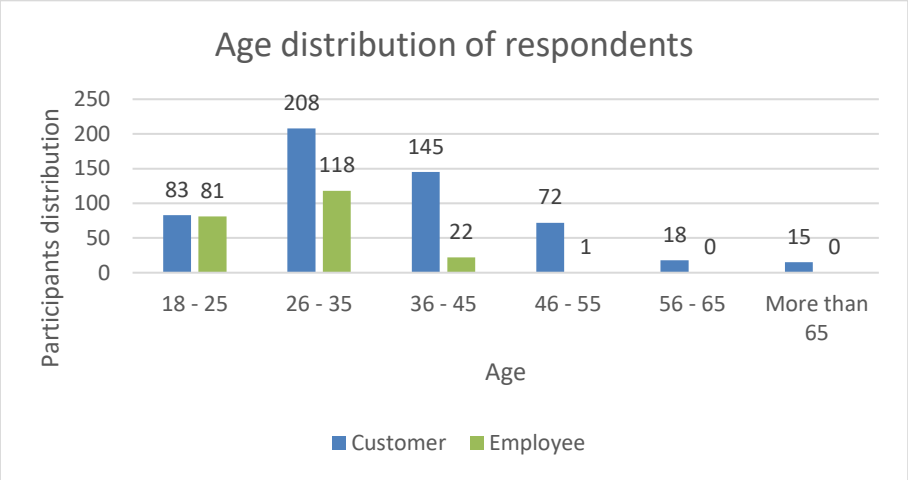

Figure 10. The distribution of ages among customers and employees.

Source: Author's own editing based on the extracted data from SPSS, 2024

Education level:

The educational levels also ranged from high school education to PhD level. 88.7% of participants had a Ba/Bs degree or above. (N=21) had a high school education or below, (N=40) were undergraduate, (N=150) participants had a BA/BS level, (N=202) had a master's, (N=52) were postgraduate, and (N=76) participants obtained a PhD level. Regarding employees, the educational levels also ranged from high school education to Postgraduate level. None of the employees obtained a PhD. (N=35) had a high school education or below, (N=15) were undergraduate, (N=116) participants had a BA/BS level, (N=45) had master's degrees, (N=11) were postgraduate, see table 10.

Table 10. Education level distribution of respondents customers

	Customer		Employee	
Education	No	Percent	No	Percent
High school or below	21	3.9	35	15.8
Undergraduate	40	7.4	15	6.8
BA/BS	150	27.7	116	52.3
MA/MS	202	37.3	45	20.3
Postgraduate	52	9.6	11	5.0
PhD	76	14.0	0	-
Total	541	100.0	222	100.0

Source: extracted from SPSS, 2024

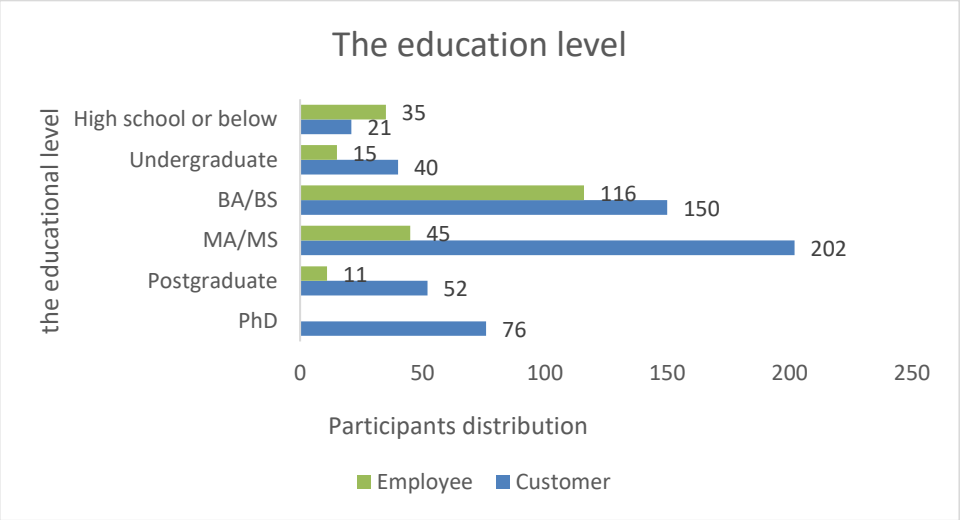

Figure 11. Education levels distribution of respondents – customers and employees.

Source: Author's own editing based on the extracted data from SPSS, 2024

Visited hotels based on star rating:

The study targeted customers from three, four, and five-star hotels. (N=297) Visitors who visited three-star hotels when they filled out the questionnaire (N=134) were visiting five-star hotels, while those who visited four-star hotels (N=110) were visiting five-star hotels. Regarding employees, (N=102) employees were working in three-star hotels, (N=82) were working in four-star hotels, and (N=38) were working in five-star hotels, see table 11.

Table 11. The respondents' distribution of customers and employees is based on hotels' star rate

	Customers		Employees	
Star rate	No	Percent	No	Percent
3 stars	297	55	102	46
4 stars	110	20.5	82	37
5 stars	134	24.5	38	17
Total	541	100.0	222	100.0

Source: extracted from SPSS, 2024

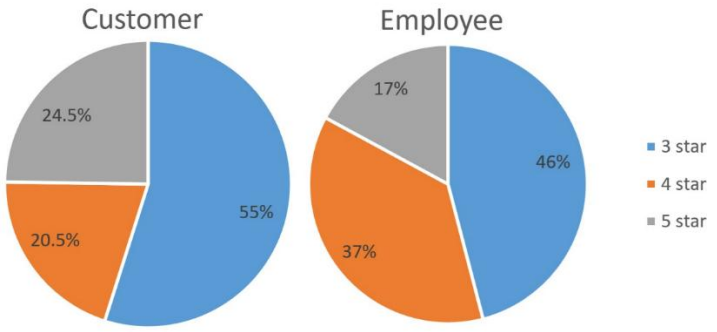

Figure 12. Distribution based on hotels' star rate of customers and employees.

Source: Author's own editing, based on the extracted data from SPSS, 2024

There are 57 four-star green hotels in Budapest compared to 25 three-star green hotels, and 12 five-star green hotels. The visitors' answers show how the management of hotels collaborate to distribute the questionnaire, and how visitors had the will to fill it.

4.1.2.2. Customers' descriptive statistics.

This sub-chapter presents the remaining descriptive statistics results regarding customers' segment, starting with Marital status, staying in the hotel, working types, income, visit times, nationality, and the language used to fill the questionnaire.

Marital status:

The marital status of customers differed by the recorded answers, which present all the different statuses. The married participants were (N=224), the singles were (N=144), (N=126) were in a relationship, (N=23) were divorced, and (N=15) were widows. Only (N=9) participants preferred not to mention their marital status, see table 12.

Table 12. The distribution of respondents customers based on marital status

Marital status	Customer	Percent
Single	144	26.6
In a relation	126	23.3
Married	224	41.4
Divorced	23	4.3
Widow	15	2.8
I prefer not to say	9	1.7
Total	541	100.0

Source: extracted from SPSS, 2024

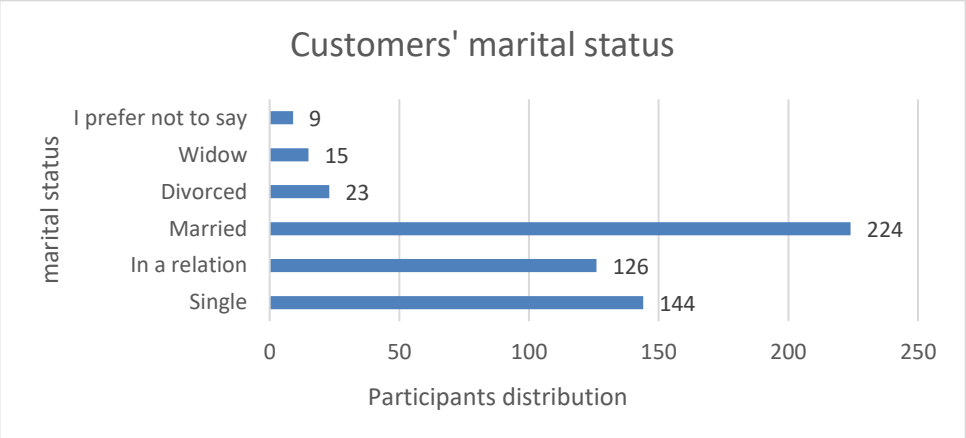

Figure 13. The distribution of respondents - customers based on marital status

Source: Author's own editing based on extracted data from SPSS, 2024

Staying in the hotel:

Most of the visitors stayed with a partner (N=205), and staying with friends (N=163) was the second selected answer, followed by staying with the family (N=114), and only (N=59) participants visited alone, see table 13.

Table 13. Staying in the hotel distribution of respondents customers

You are staying in the hotel:	Customer	Percent
Alone	59	10.9
With friends	163	30.1
With your family	114	21.1
With your partner	205	37.9
Total	541	100.0

Source: extracted from SPSS, 2024

Participants' working types:

Participants with full-time employment were the highest working type (N=247), followed by students (N=97), freelancers (N=95), part-time employment (N=60), business owners (N=20), and the lowest number of working types were the retired (N=10), household (N=9), seasonal working (N=2). Only (N=1) answer was not working, see table 14.

Table 14. The distribution of respondents' customer working status

Working	Customer	Percent
Business owner	20	3.7
Doesn't work	1	0.2
Freelancer	95	17.6
Full-time employee	247	45.7
Household	9	1.7
Part-time employee	60	11.1
Retired	10	1.8
Seasonal	2	0.4
Student	97	17.9
Total	541	100.0

Source: extracted from SPSS, 2024

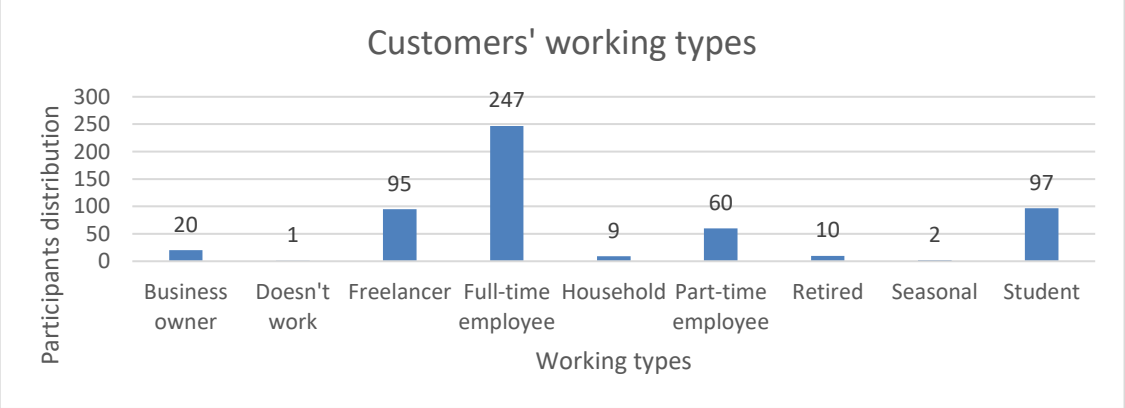

Figure 14. Hotels' managerial levels' research model after the modifications

Source: Author's own editing based on extracted data from SPSS, 2024

Customers' monthly income (in Euro):

Most of the participants had an income of 1000-2500 (N=219), (N=155) earned 2500-500, (N=129) earned less than 1000, (N=23) participants earned 5000-10000, and only (N=5) participants earned more than 10000. However, (N=10) preferred not to say, see table 15.

Table 15. Income levels' distribution of the respondents customers

Income	Customer	Percent
1000-2500	219	40.5
2500-5000	155	28.7
5000-10000	23	4.3
I prefer not to say	10	1.8
Less than 1000	129	23.8
More than 10000	5	0.9
Total	541	100.0

Source: extracted from SPSS, 2024

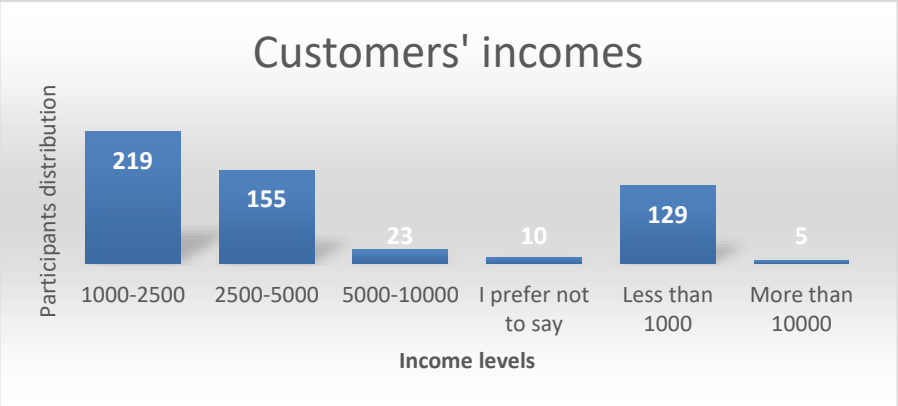

Figure 15. The distribution of income levels for customers

Source: Author's own editing based on the extracted data from SPSS, 2024

Customers' visiting times:

(N=208) participants had visited hotels 2-5 times, (N=197) participants were visiting a hotel for the first time, (N=82) participants had more than 10 visits, and (N=54) had 6-10 visits, see table 16.

Table 16. Respondents – customers distribution based on visiting times

Experience/s in hotels, visiting times:	Customer	Percent
2 to 5	208	38.4
6 to 10	54	10.0
First time visiting	197	36.4
More than 10 times	82	15.2
Total	541	100.0

Source: extracted from SPSS, 2024

Customers' Nationalities/ countries:

The participants' nationalities were divided into 71 different nationalities and countries. (N=86) was Hungarian. The visitors were from all countries and all continents; see Table 17.

Table 17. Distribution of respondents – customers based on the origin country

Country	No	%	Country	No	%	Country	No	%	Country	No	%
Afghanistan	1	0.2	Germany	14	2.6	Lao	6	1.1	Russia	7	1.3
Angola	3	0.6	Ghanaian	1	0.2	Lebanon	6	1.1	Serbia	5	0.9
Argentina	6	1.1	Giorgia	1	0.2	Malaysia	9	1.7	Slovakia	11	2.0
Austria	11	2.0	Greece	6	1.1	Mexico	4	0.7	South Afri	5	0.9
Australia	4	0.7	Hungary	86	15.9	Moldova	2	0.4	South Kore	8	1.5
Azerbaijan	1	0.2	Iceland	1	0.2	Mongolia	1	0.2	Spain	9	1.7
Bangladesh	10	1.8	India	8	1.5	Montenegro	3	0.6	Sudan	2	0.4
Belgium	6	1.1	Indonesia	12	2.2	Morocco	5	0.9	Sweden	6	1.1
Brazil	6	1.1	Iran	9	1.7	Mozambique	2	0.4	Switzerland	5	0.9
Bulgaria	2	0.4	Iraq	1	0.2	Netherland	9	1.7	Syria	10	1.8
Canada	2	0.4	Irland	3	0.6	Nigeria	13	2.4	Tanzania	1	0.2
China	8	1.5	Israel	15	2.8	Norway	6	1.1	Thailand	1	0.2
Croatia	6	1.1	Italy	8	1.5	Oman	1	0.2	Tunisia	11	2.0
Czech	10	1.8	Japan	3	0.6	Pakistan	2	0.4	Turkey	7	1.3
Denmark	4	0.7	Jordan	10	1.8	Palestine	6	1.1	UAE	2	0.4
Ecuador	4	0.7	Katar	1	0.2	Philippine	3	0.6	Uganda	3	0.6
Egypt	3	0.6	Kazakhstan	6	1.1	Poland	8	1.5	UK	6	1.1
Ethiopia	7	1.3	Kenya	8	1.5	Portugal	8	1.5	Ukraine	12	2.2
Finland	5	0.9	Kosovo	13	2.4	Qatar	4	0.7	USA	3	0.6
France	8	1.5	KSA	4	0.7	Romania	6	1.1	Vietnam	3	0.6
Georgia	3	0.6				Total				541	100.0

Source: Author's own editing depending on questionnaire answers, 2024

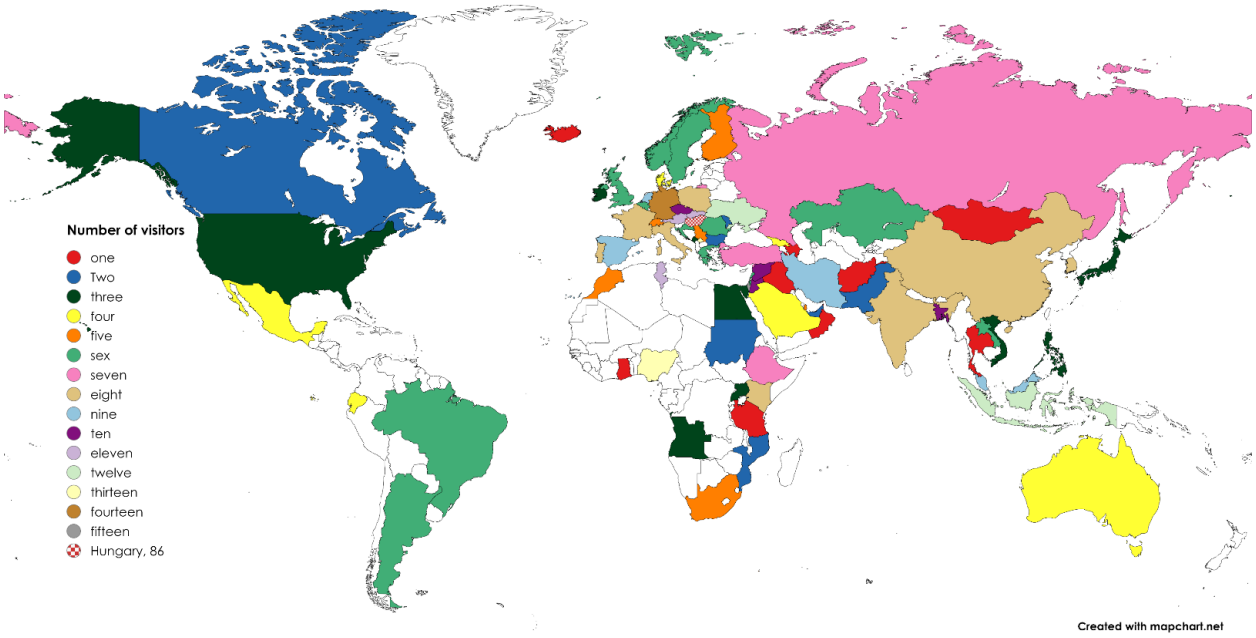

Figure 16. Distribution of respondents – customers based on the origin country

Source: Author's own editing, based on the extracted data from SPSS, 2024

Questionnaire filling language:

(N=455) participants filled the questionnaire in English, and (N=86) did it in Hungarian. This result is similar to the nationality of participants where (N=86) participants were Hungarians, and the rest were from other countries, see table 18.

Table 18. Distribution of respondents – customers based on used languages

Where from	Customer	Percent
English	455	84.1
Hungarian	86	15.9
Total	541	100.0

Source: extracted from SPSS, 2024

4.1.2.3. Employees' descriptive statistics

This sub-chapter presents the remained descriptive statistics results regarding employees' segment, starting with the job title, working types, working experiences, and the language used to fill the questionnaire.

Job title:

The job title of participate employees had two levels i.e. employee, and supervisor. (N=184) participants were employees, and (N=38) were supervisors, see table 19.

Table 19. Distribution of respondents – employees based on their positions

Job title	Employee	Percent
Employee	184	82.9
supervisor	38	17.1
Total	222	100.0

Source: extracted from SPSS, 2024

Working types/ contracts:

Employees with a full-time contract were the majority (N=183), followed by students (N=18), part-time contract (N=9), contractual contract (N=8). Only (N=4) participants were in training period, see table 20.

Table 20. Distribution of respondents – employees based on contract / working types

Working contract	Employee	Percent
Contractual	8	3.6
Full-time	183	82.4
Part-time	9	4.1
Student	18	8.1
Training	4	1.8
Total	222	100.0

Source: extracted from SPSS, 2024

Employees' working experience:

(N=85) of employees were fresh employees and had 1-3 years work experience, (N=83) had 4-9 years work experience, (N=38) had less than one year of work experience, (N=15) had 10-15 years work experience, and only one employee had more than 20 years' experience, see table 21.

Table 21. Distribution of respondents employees based on working experience period

Experience	Employee	Percent
1 to 3 years	85	38.3
10 to 15 years	15	6.8
4 to 9 years	83	37.4
less than 1 y	38	17.1
more than 20 y	1	0.5
Total	222	100.0

Source: extracted from SPSS, 2024

Questionnaire filling language:

(N=207) participants filled the questionnaire in Hungarian, were only (N=15) did it in English. This result shows that most employees are Hungarian, but it is not 100% accurate, because some Hungarians may have filled the questionnaire in English and vice versa, some international employees may have filled it in Hungarian, see table 22.

Table 22. Distribution of respondents – employees based on used languages

Language	Frequency	Percent
English	15	6.8
Magyar	207	93.2
Total	222	100.0

Source: extracted from SPSS, 2024

4.1.3. Regression analysis results

This sub-chapter presents the regression analysis for both segments: customers and employees, beginning with the reliability test for each segment and then proceeding to the detailed analysis.

4.1.3.1. Reliability test

The reliability was tested using the SPSS program, and the Cronbach alpha was used to test reliability. Four reliability tests have been conducted for each segment, as there are four main groups representing the primary variables. The following table shows the reliability test results. On the other hand, all of the Cronbach alpha values exceeded 0.7, meaning that the internal consistency of each set of questions is acceptable and good, see table (23). Additionally, the assumptions of the multiple regression analysis were fulfilled for both segments' related analysis.

Table 23. Main variables' Cronbach alpha reliability test

Segment	Group name	Reliability Statistics		Sample size
		Cronbach's Alpha	N of Items	
Customers	GSC	0.877	12	541
	GMC	0.77	6	541
	GHC	0.722	4	541
	HPC	0.788	9	541
Employees	GSE	0.831	14	222
	GME	0.741	6	222
	GHE	0.822	8	222
	HPE	0.872	15	222

Source: extracted from SPSS, 2024

4.1.3.2. Regression analysis results/customers

Part one: the regression analysis without moderate relations.

The following tables show the analysis results including the model summary (table 24), correlation matrix (table 25), ANOVA test (table 26), and the Coefficients (table 27).

Model summary:

Table 24. Customers' model summary

Model	R	R^2	Adjusted R^2	RMSE
1	0.553	0.306	0.302	0.54

Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a moderate correlation between the study's variables, also, a moderate fit and predictive ability

of the model.

Correlation matrix:

Table 25. Customers' model correlation matrix

Variable	mean	SD	GSCM	GM	GHRM	HP
GSCM	5.03	0.81	1.000			
GM	5.27	0.83	-.127**	1.000		
GHRM	5.49	0.79	-.069*	.445**	1.000	
HP	5.67	0.65	-.146**	.485**	.443**	1.000

SD: standard deviation, **. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The correlation matrix shows the correlation between variables as couples. GSCM has negative correlations with the other variables, whereas other correlations are positive. Additionally, none of the correlation values exceeded 0.7, which reflects the absence of multicollinearity, which is a good sign. Moreover, all correlations are significant.

ANOVA table:

Table 26. Customers' model ANOVA table

Model		SS	df	MS	F	P
1	Regression	68.98	3	22.995	78.844	<0.001**
	Residual	156.617	537	0.292		
	Total	225.602	540			

SS: sum of squares, MS: mean square. **. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

Coefficients:

Table 27. Customers' model coefficients table

	B	SE	β	t	P
(Constant)	3.305	0.248		13.343	<0.001**
GSCM	-0.066	0.029	-0.082	-2.262	0.024*
GM	0.27	0.031	0.349	8.643	<0.001**
GHRM	0.231	0.033	0.281	7.008	<0.001**

B: Unstandardized Coefficients, SE: Std. Error, β: Standardized Coefficients. **. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The purpose of this analysis was to examine the relationship between the dependent variable (Hotel performance HP) and three independent variables: green supply chain management GSCM, green human resource management GHRM, and green marketing GM. This analysis aims to identify which factors and how they contribute significantly to hotel performance. The multiple regression analysis is used, and results show that 30.6% of the hotel performance can be accounted for by the three predictors, collectively, F (3,537) =78.8), P<0.001.

Looking at the unique individual contribution of the predictors, results show that GM (β= 0.349, t=8.643, p<0.001), and GHRM (β= 0.281, t=7.008, p<0.001) positively predict HP, but the GSCM (β= -0.082, t=-2.26, p=0.024) negatively predicts HP.

Part two: the regression analysis with the first moderate relations (GHRM moderates the relation between GM and HP).

A moderation analysis was adjusted, using centered variables. The PROCESS SPSS macro was used to analyze the data (Hayes, 2022). Altogether, 30.77% of the variability in HP was predicted by GM, $R^2 = 0.307$, $F(3, 537) = 79.57$, $p < .01$, with an increase of 0.17% in variance explained in the dependent variable. Table (28) displays the unstandardized regression coefficients. The interaction effect was statistically significant (p = 0.01), indicating that GHRM moderates the effect of GM on HP. Table (29) presents the conditional effects of the focal predictor GHRM at three values of the moderator GM. And (table 30) presents the Model Summary of the moderator GHRM.

The F-square effect size is 0.11, which is considered as a small effect size of moderation respectively.

The changes in R^2 equation (F^2) = (R^2 included – R^2 excluded) / (1 – R^2 included)

Summary of moderate (GHRM) regression analysis:

Table 28. Summary of moderated (GHRM) regression analysis table

	B	SE	t	P	95% CI	
					Low	Up
Constant	5.4781	1.0063	5.4438	< .001**	3.5014	7.4549
GM*GHRM	.0904	.0351	2.5765	.01**	.0215	.1594

**. P<0.01, *P<0.05. Source: extracted from SPSS, 2024

The table shows the positive effect of the moderator variable on the independent variable, and also on the model totally. Those effects are statistically significant.

Conditional effects of the focal predictor at values of the moderator (GHRM):

Table 29. Conditional effects of the focal predictor at the moderator (GHRM) table values

GHRM	Effect	SE	t	P	95% CI	
					Low	Up
-1 SD	.2114	.0404	5.2274	**< .001	.132	.2908
Mean	.2792	.0311	8.9863	**< .001	.2182	.3403
+1 SD	.3471	.0410	8.4627	**< .001	.2665	.4276

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows different effect values of the moderator with increasing the used units, noticing that with additional units the effect increased in the positive direction, and with a statistically

significant effect.

Model Summary of the moderator GHRM:

Table 30. Model Summary of the moderator GHRM

R	R^2	MSE	F	Df1	Df2	p
.5547	.3077	.2908	79.5682	3	537	**<0.00

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a moderate correlation between the study's variables. Also, a moderate fits and predictive ability of the model. The values of (R and R^2) have increased slightly with the moderator variable effects.

Part three: the regression analysis with the first moderate relations (GM moderates the relation between GSCM and HP).

A moderation analysis was performed, using centered variables. The PROCESS SPSS macro was used to analyze the data (Hayes, 2022). Altogether, 24.68% of the variability in HP was predicted by GSCM, $R^2 = 0.468$, F (3, 537) = 58.65, $p < .01$, with a decrease of 5.92% in variance explained in the dependent variable. Table (31) displays the unstandardized regression coefficients. The interaction effect could be considered statistically significant ($p = 0.0576$), indicating that GM moderates the effect of GSCM on HP. Table 32 presents the conditional effects of the focal predictor GM at three values of the moderator GSCM, noticing that the effect is negative and it increases in the negative direction as the value increases, which represents a negative relation. Table 33 presents the Model Summary of the moderator GM.

The F-square effect size is - 0.1, which is considered as a small effect size of moderation respectively, but the effect is negative.

The changes in R^2 equation (F^2) = (R^2 included – R^2 excluded) / (1 – R^2 included)

Summary of moderated (GM) regression analysis:

Table 31. Summary of the moderated (GM) regression analysis table

	B	SE	t	P	95% CI	
					Low	Up
Constant	2.2743	1.0304	2.2071	*0.0277	0.2501	4.5248
GSCM*GM	-0.0659	0.0367	-1.795	*0.0576	-0.138	0.0062

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the negative effect of the moderator variable on the independent variable, but it is positive on the model totally. Those effects are statistically significant. The negative effect is almost non-existent.

Conditional effects of the focal predictor at values of the moderator (GM):

Table 32. Conditional effects of the focal predictor at values of the moderator (GM) table

GM	Effect	SE	t	P	95% CI	
					Low	Up
-1 SD	-0.0027	0.0475	-0.0569	0.9546	-0.0959	0.0905
Mean	-0.0686	0.0302	-2.2728	*0.0234	-0.1279	-0.0093
+1 SD	-0.1125	0.0389	-2.8918	**0.004	-0.1890	-0.0361

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows different effect values of the moderator with increasing the used unites, noticing that with additional unites the effect increased in the negative direction, and with a statistically significant effect.

Model Summary of the moderator GM

Table 33. Model Summary of the moderator GM table

R	R^2	MSE	F	Df1	Df2	p
.4968	.2468	.3164	58.6445	3	537	**<0.00

**. P<0.01, *P<0.05 Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a low-to-moderate correlation between the study's variables. And also, a low to moderate fit and predictive ability of the model. The values of (R and R^2) have decreased slightly with the moderator variable effect.

4.1.3.3. Regression analysis results/employees

Part one: the regression analysis without moderate relations.

The following tables show the analysis results, including the model summary (see table 34), correlation matrix (see table 35), ANOVA test (see table 36), and the Coefficients (see table 37).

Model summary (employees):

Table 34. Employees' model summary

Model	R	R^2	Adjusted R^2	RMSE
Customers	0.632	0.400	0.392	0.54997

Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a moderate correlation between the study's variables. And also, a moderate fit and predictive ability of the model.

Correlation matrix (employees' model):

Table 35. Employees' model correlation matrix

Variable	mean	SD	GSCM	GM	GHRM	HP
GSCM	5.44	0.53	1			
GM	5.32	0.70	.439**	1		
GHRM	5.43	0.72	.655**	.526**	1	
HP	5.35	0.71	.587**	.348**	.562**	1

SD: standard deviation, **. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The correlation matrix shows the correlation between variables as couples. All correlations are positive. Additionally, none of the correlation values exceeded 0.7, which reflects the absence of multicollinearity, which is a good sign. Moreover, all correlations are significant.

ANOVA table (employees' model):

Table 36. Employees' model ANOVA table

Model		SS	df	MS	F	P
Customers	Regression	43.949	3	14.650	48.435	**<.001
	Residual	65.937	218	0.302		
	Total	109.886	221			

SS: sum of squares, MS: mean square. **. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

Coefficients result (employees' model):

Table 37. Employees' model coefficients table

	B	SE	β	t	P
(Constant)	0.880	0.401		2.194	0.029*
GSCM	0.503	0.093	0.379	5.402	<0.001**
GM	0.023	0.062	0.023	0.370	0.712
GHRM	0.297	0.073	0.301	4.064	<0.001**

B: Unstandardized Coefficients, SE: Std. Error, β: Standardized Coefficients. **. P<0.01, *P<0.0

Source: extracted from SPSS, 2024

The multiple regression analysis results show that 0.392% of the hotel performance can be accounted for by the three predictors, collectively, F (3,218) =48.44), P<0.001.

Looking at the unique individual contribution of the predictors, results show that GSCM (β= 0.379, t=5.402, p<0.001), and GHRM (β= 0.301, t=4.064, p<0.001) positively predict HP. But the GM (β= 0.023, t=0.370, p=0.712) cannot predict HP because the P-value was not significant.

Part two: the regression analysis with the first moderate relations (GHRM moderate the relation between GM and HP).

A moderation analysis was performed, using centered variables. The PROCESS SPSS macro was used to analyze the data (Hayes, 2022). Altogether, 32.22% of the variability in HP was predicted by GM, $R^2 = 0.32$, F (3, 218) = 34.54, p =0.36, with a decrease of 0.07% in variance explained in the dependent variable. Table (38) displays the unstandardized regression coefficients. The interaction effect was not statistically significant (p = 0.36), indicating that GHRM doesn't moderate the effect of GM on HP. And (table 39) presents the Model Summary of the moderator GHRM.

Summary of moderate (GHRM) regression analysis:

Table 38. Summary of moderated (GHRM) regression analysis table

	B	SE	t	P	95% CI	
					Low	Up
Constant	1.0438	1.2688	0.8226	0.4116	-1.4569	3.5445
GM*GHRM	-0.0408	0.0446	-0.09158	0.3608	-0.1228	0.471

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the negative effect of the moderator variable on the independent variable, but it is positive on the model totally. Those effects are not statistically significant. The negative effect is almost non-existent.

Model Summary of the moderator GHRM

Table 39. Model Summary of the moderator GHRM table

R	R^2	MSE	F	Df1	Df2	p
.5676	.3222	.3416	34.5464	3	218	**0.00

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a moderate correlation between the study's variables. And also, a moderate fit and predictive ability of the model. The values of (R and R^2) have decreased slightly with the moderator variable effect, but it is still a moderate relation.

Part three: the regression analysis with the first moderate relations (GM moderates the relation between GSCM and HP).

A moderation analysis was performed, using centered variables. The PROCESS SPSS macro was used to analyze the data (Hayes, 2022). Altogether, 35.58% of the variability in HP was predicted by GSCM, $R^2 = 0.356$, F (3, 218) = 40.1341, p =0.508, with a decrease of 4.42% in variance explained in the dependent variable. Table (40) displays the unstandardized regression coefficients. The interaction effect was not statistically significant (p = 0.5087), indicating that GM doesn't moderate the effect of GSCM on HP. And (table 41) presents the Model Summary of the moderator GM.

Summary of moderated (GM) regression analysis:

Table 40. Summary of the moderated (GM) regression analysis table

	B	SE	t	P	95% CI	
					Low	Up
Constant	-0.1269	1.5708	-0.0808	0.9357	-3.2229	2.9691
GSCM*GM	-0.0361	0.0546	-0.662	0.5087	-0.1437	0.0715

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the negative effect of the moderator variable on the independent variable, and the model totally. Those effects are not statistically significant. The negative effect is almost non-existent.

Model Summary of the moderator GM:

Table 41. Model Summary of the moderator GM table

R	R^2	MSE	F	Df1	Df2	p
0.5965	0.3558	0.3247	40.1341	3	218	**0.00

**. P<0.01, *P<0.05

Source: extracted from SPSS, 2024

The table shows the R, R2 and Adjusted R2 values. The value of (R and R^2) reflects a moderate correlation between the study's variables. And also, a moderate fits and predictive ability of the model. The values of (R and R^2) have decreased slightly with the moderator variable effect, but it is still a moderate relation.

4.1.4. Path analysis results

The study conducted the path analysis using SmartPLS 3 software as an effective method to discover the relations between the study variables in a more detailed way. The results are divided into two groups, customers and employees' analysis. The following section will summarize the analysis results. The analysis has been applied in two parts for each segment. The first part includes the analysis without the moderating effects, and the second part includes the moderating effects.

4.1.4.1. Path analysis results / customers

It is important to mention that the study variables have been divided into sub-variables as shown in the model of the study. The GSCM has been divided into three variables, i.e., resources management (resc), waste management (wast), and Suppliers relations management (supp). Green marketing has been divided into two variables i.e.: green marketing practices (GM), and environmental certificates (cert). Hotel performance HP has been divided into three variables i.e.: customers' satisfaction (sat), customers' loyalty (loy), and employees' satisfaction (emp) where GHRM (ghrm) had no changes.

Part one: path analysis assumptions/model assessment:

The reliability and validity of the model was checked and analyzed, table (42) shows the necessary results to judge the reliability and validity of the model, including the Cronbach's Alpha test to check the reliability, all values were above 0.7 which referee to a reliable data and an internal consistency of each set of items as a group (Hair *et al.*, 2017), the rho-a, the composite reliability, the average variance extracted (AVE), and the outer loading was also checked as shown also in table (42). Some of the outer loading values were less than 0.7 but so close to it, and they represent important elements of the study. Overall, the AVE value was not violated (AVE>0.5), meaning there is enough convergent validity (F. Hair Jr *et al.*, 2014), and it is not necessary to remove the low outer loading values in this case. According to the measure's values, the model is reliable.

Table 42. Reliability and validity tests of the customers' model

Variables	Items	Loading	Cronbach's Alpha	rho_a	Composite Reliability	AVE	Outer VIF
resc	GSC1	0.703	0.878	0.907	0.911	0.674	1.597
	GSC2	0.878					3.401
	GSC9	0.894					3.942
	GSC10	0.795					2.311
	GSC11	0.820					2.396
wast	GSC3	0.897	0.854	0.851	0.904	0.705	3.837
	GSC4	0.896					3.303
	GSC7	0.662					1.260
	GSC8	0.880					3.830
supp	GSC5	0.863	0.722	0.773	0.833	0.627	1.487
	GSC6	0.691					1.460
	GSC12	0.813					1.343
gm	GMC2	0.801	0.735	0.736	0.849	0.653	1.426
	GMC3	0.821					1.624
	GMC4	0.802					1.407
cert	GMC1	0.744	0.701	0.712	0.833	0.625	1.234
	GMC5	0.842					1.511
	GMC6	0.784					1.505
ghrm	GHC1	0.773	0.728	0.733	0.831	0.552	1.444
	GHC2	0.723					1.344
	GHC3	0.781					1.450
	GHC4	0.691					1.290
sat	HPC4	0.723	0.729	0.735	0.828	0.546	1.544
	HPC5	0.760					1.532
	HPC6	0.738					1.387
	HPC7	0.736					1.220
loy	HPC8	0.688	0.713	0.728	0.820	0.533	1.380
	HPC9	0.738					1.308
	HPC10	0.796					1.392
	HPC11	0.694					1.439
emp	HPC12	1.000	1.000	1.000	1.000	1.000	1.000

Source: extracted from smart-pls3, 2024

In order to test the discriminant validity, the methods used in this study are three, i.e.: Fornell-Larcker Criterion (see table 43), Heterotrait-Monotrait Ratio (HTMT) (see table 44), and the cross loading (see table 45).

According to the square root of AVE of each construct should be greater than the correlation with any other construct in the framework (Fornell and Larcker, 1981). On the other

hand, the HTMT test value for all variables should be lower than 85% or 9% (Henseler, Ringle and Sarstedt, 2015; Hair *et al.*, 2017; Franke and Sarstedt, 2019). In this study, all values of the "Fornell-Larcker Criterion" and HTMT were valid (<0.85 or 0.9). The value in the Fornell-Larcker Criterion for emp*emp is equal to 1, but this does not refer to a violation, because this variable has one item.

On the other hand, cross-loading is also an important way to assess the individual measurement items that contribute to multiple constructs within your model. By examining cross-loadings, you can identify potential issues with convergent validity, such as items that do not align well with their intended constructions or show strong associations with unrelated constructions. In our study, cross-loading tests were acceptable, according to [350] the outer loading of each item on its associated construct should be greater than the loading of the item on other constructs, and this is what the results show, except for two values, i.e., GSC6, and GSC7. And this is justified due to their low loading, but as there is no violation of the AVE, this is acceptable (Anekawati *et al.*, 2017; Cheung *et al.*, 2024).

Table 43. Fornell-Larcker Criterion test results table

	cert	emp	ghrm	gm	loy	resc	sat	supp	wast
cert	**0.791**								
emp	0.196	**1.000**							
ghrm	0.359	0.280	**0.743**						
gm	0.470	0.251	0.371	**0.808**					
loy	0.382	0.312	0.423	0.372	**0.730**				
resc	-0.098	-0.088	-0.060	-0.077	-0.109	**0.821**			
sat	0.265	0.365	0.324	0.423	0.490	-0.116	**0.739**		
supp	-0.102	-0.002	-0.042	-0.110	-0.058	0.132	-0.102	**0.792**	
wast	-0.125	-0.079	-0.064	-0.051	-0.107	0.744	-0.133	0.492	**0.840**

Source: extracted from smart-pls3, 2024

Table 44. Heterotrait-Monotrait Ratio (HTMT) test results table

	cert	emp	ghrm	gm	loy	resc	sat	supp	wast
cert									
emp	0.223								
ghrm	0.503	0.326							
gm	0.649	0.291	0.520						
loy	0.519	0.363	0.587	0.480					
resc	0.118	0.087	0.085	0.105	0.129				
sat	0.353	0.435	0.448	0.546	0.660	0.138			
supp	0.125	0.006	0.100	0.151	0.092	0.156	0.122		
wast	0.157	0.085	0.086	0.098	0.124	0.844	0.160	0.584	

Source: extracted from smart-pls3, 2024

Table 45. Cross loadings table

	resc	wast	supp	gm	cert	ghrm	sat	loy	emp
GSC1	**0.703**	0.465	0.079	-0.086	-0.051	-0.031	-0.088	-0.065	-0.043
GSC2	**0.878**	0.804	0.162	-0.075	-0.126	-0.077	-0.111	-0.101	-0.12
GSC9	**0.894**	0.75	0.14	-0.049	-0.092	-0.032	-0.085	-0.082	-0.069
GSC10	**0.795**	0.453	0.016	-0.026	-0.022	-0.007	-0.086	-0.067	-0.036
GSC11	**0.82**	0.501	0.108	-0.073	-0.08	-0.077	-0.098	-0.116	-0.068
GSC3	0.727	**0.897**	0.281	-0.044	-0.088	-0.053	-0.109	-0.071	-0.064
GSC4	0.764	**0.896**	0.305	-0.016	-0.114	-0.049	-0.082	-0.103	-0.07
GSC7	0.247	**0.662**	0.807	-0.07	-0.104	-0.039	-0.143	-0.097	-0.024
GSC8	0.764	**0.88**	0.207	-0.037	-0.108	-0.071	-0.103	-0.082	-0.106
GSC5	0.12	0.52	**0.863**	-0.069	-0.09	0.002	-0.091	-0.068	0.003
GSC6	0.102	0.305	**0.69**	-0.066	-0.038	-0.019	-0.038	-0.018	0.001
GSC12	0.096	0.307	**0.813**	-0.123	-0.095	-0.082	-0.094	-0.036	-0.009
GMC2	0	0.019	-0.05	**0.801**	0.369	0.255	0.378	0.313	0.168
GMC3	-0.088	-0.069	-0.134	**0.821**	0.442	0.339	0.278	0.29	0.19
GMC4	-0.102	-0.077	-0.089	**0.802**	0.336	0.31	0.359	0.297	0.247
GMC1	-0.07	-0.064	-0.031	0.41	**0.744**	0.291	0.211	0.272	0.201
GMC5	-0.099	-0.133	-0.15	0.407	**0.842**	0.323	0.22	0.344	0.195
GMC6	-0.058	-0.095	-0.048	0.28	**0.784**	0.226	0.196	0.283	0.047
GHC1	-0.031	-0.082	-0.076	0.266	0.22	**0.773**	0.25	0.323	0.229
GHC2	-0.021	0.004	0.003	0.219	0.271	**0.723**	0.233	0.31	0.182
GHC3	-0.059	-0.06	0.013	0.194	0.232	**0.781**	0.247	0.339	0.238
GHC4	-0.07	-0.047	-0.07	0.446	0.36	**0.691**	0.233	0.281	0.178
HPC4	-0.034	-0.031	-0.021	0.219	0.167	0.218	**0.723**	0.39	0.28
HPC5	-0.133	-0.153	-0.124	0.281	0.174	0.238	**0.76**	0.34	0.325
HPC6	-0.086	-0.083	-0.053	0.266	0.118	0.319	**0.738**	0.342	0.308
HPC7	-0.078	-0.106	-0.087	0.432	0.292	0.194	**0.736**	0.379	0.189
HPC8	-0.05	-0.039	-0.037	0.193	0.246	0.323	0.281	**0.688**	0.221
HPC9	-0.095	-0.099	-0.065	0.312	0.319	0.3	0.397	**0.738**	0.195
HPC10	-0.096	-0.129	-0.074	0.383	0.326	0.317	0.432	**0.796**	0.293
HPC11	-0.068	-0.012	0.036	0.135	0.192	0.304	0.284	**0.694**	0.19
HPC12	-0.088	-0.079	-0.002	0.251	0.196	0.28	0.365	0.312	**1**

Source: extracted from smart-pls3, 2024

Regarding the collinearity and common method bias, the outer VIF in table (42) shows acceptable values which indicate that the model is not polluted, where the values of VIF should be lower than 5 or 10, and it is more favorable to be lower than 3.3. In this study, only three

values were more than 3.3 but none of them exceeded 5 or even 4, which is considered acceptable. Moreover, the inner VIF values were less than 5, and only one value exceeded 3.3 but with only 0.2 where it was 3.5 which is also considered acceptable (see table 46), and this model could be claimed as a good model with no bias or collinearity (Kock and Lynn, 2012; Kock, 2020).

Table 46. Inner VIF values table

Variables	Inner VIF	Variables	Inner VIF	Variables	Inner VIF
cert → emp	1.368	cert → sat	1.368	cert → loy	1.368
ghrm → emp	1.224	ghrm → sat	1.224	ghrm → loy	1.224
gm → emp	1.392	gm → sat	1.392	gm → loy	1.392
resc → emp	2.704	resc → sat	2.704	resc → loy	2.704
supp → emp	1.604	supp → sat	1.604	supp → loy	1.604
wast → emp	3.514	wast → sat	3.514	wast → loy	3.514

Source: extracted from smart-pls3, 2024

Part two: Structural path model analysis results:

After assessing the model, it was possible to continue further and depend on the analysis results as valid results. The applied i.e. bootstrapping and blindfolding techniques results in the data are summarized in table (47) and table (48). Table (49) shows the values of the determination coefficient (R^2) and the (Q^2) statistics. The (R^2) value reflects the variance ratio in the dependent variable(s) that can be explained by one or more predictors (Hair *et al.*, 2010; Elliott and Woodward, 2024). In this study, they are: 0.112, 0.265, and 0.223. The (Q^2) represents an estimate of the predictive ability of the model, and those values are: 0.089, 0.132, and 0.11, which could be considered small and close to medium.

Table 47. R Square, R Square Adjusted, and Q Square values table

	R Square	R Square Adjusted	Q Square
emp	0.112	0.102	0.089
loy	0.265	0.257	0.132
sat	0.223	0.214	0.11

Assessing predictive relevance (Q2) value of the effect size: 0.02= Small, 0.15= Medium, 0.35= Large.

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Furthermore, table (48) shows the rest of the results, starting with Path Coefficient, which shows the effect of each independent variable on the dependent variable, F^2 or the effect size, t-value is the t-statistic value, P-value is the type of the result whether it is significant or not.

Table 48. Bootstrapping the results of the customers' model

	Path	Path Coefficient	f Square	t Value	p Value	2.50%	97.50%
h1	resc → emp	-0.0093	0.00	0.15	0.879	-0.137	0.105
	resc → sat	-0.0078	0.00	0.13	0.898	-0.132	0.110
	resc → loy	-0.0313	0.00	0.54	0.589	-0.153	0.073
	supp → emp	0.0681	0.00	1.23	0.218	-0.047	0.167
	supp → sat	-0.0097	0.00	0.20	0.842	-0.108	0.086
	supp → loy	0.0170	0.00	0.35	0.725	-0.084	0.106
	wast → emp	-0.0791	0.00	1.13	0.260	-0.214	0.065
	wast → sat	-0.0899	0.00	1.27	0.205	-0.227	0.051
	wast → loy	-0.0408	0.00	0.62	0.536	-0.163	0.094
H3	cert → emp	0.0454	0.00	0.86	0.389	-0.055	0.151
	cert → sat	0.0288	0.00	0.60	0.547	-0.061	0.126
	cert → loy	0.1914	0.04	4.17	<0.001**	0.102	0.284
	gm → emp	0.1571	0.02	2.98	0.003**	0.085	0.313
	gm → sat	0.3350	0.10	7.09	<0.001**	0.084	0.288
	gm → loy	0.1736	0.03	3.75	<0.001**	0.194	0.383
H2	ghrm → emp	0.2029	0.04	3.52	<0.001**	0.051	0.258
	ghrm → sat	0.1830	0.04	3.55	<0.001**	0.237	0.424
	ghrm → loy	0.2857	0.09	5.92	<0.001**	0.082	0.263

**. P<0.01, *P<0.05

Source: Author's own editing based on extracted data from SmartPLS3, 2024

The next table (49) summarizes the results in a statistical form for each variable:

Table 49. Summary results of the applied path analysis on the customers' model

	relation	result
h1	resc → emp	(β=-0.0093, t=0.1516, p=0.8794)
	resc → sat	(β=-0.0078, t=0.1281, p=0.898)
	resc → loy	(β=-0.0312, t=0.54, p=0.588)
	supp → emp	(β=0.0681, t=1.2308, p=0.2184)
	supp → sat	(β=-0.009, t=0.198, p=0.8424)
	supp → loy	(β=0.0169, t=0.352, p=0.7246)
	wast → emp	(β=-0.079, t=1.125, p=0.2604)
	wast → sat	(β=-0.089, t=1.268, p=0.2047)
	wast → loy	(β=-0.04, t=0.618, p=0.5362)
H3	cert → emp	(β=0.045, t=0.86, p=0.3885)
	cert → sat	(β=0.0288, t=0.6, p=0.5474)
	cert → loy	(β=0.191, t=4.167, p=<0.01)
	gm → emp	(β=0.157, t=2.978, p=<0.01)
	gm → sat	(β=0.335, t=7.086, p=<0.01)
	gm → loy	(β=0.1736, t=3.7519, p=<0.01)
H2	ghrm → emp	(β=0.2028, t=3.518, p=<0.01)
	ghrm → sat	(β=0.183, t=3.5458, p=<0.01)
	ghrm → loy	(β=0.285, t=5.917, p=<0.01)

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Figure 17. represents the extracted customers' model including all sub-variables and the relations between each of them, besides each variable items. This figure helps to show a full map of relations and the strength of each relation.

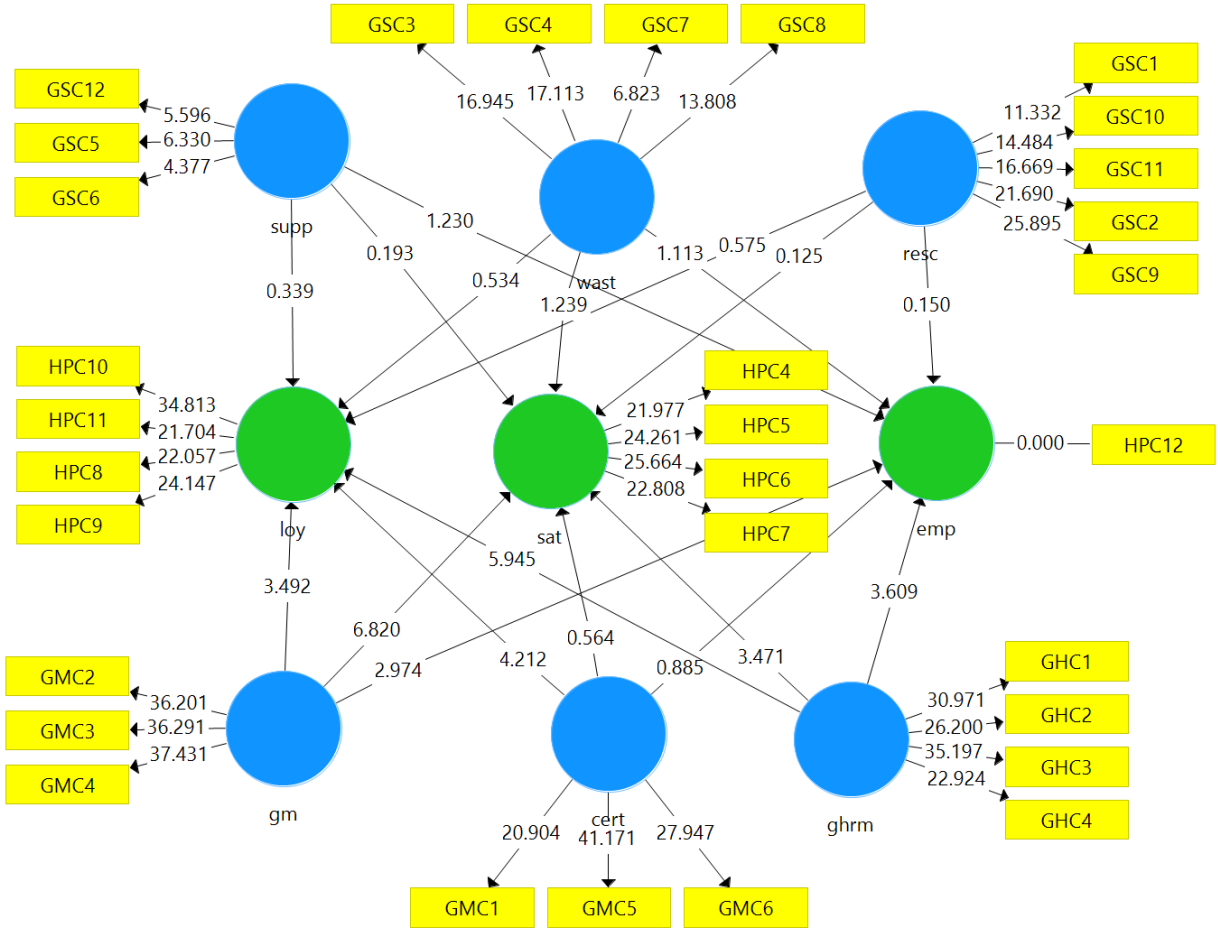

Figure 17. Customers, research model with path analysis applied using SmartPLS3

Source: extracted from smart-pls3, 2024

Part three: moderators' structural path model results:

Regarding breaking the main variables into sub-variables, the moderators' variables also have been divided into the same structure of breaking, generating one moderator variable of GHRM on the relation between green marketing and hotel performance, this let to 6 moderator variables of GHRM, because there are two variables for the green marketing (gm, cert), and three variables for the hotel performance (sat, loy, emp). The same is true for green marketing as a moderator of the relation between GSCM and HP, which produced 18 sub-moderator variables. Table 50 and 51 show the moderator variables, their statistical results, values, and their relations plus the p-values of each variable, which are extracted from the SmartPLS using the bootstrapping technique. All P-values were not significant; thus, there is no need to continue further or summarize any more results in this case.

Moderator variables' Path Coefficient, F^2, t-statistic value, P-value:

Table 50. Moderator variables' Path Coefficient, F2, t-statistic value, P-value

Path	Path Coefficient	f Square	t Value	p Value	2.50%	97.50%
cert*resc→sat	-0.017	0.000	0.221	0.825	-0.170	0.136
gm*resc→sat	-0.132	0.007	1.744	0.081	-0.273	0.023
cert*wast→sat	-0.008	0.000	0.087	0.931	-0.176	0.173
gm*wast→sat	0.185	0.009	1.930	0.054	-0.016	0.363
cert*supp→sat	-0.074	0.003	1.042	0.297	-0.209	0.070
gm*supp→sat	-0.014	0.000	0.220	0.826	-0.147	0.108
cert*resc→loy	0.038	0.001	0.491	0.624	-0.120	0.183
gm*resc→loy	-0.054	0.001	0.764	0.445	-0.187	0.092
cert*wast→loy	-0.096	0.003	1.120	0.263	-0.255	0.084
gm*wast→loy	0.040	0.000	0.445	0.656	-0.142	0.211
cert*supp→loy	-0.006	0.000	0.097	0.923	-0.134	0.116
gm*supp→loy	0.034	0.001	0.533	0.594	-0.094	0.154
cert*resc→emp	-0.013	0.000	0.156	0.876	-0.163	0.152
gm*resc→emp	-0.038	0.000	0.443	0.658	-0.203	0.130
cert*wast→emp	-0.091	0.002	1.040	0.298	-0.266	0.081
gm*wast→emp	0.093	0.002	0.986	0.324	-0.098	0.274
cert*supp→emp	-0.057	0.002	0.838	0.402	-0.183	0.084
gm*supp→emp	-0.005	0.000	0.074	0.941	-0.139	0.122
ghrm*cer→loy	0.079	0.007	1.616	0.106	-0.026	0.167
ghrm*gm→loy	0.009	0.000	0.206	0.836	-0.073	0.100
ghrm*cer→sat	0.097	0.009	1.857	0.063	-0.012	0.190
ghrm*gm→sat	0.038	0.002	0.790	0.429	-0.056	0.130
ghrm*cer→emp	0.060	0.003	1.083	0.279	-0.051	0.166
ghrm*gm→emp	-0.025	0.001	0.468	0.640	-0.133	0.075

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Moderator variables results summary:

Table 51. Moderator variables results summary

	relation	result
H4	cert*resc→sat	(β=-0.0172, t=0.22, p=0.824)
	gm*resc→sat	(β=-0.132, t=1.744, p=0.081)
	cert*wast→sat	(β=-0.0076, t=0.086, p=0.93)
	gm*wast→sat	(β=0.185, t=1.93, p=0.053)
	cert*supp→sat	(β=-0.074, t=1.042, p=0.297)
	gm*supp→sat	(β=-0.0143, t=0.22, p=0.83)
	cert*resc→loy	(β=0.038, t=0.49, p=0.624)
	gm*resc→loy	(β=-0.054, t=0.76, p=0.445)
	cert*wast→loy	(β=-0.096, t=1.12, p=0.263)
	gm*wast→loy	(β=0.04, t=0.445, p=0.66)
	cert*supp→loy	(β=-0.006, t=0.01, p=0.92)
	gm*supp→loy	(β=0.035, t=0.53, p=0.59)
	cert*resc→emp	(β=-0.013, t=0.156, p=0.88)
	gm*resc→emp	(β=-0.037, t=0.44, p=0.657)
	cert*wast→emp	(β=-0.091, t=1.04, p=0.3)
	gm*wast→emp	(β=0.09, t=0.98, p=0.32)
	cert*supp→emp	(β=-0.056, t=0.83, p=0.402)
	gm*supp→emp	(β=-0.005, t=0.07, p=0.94)
H5	ghrm*cer→loy	(β=0.079, t=1.62, p=0.106)
	ghrm*gm→loy	(β=0.009, t=0.21, p=0.836)
	ghrm*cer→sat	(β=0.097, t=1.86, p=0.06)
	ghrm*gm→sat	(β=0.037, t=0.79, p=0.429)
	ghrm*cer→emp	(β=0.06, t=1.083, p=0.28)
	ghrm*gm→emp	(β=-0.025, t=0.468, p=0.64)

Source: Author's own editing based on extracted data from SmartPLS3, 2024

4.1.4.2. Path analysis results/employees

It is important to mention that the study variables have been divided into sub-variables as shown in the model of the study, the GSCM has been divided into 4 variables i.e.: resources management (resc), waste management (wast), Suppliers relations management (supp) and (products). Green marketing has been divided into two variables i.e.: green marketing practices (GM), and environmental certificates (cert). GHRM has been divided into 3 variables, i.e., Green human resources management practices (GHRM), green culture (green cult), and working atmosphere (Atmosphere). Hotel performance HP has been divided into four variables i.e.: hotel's financial performance (fin), customers' satisfaction (sat), customers' loyalty (loy), and employees' satisfaction (emp).

Part one: path analysis assumptions/model assessment:

The path analysis assumptions were tested for the employees' segment in the same way and in the order that was used for the customers' segment.

The reliability and validity of the model was checked and analyzed, table (52) shows the necessary results to judge the reliability and validity of the model, including the Cronbach's Alpha test to check the reliability, all values were above 0.7 which referee to a reliable data and an internal consistency of each set of items as a group (Hair *et al.*, 2017), the rho-a, the composite reliability, the average variance extracted (AVE), and the outer loading was also checked as shown also in table (52). Some of the outer loading values were less than 0.7 but so close to it, and they represent important elements of the study. Overall, the AVE value was not violated (AVE>0.5) meaning there is enough convergent validity (F. Hair Jr *et al.*, 2014), and it is not necessary to remove the low outer loading values in this case. According to the measure's values, the model is reliable.

Table 52. Reliability and validity tests of the employees' model

Variables	Items	Loading	Cronbach's Alpha	rho_a	Composite reliability	AVE	Outer VIF
resc	GSE1	0.899	0.735	0.808	0.849	0.660	2.147
	GSE2	0.898					2.086
	GSE3	0.604					1.183
wast	GSE4	0.891	0.753	0.908	0.809	0.524	1.446
	GSE5	0.796					1.472
	GSE9	0.603					1.768
	GSE10	0.553					1.695
supp	GSE6	0.694	0.714	0.737	0.820	0.533	1.294
	GSE7	0.668					1.320
	GSE8	0.784					1.332
	GSE14	0.768					1.523
products	GSE11	0.841	0.716	0.744	0.840	0.639	1.588
	GSE12	0.688					1.243
	GSE13	0.858					1.593
cert	GME1	0.878	0.711	0.737	0.824	0.611	1.732
	GME5	0.721					1.785
	GME6	0.736					1.185
GreenM	GME2	0.726	0.737	0.848	0.844	0.645	1.446
	GME3	0.776					1.423
	GME4	0.897					1.534
GHRM	GHE1	0.848	0.730	0.788	0.840	0.638	1.920
	GHE2	0.841					1.339
	GHE3	0.698					1.588
green cult	GHE4	0.871	0.741	0.744	0.853	0.660	1.850

	GHE5	0.782					1.544
	GHE6	0.780					1.375
atmosphere	GHE7	0.925	0.772	0.802	0.896	0.812	1.653
	GHE8	0.877					1.653
fin	HPE1	0.731	0.719	0.756	0.837	0.633	1.562
	HPE2	0.870					1.685
	HPE3	0.780					1.256
sat	HPE4	0.864	0.741	0.767	0.884	0.792	1.530
	HPE5	0.916					1.530
loy	HPE6	0.712	0.839	0.849	0.893	0.678	1.443
	HPE7	0.866					2.210
	HPE8	0.872					2.340
	HPE14	0.833					2.095
emp	HPE9	0.794	0.833	0.835	0.877	0.544	2.003
	HPE10	0.713					1.533
	HPE11	0.730					2.080
	HPE12	0.758					1.754
	HPE13	0.688					1.523
	HPE15	0.741					2.039

Source: Author's own editing based on extracted data from SmartPLS3, 2024

In order to test the discriminant validity, the methods used in this study are three, i.e.: Fornell-Larcker Criterion (see table 53), Heterotrait-Monotrait Ratio (HTMT) (see table 54), and the cross loading (Appendix 5).

According to the square root of AVE of each construct should be greater than the correlation with any other construct in the framework (Fornell and Larcker, 1981). On the other hand, the HTMT test value for all variables should be lower than 85% or 9% (Henseler, Ringle and Sarstedt, 2015; Hair *et al.*, 2017; Franke and Sarstedt, 2019). In this study, all values of the "Fornell-Larcker Criterion" and HTMT were valid (<0.85 or 0.9).

On the other hand, cross-loading is also an important way to assess the individual measurement items that contribute to multiple constructs within your model. By examining cross-loadings, you can identify potential issues with convergent validity, such as items that do not align well with their intended constructions or show strong associations with unrelated constructions. In our study, cross-loading tests were acceptable, according to (Wynne, 1998) The outer loading of each item on its associated construct should be greater than the loading of the item on other constructs, and this is what the results show. And this is justified due to their low loading, but as there is no violation of the AVE, this is acceptable (Anekawati *et al.*, 2017; Cheung *et al.*, 2024).

Table 53. Fornell-Larcker Criterion test results table

	GHRM	GreenM	Atmos-phere	cert	emp	fin	green cult	loy	Prod.	resc	sat	supp	wast
GHRM	**0.799**												
GreenM	0.246	**0.803**											
atmosphere	0.386	0.486	**0.901**										
cert	0.336	0.371	0.231	**0.781**									
emp	0.500	0.337	0.403	0.200	**0.738**								
fin	0.193	0.223	0.068	0.041	0.205	**0.796**							
green cult	0.489	0.420	0.595	0.380	0.451	0.093	**0.812**						
loy	0.425	0.470	0.520	0.269	0.648	0.094	0.407	**0.823**					
products	0.466	0.167	0.313	0.187	0.459	0.100	0.348	0.499	**0.799**				
resc	0.442	0.319	0.435	0.200	0.644	0.010	0.417	0.559	0.575	**0.812**			
sat	0.242	0.327	0.403	0.003	0.596	0.200	0.295	0.655	0.459	0.555	**0.890**		
supp	0.394	0.087	0.245	0.261	0.386	0.193	0.265	0.333	0.454	0.411	0.269	**0.730**	
wast	0.423	0.338	0.318	0.367	0.355	-0.117	0.499	0.409	0.386	0.455	0.241	0.235	**0.724**

Source: extracted from smart-pls3, 2024

Table 54. Heterotrait-Monotrait Ratio (HTMT) test results table

	GHRM	GreenM	Atmos-phere	cert	emp	fin	green cult	loy	products	resc	sat	supp	wast
GHRM													
GreenM	0.344												
atmosphere	0.465	0.611											
cert	0.46	0.529	0.309										
emp	0.607	0.389	0.497	0.253									
fin	0.276	0.283	0.136	0.092	0.268								
green cult	0.652	0.575	0.781	0.53	0.568	0.163							
loy	0.501	0.562	0.633	0.283	0.776	0.12	0.511						
products	0.627	0.234	0.407	0.289	0.582	0.143	0.483	0.649					
resc	0.584	0.419	0.585	0.331	0.794	0.094	0.591	0.699	0.793				
sat	0.28	0.406	0.524	0.087	0.758	0.295	0.389	0.835	0.608	0.706			
supp	0.52	0.139	0.358	0.375	0.479	0.257	0.386	0.414	0.63	0.588	0.351		
wast	0.557	0.56	0.447	0.544	0.38	0.184	0.691	0.418	0.466	0.529	0.265	0.302	

Source: extracted from smart-pls3, 2024

Regarding the collinearity and common method bias, the outer VIF in table (52) shows acceptable values which indicate that the model is not polluted, where the values of VIF should be lower than 5 or 10, and it is more favorable to be lower than 3.3. In this analysis, none of

values exceeded 3.3, which is considered acceptable. Moreover, the inner VIF values were also less than 3.3, which is also regarded as acceptable (see table 55), and this model could be claimed as a good model with no bias or collinearity (Kock and Lynn, 2012; Kock, 2020).

Table 55. Inner VIF values table

Variables	Inner VIF	Variables	Inner VIF	Variables	Inner VIF	Variables	Inner VIF
resc → fin	1.895	resc → sat	1.895	resc → loy	1.895	resc → emp	1.895
supp → fin	1.424	supp → sat	1.424	supp → loy	1.424	supp → emp	1.424
wast → fin	1.617	wast → sat	1.617	wast → loy	1.617	wast → emp	1.617
prod → fin	1.755	prod → sat	1.755	prod → loy	1.755	prod → emp	1.755
cert → fin	1.387	cert → sat	1.387	cert → loy	1.387	cert → emp	1.387
gm → fin	1.529	gm → sat	1.529	gm → loy	1.529	gm → emp	1.529
ghrm → fin	1.661	ghrm → sat	1.661	ghrm → loy	1.661	ghrm → emp	1.661
green cult → fin	2.045	green cult → sat	2.045	green cult → loy	2.045	green cult → emp	2.045
atmospher → fin	1.859	atmospher → sat	1.859	atmospher → loy	1.859	atmospher → emp	1.859

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Part two: Structural path model analysis results:

After assessing the model, it was possible to continue further and depend on the analysis results as valid results. The applied bootstrapping and blindfolding techniques summarize the data in tables (56) and (57). Table (56) shows the values of the determination coefficient (R^2) and the (Q^2) statistics. The (R^2) value reflects the variance ratio in the dependent variable(s) that can be explained by one or more predictors (Hair *et al.*, 2010; Elliott and Woodward, 2024). In this study, they are: 0.199, 0.419, 0.5, and 0.504. The (Q^2) represents an estimate of the predictive ability of the model, and those values are: 0.101, 0.302, 0.321, and 0.258 which are considered medium except the first value which is small and close to medium.

Table 56. R Square, R Square Adjusted, and Q Square values table

	R Square	R Square Adjusted	Q Square
fin	0.199	0.165	0.101
sat	0.419	0.394	0.302
loy	0.5	0.479	0.321
emp	0.504	0.483	0.258

Assessing predictive relevance (Q2) value of the effect size: 0.02= Small, 0.15= Medium, 0.35= Large.

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Furthermore, table (57) shows the rest of the results, starting with Path Coefficient, which shows the effect of each independent variable on the dependent variable, F^2 or the effect

size, t-value is the t-statistic value, P-value is the type of the result whether it is significant or not.

Table 57. Bootstrapping results of employees' model

	Path	Path Coefficient	f Square	t Value	p Value	2.50%	97.5%
gscm	resc → fin	-0.151	0.015	1.758	0.079	-0.321	0.015
	resc → sat	0.357	0.116	4.627	0.000***	0.201	0.503
	resc → loy	0.210	0.046	3.137	0.002***	0.074	0.336
	resc → emp	0.439	0.205	6.476	0.000***	0.297	0.562
	supp → fin	0.207	0.037	2.788	0.005***	0.060	0.350
	supp → sat	0.049	0.003	0.684	0.494	-0.090	0.196
	supp → loy	0.046	0.003	0.772	0.440	-0.065	0.170
	supp → emp	0.093	0.012	1.552	0.121	-0.015	0.220
	wast → fin	-0.306	0.072	3.573	0.000***	-0.464	-0.125
	wast → sat	-0.039	0.002	0.439	0.661	-0.213	0.136
	wast → loy	0.071	0.006	1.007	0.314	-0.060	0.217
	wast → emp	-0.048	0.003	0.779	0.436	-0.163	0.082
	prod → fin	0.076	0.004	0.884	0.377	-0.091	0.248
	prod → sat	0.235	0.054	3.256	0.001***	0.093	0.374
	prod → loy	0.208	0.049	2.709	0.007***	0.058	0.357
	prod → emp	0.037	0.002	0.599	0.549	-0.089	0.153
gm	cert → fin	-0.092	0.008	1.067	0.286	-0.258	0.078
	cert → sat	-0.199	0.049	2.687	0.007***	-0.341	-0.051
	cert → loy	0.014	0.000	0.194	0.846	-0.125	0.152
	cert → emp	-0.063	0.006	0.968	0.333	-0.186	0.069
	gm → fin	0.350	0.100	4.239	0.000***	0.180	0.502
	gm → sat	0.200	0.045	2.555	0.011**	0.051	0.355
	gm → loy	0.238	0.074	3.819	0.000***	0.118	0.364
	gm → emp	0.120	0.019	1.926	0.05**	-0.002	0.244
ghrm	ghrm → fin	0.226	0.038	2.396	0.017**	0.032	0.404
	ghrm → sat	-0.073	0.005	0.982	0.326	-0.219	0.071
	ghrm → loy	0.074	0.007	1.028	0.304	-0.069	0.209
	ghrm → emp	0.201	0.049	3.028	0.002***	0.072	0.333
	green cult → fin	0.081	0.004	0.817	0.414	-0.118	0.274
	green cult → sat	0.012	0.000	0.191	0.848	-0.107	0.147
	green cult → loy	-0.078	0.006	0.999	0.318	-0.219	0.086
	green cult → emp	0.134	0.018	1.702	0.089	-0.016	0.290
	atmospher → fin	-0.127	0.011	1.517	0.129	-0.286	0.045
	atmospher → sat	0.144	0.019	2.110	0.035**	0.007	0.273
	atmospher → loy	0.229	0.056	3.364	0.001***	0.087	0.351
	atmospher → emp	-0.008	0.000	0.094	0.925	-0.169	0.152

***. P<0.01, **P<0.05

Source: Author's own editing based on extracted data from SmartPLS3, 2024

The following table (58) summarizes the results in a statistical form for each variable:

Table 58. Summary results of the applied path analysis on employees' model

	relation	result
gscm	resc → fin	(β=-0.15, t=1.758, p=0.078)
	resc → sat	(β=0.357, t=4.626, p=<0.01)
	resc → loy	(β=0.209, t=3.137, p=<0.01)
	resc → emp	(β=0.4387, t=6.47, p=<0.01)
	supp → fin	(β=0.21, t=2.787, p=<0.01)
	supp → sat	(β=0.049, t=0.68, p=0.494)
	supp → loy	(β=0.0463, t=0.772, p=0.44)
	supp → emp	(β=0.093, t=1.55, p=0.121)
	wast → fin	(β=-0.306, t=3.57, p=<0.01)
	wast → sat	(β=-0.039, t=0.438, p=0.66)
	wast → loy	(β=0.07, t=1.01, p=0.314)
	wast → emp	(β=-0.0481, t=0.779, p=0.435)
	prod → fin	(β=0.076, t=0.88, p=0.376)
	prod → sat	(β=0.235, t=3.25, p=<0.01)
	prod → loy	(β=0.21, t=2.71, p=<0.01)
	prod → emp	(β=0.037, t=0.599, p=0.549)
gm	cert → fin	(β=-0.092, t=1.067, p=0.2859)
	cert → sat	(β=-0.1988, t=2.687, p=<0.01)
	cert → loy	(β=0.0137, t=0.1937, p=0.846)
	cert → emp	(β=-0.0627, t=0.967, p=0.33)
	gm → fin	(β=0.35, t=4.239, p=<0.01)
	gm → sat	(β=0.199, t=2.55, p=<0.01)
	gm → loy	(β=0.238, t=3.82, p=<0.01)
	gm → emp	(β=0.12, t=1.93, p=0.05)
ghrm	ghrm → fin	(β=0.2262, t=2.39, p=0.017)
	ghrm → sat	(β=-0.0726, t=0.982, p=0.326)
	ghrm → loy	(β=0.074, t=1.03, p=0.304)
	ghrm → emp	(β=0.2, t=3.03, p=<0.01)
	green cult → fin	(β=0.08, t=0.82, p=0.414)
	green cult → sat	(β=0.0125, t=0.2, p=0.85)
	green cult → loy	(β=-0.078, t=0.998, p=0.318)
	green cult → emp	(β=0.134, t=1.7, p=0.089)
	atmospher → fin	(β=-0.13, t=1.514, p=0.13)
	atmospher → sat	(β=0.144, t=2.11, p=0.035)
	atmospher → loy	(β=0.23, t=3.36, p=<0.01)
	atmospher → emp	(β=-0.008, t=0.09, p=0.925)

Source: Author's own editing based on extracted data from SmartPLS3, 2024

Figure 18. represents the extracted employees' model, including all sub-variables and the relations between each of them, besides each variable items. This figure helps to show a full map of relations and the strength of each relation.

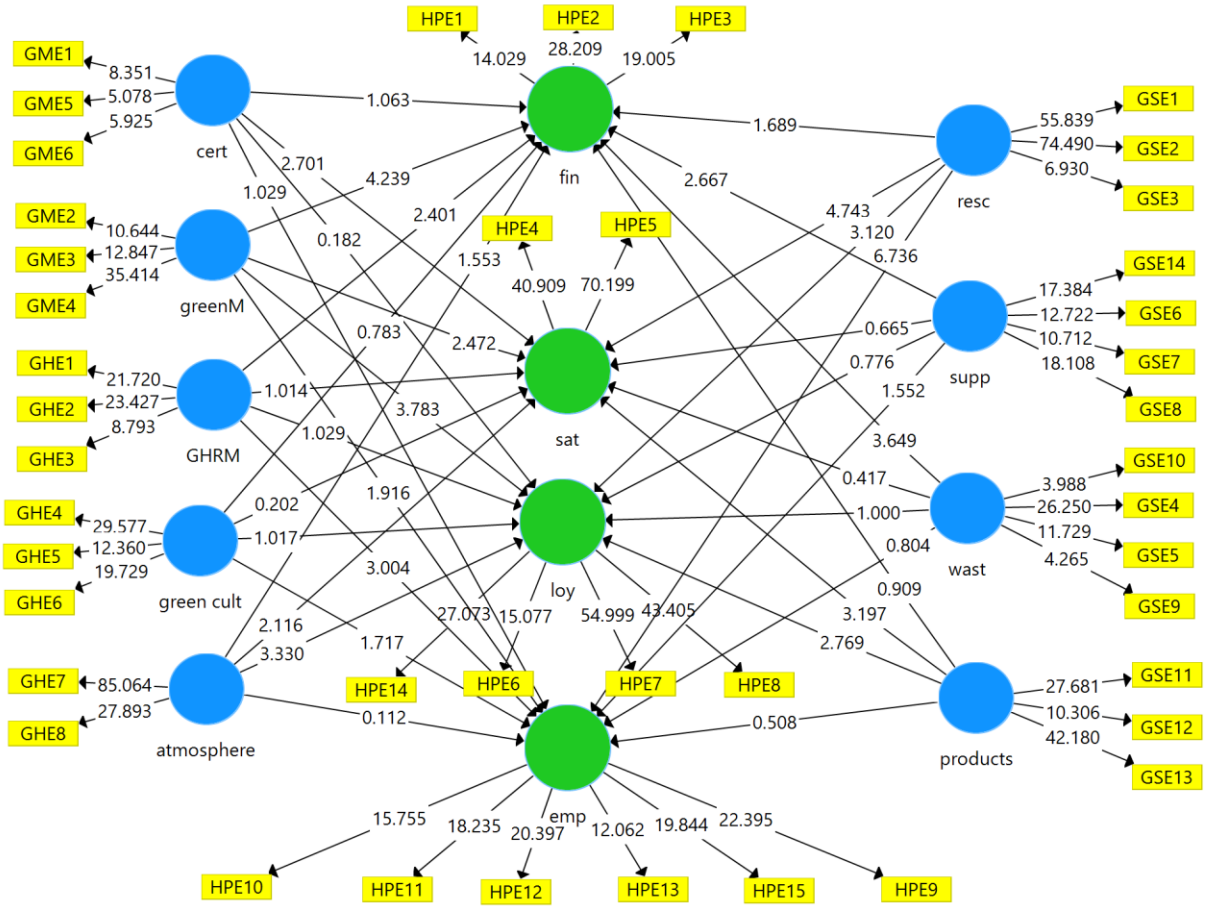

Figure 18. Customers, research model with path analysis applied using SmartPLS3

Source: extracted from smart-pls3, 2024

Part three: moderators' structural path model results:

Regarding breaking the main variables into sub-variables, the moderators' variables also have been divided into the same structure of breaking, generating one moderator variable of GHRM on the relation between green marketing and hotel performance, this let to 24 moderator variables of GHRM, because there are 3 variables for the GHRM, two for the green marketing (gm, cert), and four variables for the hotel performance (fin, sat, loy, emp). The same for green marketing as a moderator of the relation between GSCM and HP, which produced 32 sub-moderator variables. The following tables (Appendix 6, Appendix 7) show the moderator variables, their statistical results, values, and their relations, plus the p-values of each variable, which are extracted from the SmartPLS using the bootstrapping technique.

Appendix 6. Moderator variables' Path Coefficient, F2, t-statistic value, P-value.

The next table (Appendix 7) summarizes the results in a statistical form for each variable:

Appendix 7. Moderator variables results summary.

The statistical results showed some significant effects of some moderator variables, which also affected the R^2 and the Q^2. The effect in total was positive on the main relations. Table (59) shows the changes in R^2 and R^2 adjusted. Moreover, the F^2 which represents the size effect of the moderator variable/s, and it was calculated using this equation:

The changes in R^2 equation (F^2) = (R^2 included – R^2 excluded) / (1 – R^2 included)

Table 59. Changes in R2 and R2 Adjusted after the moderators' effects

	Before		After		
Dependent variable	R^2	R^2 Adjusted	R^2	R^2 Adjusted	F^2
emp	0.504	0.483	0.567	0.517	0.275
fin	0.199	0.165	0.304	0.223	0.137
loy	0.5	0.479	0.582	0.534	0.354
sat	0.419	0.394	0.506	0.449	0.345

Assessing predictive relevance (F2) value of the effect size: 0.02= Small, 0.15= Medium, 0.35= Large.

Source: Author's own editing based on extracted data from smart-pls3, 2024

The R-squared values become better after applying the moderators' effect, and the same is true for the R-squared adjusted. The F square values show the effects of size ranging from small to large i.e., 0.137- small, 0.275- medium, 0.345 & 0.354- large.

In total, the moderators' effects were positive. And that effect was not visible when the analysis was applied to the main variables, but when the sub-variables were analyzed, more results came to the surface.

4.1.5. Summary of The Hypotheses Results

Based on the study segments, two groups of summaries are presented in table (60). Both customers and employees' segments have two summaries, each summary is based on a different analysis method, i.e., regression analysis, and path analysis results.

Table 60. Hypotheses summary

		Customers	Employees
Based on the regression analysis			
NO	Hypothesis	result	
H1	Adopting green supply chain management affects hotels' performance positively	Yes- Negative	Yes- Positive
H2	Adopting green human resources management affects hotels' performance positively	Yes- Positive	Yes- Positive
H3	Green marketing affects hotels' performance positively	Yes- Positive	No
H4	Green marketing moderates the effects of GSCM on hotels' performance	Yes- Negative	No
H5	GHRM moderates the effects of green marketing on hotels' performance	Yes- Positive	No
Based on the path analysis			
H1	Adopting green supply chain management affects hotels' performance positively	No	Yes- Positive/ Partially
H2	Adopting green human resources management affects hotels' performance positively	Yes- Positive	Yes- Positive/ Partially
H3	Green marketing affects hotels' performance positively	Yes- Positive/ Partially	Yes- Positive/ Partially
H4	Green marketing moderates the effects of GSCM on hotels' performance	No	No
H5	GHRM moderates the effects of green marketing on hotels' performance	No	Yes- Positive/ Partially

Source: Author's own editing based on the applied statistical analyses: regression analysis and path analysis, 2024

4.1.6. Exploratory meetings

Three meetings were conducted with the management of three hotels, including three different star-level hotels (five, four, and three-star hotels). The questions for the meetings were the same as the research questions, with more details and investigation. Managers' answers and points of view were the same in many areas. Even the number of meetings is not enough to build an analysis based on them. Those meetings would provide an insight as an exploratory study for future research. Meeting findings are summarized and organized in a table (61) to prevent duplications in answers and to deliver the direct point and ideas.

Table 61. Meetings summary and main points of view

Hotel level	
All hotels	Informing employees, educating them and explaining the reasons, consequences and the target behind adopting the green practices. Which helps to change the old mentalities or traditional thinking employees.
All hotels	Raise employee's awareness and attention and involve them to become an effective part of the green transformation
4+5	Providing suitable environmental training programs for employees regularly and when it is essential, especially when an update is adopted.
4	Mandatory procedures may be helpful in directing employees to adopt environmental practices more effectively, but this cannot be applied to customers, where work is done to stimulate ethical awareness among customers, educate them and explain the critical role they can play in reducing negative environmental impacts by changing their behavior during their stay at the hotel.
3+5	Renovation and upgrading the building infrastructure is one of the most effective methods toward the green transformation. Moreover, designing and building a green facility is the most effective way to create a green building, but it is not always possible. that would make the return benefit on applying green practices at the highest levels. Such as lighting, storage, ventilation, parking, gardens, and green spaces without using any energy.
3+5	Changing and modifying the lowest-cost devices and equipment is also an effective solution to making the organization greener, especially devices and equipment that need regular change, such as lights, toilet flushers, and energy-saving devices. Also, some other devices that need to be changed are necessary to stay in the competition, such as movement sensors, lights and switches, and smart keys.
3	Employees must be encouraged to present their ideas and knowledge. They can provide some creative solutions based on their experiences to raise the level of environmental performance and the hotel performance as well.
3	Keep employees updated with each change in the green practices and also about the added values, including the reflection of the financial performance and how it will be employed to invest more in green transformation. This will give them a push to interact more toward green practices.
3+5	Employees must work as a team, especially at the managerial level, due to their influence on other employees. With active participation, employees will feel more

	comfortable and supported.
3	Changes must be achieved in planned steps, accompanied by monitoring the consequences of each update or change.
3+4	The problem and targets should be addressed. Then, tasks should be evaluated, including their procedures and workflow. Then, each task should be modified to become more eco-friendly, taking into consideration the feasibility of any change and which changes can generate better outcomes. In addition, identifying with parties or management is related.
3	The same process should be applied to upgrade the equipment to an eco-friendly type.
3	Monitoring and modifying the tasks' inputs can be evident in some areas, such as waste management, where that change would affect the amount of waste and the related treatment costs.
4+5	The imported goods and resources should also be subject to evaluation regarding the expiration date, amount of waste, especially the packaging, quality, required energy and resources to use it, and the environmental effects of transporting. That gives the upper hand to local suppliers.
3	Food waste is unavoidable, but with the proper analysis, meal quality could be raised instead of quantity rising, the nutritional value could be improved, and the waste could be reused.
All hotels	Hotels cannot claim to be green without greening their sources. Due to the high-scale demand for resources by hotels, hotels gain the upper hand, leaving suppliers with one option only: following the eco-friendly path.
3	Small hotels are struggling to get eco-goods at better prices because of their low demand, which will reflect on the prices of their services.
3+5	Government rules and supportive programs toward the environment are still at the beginning of this subject, and development in this area is slow. On the other hand, the global development of eco-friendly activities regarding the hotel industry has progressed so far, and the acceleration is so fast. But at some level, the government side will become mature enough.
4+5	Even the green practices have made some savings, but the taxes and cost of using energy are still high because depending on natural energy to cover the hotel's needs is not possible.
3+5	Depending on green energy or produce, hotels need to meet many requirements, which may not be possible due to the location and the weather.
3	Making employees fund green practices requires time and practice, but eventually, it will become a habit. The output may not be good at the beginning, but the reputation, support, and interest will reach the desired level.
All hotels	Transforming to become eco-friendly is a long-term investment with a return, and the benefits are higher than keeping the regular practices. Shareholders understand this fact and support it.
5	Communicating with customers is an effective method to hear about their ideas, review and evaluation of green services. The hotel should employ an easy method of contacting customers, such as QR codes.

3+5	Customers have become more aware of environmental hazards and green practices; the hotel should consider that seriously.
4	Educating customers is very important as what they consume has a significant impact on the environment. By increasing their awareness of environmental issues and making them more adaptive to environmental practices, this will, in turn, reduce the negative environmental impacts very significantly and tangibly to the greatest extent, as they are the main consumers of food and water, whether in showers or toilets. Moreover, the electricity and energy and in general, a large number of the hotel's resources.
4	Customers' lack of awareness is evident in their logic. They consider what has been paid in advance the price of services, whether food, energy, or water, and thus will consume as much as they want as long as they cover the cost, ignoring the cost and environmental consequences.
5	Marketing for applied green practices and environmental protection is considered an effective tool for attracting more customers and enhancing the hotel's image.
5	Environmental certificates accompanied by a tangible and noticeable value from the green service which provided to customers is the best marketing combination of the green practices.
4+5	Each green management had its own impotency; they worked in parallel to achieve the best possible green performance on the organizational level.
4	Some practices may be of a special nature, as they can be started directly without complicated prior preparations, such as replacing some of the materials used with other materials that are more environmentally friendly.

*3: three-star hotel, 4: four-star hotel, 5: five-star hotel.

Source: Author's own editing based on managers' points of view during the meetings, 2025

4.2 Discussions

Results varied between the different segments, which indicates that each segment had its own experience and point of view toward the implemented environmental practices in hotels by their different departments and managements.

4.2.1. Customers

Based on the regression analysis, which has been used to analyze the relation between three main independent variables (Green supply chain management GSCM, green human resources management GHRM, and green marketing GM) and on main dependent variable (Hotel performance HP), all hypotheses have been accepted, referring to a significant effect of the green practices on the hotel's performance, but this effect was not positive all the time. The first hypothesis (H1) test shows that the green supply chain management has a significant effect on the hotel performance, but this effect was negative: GSCM (β= -0.082, t=-2.26, p=0.024). But this negative relation is extremely small. Moreover, the correlation between GSCM and HP was also negative, but its value was also small, reflecting a low level of correlation (-0.146). According to previous studies, many customers, especially in luxurious hotels, see the green practices as a negative gesture that affects the quality of the services, and it is at a luxurious level. This can be more obvious toward some special practices of the green supply chain management, such as water management by using high-pressure and low-flow equipment, where customers think that the hotel, by adopting those developments, will not be able to present the service at the same luxurious level. The same thing is happening when it comes to using recyclable or recycled equipment, many customers especially in luxurious hotels will translate such items as a low-quality material. Moreover, using ecological and less harmful materials towards the environment might also be seen as a sign of low-quality items, but from some customers' points of view, it has a lower quality than the regular materials, and even if it has the same effectiveness level, its effectiveness will be questioned. This was clearly obvious during the Covid-19 crisis, when customers preferred the traditional sterilization and disinfection material over ecological ones, especially when the eco products are new or unknown, compared to the traditional ones.

This result reveals a very important fact, that a segment of customers has a low education or information about environmental protection, green practices, and their efficiency, whether environmentally or in terms of the quality of services. Hotels serve different segments of customers, from different countries and cultures, in this study, customers segment contained participant from many countries, first world countries till the third world countries, some of those countries has a better level of development compared to Hungary regarding environmental practices, and some other countries has a lower level. Both types would give the green practices a negative result, the higher developed countries will compare the situation in Hungary to their countries. On the other hand, customers from a lower developing level might not be able to evaluate the green services accurately. This all will play some role in the evaluation. Also, the level of education will play a role in directing the evaluation.

This is why they see any environmental service as of lower quality than regular services. This is what the fourth hypothesis (H4) revealed (GM*GSCM: $F^2 = -1$, $F(3, 537) = 58.6$, $p < .001$), the (H4) was accepted but it also has a negatively, the green marketing moderate the relation between the green supply chain management and hotel performance negatively. This relation was already negative as (H1) showed but the total effect increased slightly to become more negative, but both relation whether with moderation effect or without it is so small and close to zero. The translation of the negative moderating effect of the green marketing is introducing green base services for low or none environmentally educated people will have a negative effect. Some explanation may not be enough, sometimes it is hard to understand what the hotel is trying to do by adopting green practices especially when the culture of some visitors are far from green practices.

Another reason can justify the negative results of (H1,H4), during the meeting with the hotels managers, they referred to an important point which is: many customers believe that the can use the resources during their stay in the hotel as they want, because they are paying its price, moreover, they want to spend their time in the hotel without any accounting to anything else but the level of their staying and enjoying, and that relates directly to their consumption of the resources.

Additionally, the customers who are focusing on the luxurious level of their stay will find it as a negative point when the hotel uses materials or items that are not from international brands and suppliers. This also justifies why green supply chain management had a negative effect on the hotel performance, because as an environmental hotel, many items and materials are provided from a local provider, but with the required level and quality to present the green services.

Above all, the prediction analysis shows that when there is an increase per 1 unit of the GM as a moderator between GSCM and HP, the effect will increase in the negative direction, e.g. for (-1SD the effect is -0.0027) and for (the mean value the effect is -0.0686) and for (+1SD the effect will become -0.1125). This shows that informing customers more about green practices using the same methods will have more negative results; in other words, the marketing strategy for the GSCM practices needs to be modified.

The green Human Resources management had a significant effect on the hotel's performance, which supports the hypothesis (H2). This effect was positive on the hotel performance GHRM ($\beta = 0.281$, $t=7.008$, $p<0.001$), reflecting the satisfaction that customers had while engaging with hotels' employees. This also reflects the increasing importance of investing more in human resources as a key element for success in the organization. According to the research, employees were able to solve customers' problems at a satisfactory level regarding environmental issues. Above all, this is a sign that the GHRM is doing its job and applying a good strategy, including providing hotels' employees with the necessary training to present and deliver green services successfully, encouraging them and supporting them to provide the desired green performance.

The third hypothesis (H3) has also been approved, showing that green marketing has a significant and positive effect on the hotel performance GM (β= 0.349, t=8.643, p<0.001). In general, obtaining an environmental certificate gives any organization positive points to its image and its competitive advantage, which means the hotel that obtains such a certificate is not just caring about the environment and the future of the planet, but also this hotel has followed and complied with serious procedures throughout the production of its services. Obtaining the certificate is not the end of the story, Green Marketing continues to inform other parties, including customers, about these certificate/s and what additional practices the hotel applies. Employees through their activities also play their part in the indirect marketing of the hotel green practices, not only by informing customers about the green practices and related green services and products, but also, customers will notice and analyze unconsciously how the hotel's employees doing their regular task with an eco-friendly touch, the will see how the employees respect and apply green practices by themselves, then the customers will got indirect stimulation to act environmentally and believe that what the hotel is doing is not just some marketing but also a truth and serious action. This will not be without the right support and act of the GHRM, and this indicate that the role of green human resources management was confirmed and approved its significant and positive effects on the hotel performance, in other words the fifth hypothesis (H5) has been approved to confirm the positive and significant moderating effect of the green human resources management on the relation between green marketing and hotel's performance (GHRM*GM, $F^2 = 0.11$, $F\ (3, 537) = 79.1$, $p < .001$). Even though the effect size was not big, but the R^2 increased by 0.36% which reflects after all a positive moderate effect.

The prediction analysis shows the moderator effect of GHRM on the relation between GM and HP, showing an increase in the effect value with an increase in the SD of the moderator. When the GHRM SD-1 of the mean, the effect is 0.2114, when the SD mean, the effect increases to become 0.2792, and when the SD +1 of the mean, the effect becomes 0.3471 and so on. Meaning that with more support and enhancement of the GHRM practices, more positive effects will happen between the GM and HP.

Moving deeper into details, the path analysis showed more detailed information, and which practices had the main effects, in this analysis some variables have been divided into sub variables in order to get more detailed results than the regression analysis, starting with the independent variables: GHSM has been divided into three sub-variables, i.e. resources management (resc), waste management (wast), and suppliers relations management (wast), GHRM had no changes, GM has been divided into two sub-variables i.e. Environmental certificate (cert), and green marketing practices (gm). The dependent variable HP has been divided into three sub-variables i.e. customers' satisfaction (sat), customers' loyalty (loy), and employees' attitude and satisfaction (emp).

The first hypothesis (H1) was not approved due to no significant effects of the green supply chain management on the hotel performance, even though most of the path coefficients were negative, but the values were so small, reflecting the very small negative effects of GSCM on the hotel performance. This result came in the same direction as the regression analysis result indicated, where the (H1) was approved and it was in the negative direction, but the effect was very small.

The resource management (resc) had a negative effect (Path Coefficient) on the three dependent sub-variables: resc → emp (β=-0.0093, p=0.8794), resc → sat (β=-0.0078, p=0.898), and resc → loy (β=-0.0312, p=0.588). The waste management also has a negative effect (Path Coefficient) on the HP sub-variables: wast → emp (β=-0.079, p=0.2604), wast → sat (β=-0.089, p=0.2047), wast → loy (β=-0.04, p=0.5362). And for the supp, the effect of supp on the loy was positive: supp → loy (β=0.0169, p=0.7246), and the effect of supp on the emp was also positive: supp → emp (β=0.0681, p=0.2184). but the effect of supp on the sat was also negative: supp → sat (β=-0.009, p=0.8424).

Based on both analyses' results, green supply chain management did not have a good effect on the hotel performance from customers' points of view, and that could be mainly due to the demographic specifications of the customers and their preferences as mentioned before. That should push the hotels' management to take some steps to fix this error, because GSCM effects on the environment are critical, and trying to become green without it is meaningless, not just because of the environmental side, but also due to its feasibility side.

The second hypothesis (H2) was accepted based in the path analysis results, green human resources management had a significant effects on hotel performance regarding its sub-variables i.e. customers' satisfaction, customers' loyalty, and employees attitude and satisfaction, which indicates that GHRM practices have an effective effect on the hotel and on its employees particularly, employees were able to deliver the required performance and qualitative green services to gain customers' satisfaction (β=0.183, p=<0.01) and loyalty (β=0.285, p=<0.01) and they showed a high level of satisfaction while doing their jobs and serve customers (β=0.2028, p=<0.01). The regression analysis results indicate the same results as the path analysis regarding the GHRM effect on the HP. According to both analyses' results, Green Human Resources management has a very significant and important role to play in hotels regarding green practices, and it can achieve a better performance compared with traditional situations.

On the other hand, their hypothesis (H3) was approved partially based on the path analysis results. Having a green certificate or a set of green practices did not have significant effects on the customers' satisfaction (β=0.0288, p=0.5474) or employees' attitude (β=0.045, p=0.3885), because obtaining such a certificate will not help to deliver the green image if it came without the green marketing practices to inform customers about what is those practices and certificate, and what is the efforts requirements and conditions those the hotel has to compile with and fulfil before obtaining the environmental certification. On the other hand, green marketing practices GM have significant effects on the hotel performance including customers' satisfaction (β=0.335, p=<0.01), loyalty (β=0.1736, p=<0.01), and on employees' attitude (β=0.157, p=<0.01). Without informing customers in the right ways about the green practices and obtained certificates, they will not be able to measure and evaluate the hotel's green services and performance, but when they understand appropriately, their loyalty toward green practices and services will be created (β=0.191, p=<0.01).

Both hypotheses four (H4), which test the moderating effect of green marketing on the relation between green supply chain management and hotel performance, were not approved; no significant effect was found. The moderator effects for the sub-variables had a negative value in some relations and positive values in others, but without a significant P-value for any relation. But on the other hand, even if there are no significant values, the effect values can give some direction

or a small indicator about the effect, even if it is so small. In this direction, the path analysis results are almost identical to the regression analysis results. Most of the sub-variables relations are negative, green certificate (cert) sub-variable had nine tested moderation effects, none of them were significant, only one was positive which is between resources management and customers' loyalty (cert*resc →loy/ β=0.038, p=0.624), while the other eight relations were negative, starting with the effects of GSCM sub-variables on customers' satisfactions, cert*resc →sat (β=-0.0172, p=0.824), cert*wast →sat (β=-0.0076, p=0.93), and cert*supp →sat (β=-0.074, p=0.297). This shows that obtaining an environmental certificate or applying green practices will not give any added value if it comes alone, because customer' satisfaction will not be gained without the appropriate information and explanation. The same issue is for customers' loyalty, cert*wast →loy (β=-0.096, p=0.263), cert*supp →loy (β=-0.006, p=0.92). The same problem will appear when customers tries to evaluate employees' satisfaction and attitude while doing their jobs regarding environmental services without the appropriate understand and acknowledge with the hotel's green practices, results will not be positive, cert*resc →emp (β=-0.013, p=0.88), cert*wast →emp (β=-0.091, p=0.3), cert*supp →emp (β=-0.056, p=0.402). On the other hand, green marketing practices as a sub-variable had better results compared to the environmental certificate, four relations were positive and five were negative. GM effects were positive between waste management and HP sub-variables: gm*wast →sat (β=0.185, p=0.053), gm*wast →loy (β=0.04, p=0.66), gm*wast →emp (β=0.09, p=0.32). This means that with the right marketing practices the hotel can deliver the wanted image about its practices. But also, hotel may not succeed or achieve the planned results from the gm practices based on customers opinion regarding green practices, GM had a negative moderating effects on the resources management, gm*resc →sat (β=-0.132, p=0.081), gm*resc →loy (β=-0.054, p=0.445), gm*resc →emp (β=-0.037, p=0.657). And also, negative moderating effects on the relation between suppliers' relation management and both customers' satisfaction (gm*supp →sat/ (β=-0.0143, p=0.83)) and employees' attitude and satisfaction (gm*supp →emp/ (β=-0.005, p=0.94), but it was positive on the customers' loyalty (gm*supp →loy/ (β=0.035, p=0.59)).

The fifth hypothesis (H5) was not approved either regarding path analysis results, even five of six moderator effects were positive, but they were not significant. Green human resources management have a positive moderator effect on the relations between green marketing (cert and gm) and hotel performance (sat, loy): ghrm*cert →loy ((β=0.079, t=1.62, p=0.106)), ghrm*gm →loy (β=0.009, p=0.836), ghrm*cert →sat (β=0.097, p=0.06), ghrm*gm →sat (β=0.037, t=0.79, p=0.429). Regarding the effect on the relation between green marketing practices and employees' attitude and satisfaction, this effect was negative (ghrm*gm →emp/ β=-0.025, p=0.64), but it was positive with cert instead of gm (ghrm*cert →emp/ β=0.06, p=0.28).

4.2.2. Employees

Based on the regression analysis results which have analyzed the relations between the main variables i.e., GSCM, GHRM and GM as independent variables and HP as a dependent variable, only two out of five of the study's hypotheses were approved, which are hypotheses one (H1) and two (H2). On the other hand, the hypotheses (H3), (H4) and (H5) were not approved.

Beginning with the first hypothesis (H1) which tested the effect of green Supply Chain management (GSCM) on the hotel performance (HP), it was accepted, and the relation was significant and in a positive direction ($\beta= 0.379$, $t=5.402$, $p<0.001$).

This hypothesis reveals much information and points, first of all, that applying green supply chain management practices in green hotels is compulsory for employees to obey. After all, it is obligatory for the employees to do it. Those practices are clear and easy to follow and apply and most of the time monitorable and directed by their supervisors. The second point is that the results of adopting GSCM practices will affect the hotel performance one way or the other and will be noticed directly by customers when employees are doing their job and practicing in a green and environmentally friendly way.

After all, in the same way that the reviews with the managers refer to the fact that applying green Supply Chain management in the hotel will lead to noticeable savings because the green practices, after all, attempt to conserve or save resources and consume them in planned ways. Through applying their daily duties and tasks, employees will notice and feel the real effect of green practices on the hotel. They will also be able to notice and identify how those practices affect customer satisfaction and customer loyalty. They will be able to evaluate how customers liked or did not like the green practice, or regarding green Supply Chain management applied changes. Because employees are in the front line to present hotel's services and products, they can see how customers react to Hotels Green practices regarding e.g., water saving and management, energy saving, the waste management, used material and equipment that the hotel use, the way of presenting food, Providers types whether they are green or not Green, Local or International, and after all evaluate the quality of services if good or not compared to the traditional or regular material quality and services.

Moreover, employees will show how dealing with green products and practices regarding green Supply Chain management will be easier than the regular task or acceptable even if it is obligatory. Still, after all, if hard or difficult, then there will be some bad results or relations between the Green Supply Chain management and the hotel's performance after applying those practices. Still, the results show that the relation is positive and significant at the same time.

The second hypothesis (H2) that tested the effect of green Human Resource Management on the hotel performance was also approved and the relation was significant and positive on the hotel performance ($\beta= 0.301$, $t=4.064$, $p<0.001$).

Green and Human Resource Management (GHRM) has the major effect on the employees, because in the first place, GHRM practices aim directly to shape the working area of employees and also to identify the Targets and desired results. It also stimulates and encourages employees to adopt and accept the green practices into their daily Duties and activities as much as possible and in an efficient way. This management aims not just to prepare employees to be able to handle customers' requests or to be able to present the green services in the best way, but it also tries to make the working atmosphere and situation more suitable and convenient to the employees themselves, because without that, the presented green services quality will decline.

GHRM also created and spread that green culture all around the hotel, making employees believe in their main rules and duties toward the environment by taking their part while doing their daily activities and tests. It provides them with the required training in order to upgrade their skills or teaches them how to deal with problems and present the services in the most efficient way. It also supports them and gives guidance when they need, evaluates and follows up their environmental performance, and then rewards them when they achieve the desired goals or exceed the wanted results. All of that is under the green human resource management duties umbrella. After all, when the GHRM succeeds in doing its tasks, the working atmosphere will be green willingly.

Green human resource management has to create a cooperative atmosphere between all departments, because the hotel's performance after all is not related to or dependent on one management or two, it is a collaborative work among all departments and employees. And that happened by providing the needed support for employees, helping them to achieve their tasks with an environmental touch, aiming to reach the desired Hotel performance. According to the analysis, the results on the hotel performance reflected positively, including customers' Loyalty, satisfaction, employees' attitudes and satisfaction, as well as the financial performance of the hotel.

According to the regression analysis results, the third (H3) hypothesis was not accepted, and the relation or the effect of the green marketing GM on the hotel performance HP was not significant (β= 0.023, t=0.370, p=0.712), also, the effect and the green marketing is so small, but after all it is positive.

This indicates that green marketing in its current form and used tools do not have a big effect on the customer's preferences from the employees' point of view, or the employees cannot use the green marketing tools accurately. Moreover, hotel managers referred to a serious problem, that a segment of employees with an old mentality or who do not support green practices, will be forced to present green services, but that may not be in the right and efficient way. And their way of presenting green services without showing their interest in those products did not convince customers or create an interest in choosing those products. Moreover, employees may find that the green marketing practices have no additional benefits to increase the demand for green services. The hotel should reconsider its green marketing practices to achieve more added value from such activities and stimulate employees' interest in it.

Green marketing did not have a moderate effect on the relation between GSCM and HP (GM*GSCM: β = -0.0.36, F (3, 218) = 40.1341, p = 0.508), which led to rejecting the fourth Hypothesis (H4). It worth to mention that even the moderate effect was not significant but it was in the negative direction, that may indicate indirectly that the green marketing practices need to be taking into consideration and reformed in order to produce a positive effect and be able to marketing for green supply chain management practices to gain positive opinions instead of negative influence, since the effect of GSCM on the hotel performance was positive and significant (H1).

The fifth hypothesis (H5) was also rejected, indicating there is no significant effect of the green human resources management GHRM on the relation between green marketing GM and the hotel performance HP (GHRM*GM: β = -0.04, F (3, 218) = 34.54, p = 0.36). Even though the effect was not significant, it was in the negative direction but with a very small value. This refers to a problem with the hotels' green marketing practices or green human resources management practices. The positive effect of GHRM was approved (H2) when it was not approved for the GM (3), indicating a problem with the hotel's green marketing practices. The hotel must reform and organize the GM practices to get a positive result.

For a deeper understanding, the path analysis provided more detailed results of the relations in the study model. The main variables have been divided into sub-variables, starting with the independent variables. The green supply chain management GSCM has been divided into four independent sub-variables i.e., resources management (resc), waste management (wast), suppliers' relations management (supp), and green procurement management (products). Green human resources management has been divided into three independent sub-variables i.e., green working atmosphere (atmosphere), green culture (green cult), and green human resources practices (GHRM). Green marketing has been divided into two independent sub-variables i.e., environmental certificate (cert), and green marketing practices (GreenM). And the dependent hotel performance has been divided into four dependent sub-variables i.e., customers' satisfaction (sat), customers' loyalty (loy), and employees' attitude, satisfaction (emp), and financial performance (fin).

Regarding the path analysis results, all of the hypotheses have been approved, but partially, except for hypothesis (H4), which has not been accepted. Some of the sub-variables' relations were significant, but some others were not. Starting with the first hypothesis (H1), resources management (resc) effect on hotel performance (HP) was statistically significant, and it was positive for each of customers' satisfaction (sat) (resc → sat: β=0.357, p=<0.01), customers' loyalty (loy) (resc → loy: β=0.209, p=<0.01), and employees' attitude, satisfaction (emp) (resc → emp: β=0.4387, p=<0.01). But it was negative on the financial performance (fin) (resc → fin: β=-0.15, p=0.078) even if this relation is almost significant, it should be considered. Those results indicate that customers were satisfied with the green products presented by the hotel, those products were suitable for their expectations, and above all, they are willing to retry those products again in the future and would recommend them to others. Employees were also comfortable and satisfied presenting those products and working to prepare the related services.

On the other hand, the effect of resource management on the resources was not positive; the financial return, whether from the environmental taxes or additional demand, was not positive, as employees informed.

The green procurement management (products/ prod) had positive and significant effect on both customers' satisfaction (prod → sat: β=0.235, p=<0.01), and customers' loyalty (prod → loy: β=0.21, p=<0.01), this indicate that customers were satisfied using environmental products and they noticed that the hotel using ecological products and material in its tasks and services, this points of view reached to the employees in different ways, such as asking for the green product, or giving them a positive feedback and opinions about those products, customers did not just liked those products, but also they are willing to use them in the future even if the cost was slightly higher comparing with regular products. On the other hand, the effect of the green procurement management of the financial performance (prod → fin: β=0.076, p=0.376) or the employees' satisfaction and attitude (prod → emp: β=0.037, p=0.549) was not significant, but it was positive with a very small value. In fact, the green products and material usually come with a higher price than the regular one, especially if the procurement management did not order with a nig quantities to get the size benefits, and this is a reason why most of none-green hotels are the small hotels. For the employees, using green products and regular products may be the same if they have the same level of efficiency, because to employees, the same task will be performed whether using green or regular materials, such as cleaning.

The third part of the first hypothesis (H1) is the suppliers' relations management (supp), the results of the path analysis show that all relation effects are positive but only one is statistically significant, which is the effect of the suppliers' relations management on the financial performance (supp → fin: β=0.21, p=<0.01), this reveal that hotels with a big demand can achieve more feasible purchasing from the providers, but also in this case, the green products seeded to have good prices. This result agrees with the previous result of (prod → fin), even though that result was not significant, but it was in the positive direction, which indicates hotels have a good relationship with their providers, and the prices are acceptable and have a positive influence on the hotels' financial performance. Hotel managers during the focus group meetings referred that their hotels have a vast scale in demand, this level of demand gave them the upper hand to force their conditions and terms on their providers, providers are trying to gain their satisfaction with more offers and good conditions.

The other three relations were not statistically significant, but on the other hand, the small effect of those relations on the hotel performance was positive (supp → sat: β=0.049, p=0.494), and (supp → loy: β=0.0463, p=0.44), those two results agree with the previous results (prod), where the results showed a positive and significant results, customers were satisfied with the products qualities, and at the same time the providers of those products and materials. The same situation was for the employees (supp → emp: β=0.093, p=0.121).

The last of the GSCM relations in the waste management (wast), the analysis indicates that only one part regarding the effect of waste management on the hotel performance was statistically significant which is the relation between the waste management and the financial

performance, and it was negative relation or effect (wast → fin: β=-0.306, p=<0.01). This refers to a big problem almost all hotels have; hotels managers also mentioned what food waste is, and how difficult it is to avoid or deal with it. Nowadays, the first thing that will come to your mind when thinking of a hotel, especially at breakfast time, is the open buffet. Not to mention the food waste in other areas during the preparation of luxurious meals, or the overplanning and demanding ordering of food equipment. Moreover, the hotel sometimes finds itself forced to use non-green products, and dealing with such product waste through environmental methods is also costly. Another two parts of this relation were also negative but not significant, starting with the effect on the employees' attitude and satisfaction (wast → emp: β=-0.0481, p=0.435), dealing with the waste in an environmentally friendly way needs more effort which will be performed by the hotel's employees, and sometimes this additional work makes things more complicated. Customers also may give negative feedback about waste management practices (wast → sat: β=-0.039, p=0.66), they notice if the hotel did not apply it in the appropriate ways regarding their point of view, they may also dislike the idea of the reuse or recycling, especially when it comes to luxury. On the other hand, the effect on the customers' loyalty was positive but also not significant (wast → loy: β=0.07, p=0.314).

The third hypothesis (H3) was also approved partially; the sub-variables' relation varied significantly and non-significantly, and also in positive and negative effects on the hotel performance sub-variables. The green working atmosphere (atmosphere) had two significant and positive relations or effects, and two non-significant but negative effects on the hotel performance. The green working atmosphere had significant effect on customers satisfaction (atmospher → sat: β=0.144, p=0.035), this indicates that the green human resources management succeeded to create a good collaboration and communication network among all managements and departments to facilitate the employees working regarding green services and could provide them with required support and directing when they needed it, that all reflected on the employees' ability to serve customers better and get their satisfaction and also their loyalty (atmospher → loy: β=0.23, p=<0.01).

On the other hand, the effect of the green working atmosphere on the financial performance or employees' attitude and satisfaction was neither significant nor positive. In order to present the green services, more efforts should be presented by the employees, that means more energy and harder work. This will have a negative effect on the employees, rewards and support may reduce this negativity, but it will stay there (atmospher → emp: β=-0.008, p=0.925). Employees might be exhausted, which will reflect on their attitude to doing their jobs, which will affect not just the quality of the services, but also the resources used and mistakes, which will waste more resources (atmosphere → fin: β=-0.13, p=0.13).

Green culture as a sub-variable of green human resources management did not have a significant and positive effect on the employees' attitude and satisfaction (green cult → emp: β=0.134, p=0.089) but this effect was positive and could be considered at 0.1 p-value. This indicates that green human resources management could affect human resources positively by providing them with the necessary green training and enhancing their belief about their main

role as a key element to present the green services and taking their part to protect the environment. The green culture also had a positive effect on the financial performance (green cult → fin: β=0.08, p=0.414) and customers' satisfaction (green cult → sat: β=0.0125, p=0.85), but their effects were not significant. These refer to the importance of the green culture to create better environmentally responsible employees that their performance will reflect on both customers' and financial performance due to doing their jobs and tasks in the best way. On the other hand, green culture had a non- significant, negative effect on the customers' loyalty (green cult → loy: β=-0.078, p=0.318) but it also has a small value, this might reflect some personal experiences, mentioning that some green hotels does not have a highly qualified employees yet regarding green practices, or their experience was not as they expected, or they compared it to a previous experience.

The last part of the second hypothesis (H2) is the effect of green human resources practices on the hotel's performance. This hypothesis was approved for the effects on financial performance (ghrm → fin: β=0.2262, p=0.017) and employees' attitude and satisfaction (ghrm → emp: β=0.2, p=<0.01) and both effects were in the positive direction. This result reflects the positive effects that will be generated when the employees receive the required support and encouragement, and how that will enhance their green performance and thus the financial impact and also the willingness to achieve more.

The effect on the customers' loyalty was not significant but positive (ghrm → loy: β=0.074, p=0.304), meaning that positive and good employees' green performance will affect the customers' loyalty after trying the green services provided by those employees. On the other hand, the effect on the customers' satisfaction was not significant but it was negative (ghrm → sat: β=-0.0726, p=0.326), this result has also a very small effect value, which might happen due to a personal experiences, misunderstanding, but it also might be after engaging with employees whom do not support the green practices, or with new employees whom could not deliver the idea in the required manner.

The third hypothesis (H3) had only two parts, the first one is the effect of the green marketing practices on the hotel's performance's four sub-variables i.e., (gm → fin: β=0.35, p=<0.01), (gm → sat: β=0.199, p=<0.01), (gm → loy: β=0.238, p=<0.01), (gm → emp: β=0.12, p=0.05).

On the other hand, the other part of the hypothesis has been accepted partially, the environmental certificate effect on the customers' satisfaction was statistically significant but that was in the negative direction (cert → sat: β=-0.1988, p=<0.01). Moreover, two other relations were in a negative direction but were not statistically significant i.e., (cert → fin: β=-0.092, p=0.2859), and (cert → emp: β=-0.0627, p=0.33). Only one non-significant relation was positive (cert → loy: β=0.0137, p=0.846).

Those results indicate that having a green certificate or practice is not enough alone to market the green image, that will have a negative impact on the hotel performance financially due to the cost of such practices and certificates, on the customers' satisfaction because they

cannot see and feel what the hotel has advertised, and also on the employees. That may only affect the customers' loyalty positively, because during their visit, they may touch the green atmosphere in the hotel and experience that but without the appropriate marketing this relation will remain non-significant. The hotel's employees reflect the importance and the feasibility of using a planned set of green marketing strategies, to make every task done by the employees as indirect marketing, and adopt unique and new ways to deliver the green messages to the customers. That will guarantee a positive impact on the financial performance because employees will understand more and will be able to become more effective, customers' satisfaction also will be more affected, they will be able to judge and notice more, and that in its turn will affect their loyalty and encourage them to revisit the hotel in the future.

Due to the complexity of the model, the fourth hypothesis regarding the path analysis has created 32 moderate relations, and non-statistically significant relations were found. 17 relations had a positive effect, while the others had a negative effect. Starting with the moderate effects of the green certificate on the relation between green procurement management and hotel performance, none of the relations were statistically significant, the effects had positives small value on financial performance (prod*cert → fin: β=0.014, p=0.89), customers' satisfaction (prod*cert → sat: β=0.044, p=0.666), and loyalty (prod*cert → loy: β=0.014, p=0.88). Where it was negative on employees' attitude and satisfaction (prod*cert → emp: β=-0.07, p=0.36).

The other moderate effect on the relation between green procurement management and hotel performance is the green marketing practices effect, this effect was significant and positive in the effect on the financial performance at P<=0.1 (prod*gm → fin: β=0.185, p=0.0922), this reflects the importance of the green marketing practices to present the green services and products to increase the demand on it. The effect on the customers' satisfaction (prod*gm → sat: β=0.0842, p=0.4) and loyalty (prod*gm → loy: β=0.07, p=0.52) was also in the positive direction but insignificant. On the other hand, the effect on the employees' attitude and satisfaction was negative but also insignificant (prod*gm → emp: β=-0.05, p=0.55).

The moderate effect of the green certificate on the relation between resources management and hotel performance was insignificant of all parts but it has some positives relations, including the financial performance (resc*cert → fin: β=-0.17, p=0.122), customers' satisfaction (resc*cert → sat: β=-0.005, p=0.96), customers' loyalty (resc*cert → loy: β=-0.03, p=0.78), and employees' attitude and satisfaction (resc*cert → emp: β=-0.042, p=0.678). on the other hand, the green marketing practices as a moderator has three positive insignificant effects on the same relation i.e., the financial performance (resc*gm → fin: β=0.053, p=0.599), customers' satisfaction (resc*gm → sat: β=0.0415, p=0.644), employees' attitude and satisfaction (resc*gm → emp: β=0.0512, p=0.55) where customers' loyalty got a negative effect (resc*gm → loy: β=-0.0136, p=0.88).

The moderate effect of the green certificate on the relation between suppliers' relationship management and the hotel was insignificant for all parts, but it had one positive relation, including the financial performance (supp*cert → fin: β=0.075, p=0.399). Where the

other relations were negative, including customers' satisfaction (supp*cert → sat: β=-0.115, p=0.19), customers' loyalty (supp*cert → loy: β=-0.115, p=0.11), and employees' attitude and satisfaction (supp*cert → emp: β=-0.065, p=0.37). The green marketing practices as a moderator on the other hand have two positive insignificant effects on the same relation i.e., the financial performance (supp*gm → fin: β=0.0859, p=0.335), customers' loyalty (supp*gm → loy: β=0.015, p=0.827). Where customers' satisfaction (supp*gm → sat: β=-0.0136, p=0.87) and employees' attitude and satisfaction (supp*gm → emp: β=-0.004, p=0.96) got negatives effect.

The last part of the fourth (H4) hypothesis is the moderate effect of the green marketing on the relation between GSCM and HP. The moderator effect of the green certificate was not significant at P=<0.05 but only one relation was at p=< 0.1 and it was positive relation i.e., the effect of waste management on the employees' attitude and satisfaction (wast*cert → emp: β=0.154, p=0.093), where the rest of the relation were insignificant thus in the positive direction including each of the financial performance (wast*cert → fin: β=0.065, p=0.532), customers' satisfaction (wast*cert → sat: β=0.165, p=0.11), customers' loyalty (wast*cert →loy: β=0.11, p=0.156). On the other hand, the moderate effect of the green marketing practices was only significant in one relation but at P=<0.1 and in the negative direction on the relation between waste management and employees' attitude and satisfaction (wast*gm → emp: β=-0.1428, p=0.088). The other relations include two insignificant relations in the negative direction i.e., customers' satisfaction (wast*gm →sat: β=-0.078, p=0.459), customers' loyalty (wast*gm → loy: β=-0.0765, p=0.345), and one insignificant relation in the positive direction which is the financial performance (wast*gm → fin: β=0.118, p=0.279).

Based on the mentioned results above, the fourth hypothesis (H4) was rejected, where only three of 32 moderate relations were statistically significant at P=<0.1 but not 0.05. Testing the moderate effects of green marketing on the GSCM showed that employees are considered to have a significant role to play in the marketing and informing of the green products and practices implemented by the hotel. In order to have more positive effects, more investment in the human resources must be applied.

The fifth hypothesis (H5) tests the moderator effects of the green human resources management on the relation between green marketing and hotel performance. It also had several relations, four out of 24 relations were statistically significant, one with positive effects and three with negative ones. The first relations group examines the moderator effects of the green working atmosphere on the relationship between green marketing and hotel performance. The first part of this relation testing the moderate effects of green certificate on it, one relation was statistically significant including customers' loyalty (atm*cert → loy: β=0.189, p=0.024), and at P=<0.1, customers' satisfaction could be considered as a significant relation (atm*cert → sat: β=0.168, p=0.09), and the effect was positive. The other two relations, including the financial performance (atm*cert → fin: β=0.01, p=0.9), and employees' attitude and satisfaction (atm*cert → emp: β=0.0228, p=0.84) were also positive but insignificant. The second part tested the moderating effect of the green marketing practices on the relation, the effect on the

relation between green working atmosphere and employees' attitude and satisfaction could be considered significant at p=<0.1 and it was positive (atm*gm → emp: β=0.147, p=0.089). one the other hand, two relations were significant but with negative effect i.e., customers' satisfaction (atm*gm → sat: β=-0.23, p=0.0008), customers' loyalty (atm*gm → loy: β=-0.222, p=0.0015). The last relation was the effect on the financial performance, which had a positive effect, but it was insignificant (atm*gm → fin: β=0.026, p=0.81).

The second part of the hypothesis tests the moderating effects on the relationship between green marketing and green culture. A non-significant moderate effect has been found for this group. The first part includes the effect of the green certificate on the relationship. Two relations had positive effects but insignificant ones, including both the financial performance (gc*cert → fin: β=0.176, p=0.27) and employees' attitude and satisfaction (gc*cert → emp: β=0.19, p=0.19). and the other two relations had an insignificant negative effect, including customers' satisfaction (gc*cert → sat: β=-0.152, p=0.318), and customers' loyalty (gc*cert → loy: β=-0.055, p=0.637). The second part includes the effect of green marketing practices on the relationship. Also, the two relations had positive effects but insignificant ones i.e., customers' satisfaction (gc*gm → sat: β=0.073, p=0.45), and customers' loyalty (gc*gm → loy: β=0.03, p=0.73). where the other two relations had a negative, insignificant effect, including the effect on the financial performance (gc*gm → fin: β=-0.14, p=0.266), and employees' attitude and satisfaction (gc*gm → emp: β=-0.147, p=0.149).

The third and last part of the fifth hypothesis tests the moderate effects on the relation between green marketing and green human resources management practices, including two groups, the first group is the moderate effects of green certificate on the relation, none of the effects were significant, but three effects were in the negative direction including the financial performance (ghrm-*cert → fin: β=-0.119, p=0.24), customers' satisfaction (ghrm*cert → sat: β=-0.04, p=0.65), employees' attitude and satisfaction (ghrm*cert → emp: β=-0.07, p=0.335), while one effect was positive i.e., customers' loyalty (ghrm*cert → loy: β=0.013, p=0.877). The second part includes the effect of green marketing practices on this relation. Only one relation had a significant effect, and it was negative. This effect is the effect of the GHRM practices on the relation between green marketing practices and the financial performance (ghrm*gm → fin: β=-0.19, p=0.048). Another negative effect has been revealed, but it was insignificant including the effect on the customers' loyalty (ghrm*gm → loy: β=-0.0038, p=0.96). The last two effects were also insignificant, but the effect here is positive, which includes both customers' satisfaction (ghrm*gm → sat: β=0.035, p=0.63), employees' attitude, and satisfaction (ghrm*gm → emp: β=0.069, p=0.26).

The testing of the fifth hypothesis relations showed that the different contents of the GHRM had different effects on the hotel performance. Obtaining an environmental certificate or applying green practices will have a positive effect on the hotel's performance in general if the GHRM is engaged in the equation. Green marketing practices might have a negative effect if the GHRM is engaged. This refers to a serious problem that the green human forces need more training and preparation to present and market the green services and practices in a more

efficient way.

5. Conclusions and recommendations

This chapter presents the study's conclusions, recommendations, and limitations.

5.1 Conclusions

This study aimed to present the effect of applying environmental standards, practices and adopting green certificates on the hotel performance. The study subjected the lowest cost environmental standards and related practices that any hotel in order to become an environmental or eco-friendly hotel should start with and adopt some of those standards. Those standards and practices have been extracted from the GSTC (Global Sustainable Tourism Council) criteria for hotels as a green destination.

The study examined Budapest's green hotels due to their similarity with many European cities, especially their capability and variety of options for applying environmental practices. Green hotels were selected based on previous research done by researchers, which identified green hotels in Budapest based on the adoption of one or more of several internationally or domestically recognized environmental certificates.

The theocratic background presented the analyzed variable and its importance regarding the hotel industry and the environmental performance. Green practices were organized into three main management areas: green human resources management, green supply chain management, and green marketing. Those three management strategies have been considered strategic steps to adopt the environmental aspect. A 2D study was conducted, which included two main direct stakeholders as separate segments, i.e., Green Hotel's customers and employees. The study is based on quantitative data; each segment had its own model, questionnaire, and analysis. Two different statistical analysis methods have been used. The first is the multiple regression analysis, which was applied to analyze customers and employees segments' collected data, including the variable in general viewing. On the other hand, the path analysis method is used to dive deeper into details and divide the latent variables into sub-variables, which enables the study to create more relations and extract more information and results. At the same time, three interviews were conducted as an exploratory study for future research using a qualitative method.

Each analysis delivered valuable and different ways to analyze the research problem, thus delivering different results. Additionally, the three meetings, which were organized with three different hotels and different star ratings, helped to enhance the distributed questionnaires and also to get some reference points of view to understand the analysis' results better. Moreover, the hotel managers had a noticeable role in improving the questionnaires and creating a better version.

The regression analyses for the two segments presented two different results due to each segment's various points of view. The three main management variables were presented as independent variables, one variable each, where the hotel's performance was given in one

dependent variable. On the other hand, path analyses used sub-variables to reveal the more detailed relation types between the study indicators.

The green supply chain management effect on the hotel performance differed from one segment to another. A statistical and positive impact on the hotel performance has been indicated as a result of analyzing employees' replays, reflecting the importance of the green supply chain management on the work's tasks, employees' satisfaction, hotel financial performance and above all, it was accepted by customers based on their feedback provided to the employees. On the other hand, the effect provided by customers' replays' analysis was not positive, but it was tiny. In the different analyses, this effect was insignificant and not negative for all practices. This indicates a hidden problem that needs more investigation and analysis, or there are some practices that some customers do not prefer.

Green human resources management had a significant effect on the hotel's performance. That effect was positive according to all segments, but its strength varied between the study's segments. The answers to the employees' segment revealed more positive results regarding the effect of green human resources management on hotel performance than the results of the customers.

That shows the significant importance of green human resources management on the hotel's performance. It is essential for the management as an effective key to raising the hotel performance level, necessary in employees' points of view as a supportive way for them to do their jobs and tasks better, also for the customers through their engaging with employees that has a practical and positive influence on their satisfaction and loyalty. However, the path analysis did not show a significant effect of all green human resources management components on the hotel performance parts regarding employees' answers, indicating that some practices need to be focused on more to get higher benefits from it.

The last management is green marketing management, and the analysis results revealed statistically significant effects on the hotel's performance, according to customers' points of view. That effect was also positive regarding the employees' answers but not significant. This highlights the importance of green marketing to present and introduce green products and services or even to appropriately announce the green practices implemented by the hotel.

Customers did not welcome green practices regarding green supply chain management; this problem can be solved with the appropriate green marketing for the green practices in the hotel, to provide customers with a better understanding of the nature of the services, then they will be able to evaluate and judge the quality and reasons of green services. Some customers are self-benefit oriented, and it is the hardest group to convince them of the green services. This is the reason behind the adverse moderate effect of green marketing on green resource management; such customers will see green services as poor practices or non-qualified compared with regular practices. Customers seeking luxurious service and products find it hard to be convinced by the goodness of green practices, and how saving resources will not affect the quality of what they get.

According to the study results, green human resources management and green marketing practices will generate a positive effect on the financial performance of the hotel, on the other hand, green supply chain management practices and specifically the waste management practices and the resources management had an adverse effect on the financial performance, environmental certificate had also an adverse effect on the financial performance but it was tiny. For the green human resources management, green human resources management practices and green culture both positively affected the hotel's financial performance. In contrast, the green working atmosphere affected it negatively.

The analysis of customers' replies indicated a statistically significant relationship between environmental certificates and customers' loyalty, while Green Marketing practice had more significant relationships with both customers' satisfaction and loyalty. This lowers the interest in obtaining a certificate compared to the actual services they receive. Employees, on the other hand, agreed with the customers' point of view. Moreover, hotel managers highlighted during the meeting that practices are more important than the certificate.

Based on the analyzed segments, applying green human resources management will more positively affect the hotel's performance. However, the effects of green supply chain management were not positive for all practices, and they need more support and appropriate marketing and explanation to be evaluated and judged correctly. That would answer the first research question.

Regarding the second research question, the effect of GHRM on the GM varied between segments and analyses. Customers' regression analysis revealed a small, significant positive effect, while employees' analysis showed a small negative impact, but this effect was not statistically significant. On the other hand, customers' path analysis did not reveal any significant relations, while employees' analysis showed different types of relations. The significant relations were statistically significant, while some other relations were negative but had no significant value. This indicates the positive effect of GHRM on GM.

The effect of GM on the GSCM, which is the third research question, also showed different results regarding the analyzed segments. Customers' regression analysis results showed significant negative results, and this effect had a small value. For the employees' analysis result, the relation had a negative effect, but this effect was small and not significant. On the other hand, path analysis results for both segments did not have any significant effect on this relation.

5.2 Recommendations

This study aimed to discover the effects of applying green standards represented into applicable green practices by three main hotel's management which are GSCM, GHRM, and green marketing, on hotel performance: financial performance, customer satisfaction, loyalty, employee satisfaction, and attitude. Based on that, some recommendations could be outlined regarding each practice or sub-management, as well as the affected performance. Some practices could be applied, and some others require a minor enhancement to add more value. On the other hand, some practices should be modified where applying them directly or in the current form will negatively affect the performance.

This study recommends paying close attention to green marketing strategies and practices, as GM practices will significantly positively affect hotel performance, including financial performance, customer satisfaction, loyalty, employee satisfaction and attitude. Focusing on obtaining a green certificate will positively affect customer loyalty. This reveals the importance of green marketing practices over green or environmental certificates. Obtaining an environmental certificate did not have a negative effect on the hotel's performance regarding customer analysis, but the results were not significant. For employees, obtaining environmental certificates would negatively affect customer satisfaction. The same applies to financial performance and employees' satisfaction, where only customers' loyalty was positively affected, which means that green marketing practices played the leading role in explaining and showing customers what obtaining environmental certificates means. In short, environmental certificates cannot speak alone.

Regarding GHRM, the GHRM practice is also highly important to start with. In addition to the positive effect of GHRM practices on the hotel performance, according to customers' analysis, it is somehow unavoidable to achieve a green transformation, where it could be considered a main column of this change. GHRM practices also had a positive effect on financial performance and employee satisfaction. However, the application of the GHEM practices should be done with extra attention because of their extended impact on customers.

Improving the green working atmosphere as a part of GHEM could be postponed for a short time, since it has a positive effect on customers' loyalty and satisfaction, but it requires an additional cost, which is not significant. Otherwise, postponing it for a long time would be recommended. Green culture, on the other hand, has a positive effect on hotel performance in general, but it also has a minor negative impact on customer loyalty. This effect could be ignored due to its tiny and insignificant value. Spreading green culture over the organization is much easier after adopting the GHRM practices successfully and starting to modify the working atmosphere into a green form.

Moving to the last management (GCSM), starting with green products is the best practice of sub-management to start with, this will affect both customers' satisfaction and loyalty positively and significantly, also the effect on the financial performance and customers satisfaction and attitude will be positive even if it is not a significant effect. The second part of

GSCM this study would recommend beginning with is the suppliers relations management, this would affect the financial performance positively and significantly, moreover the effect on employees and customers loyalty will be positive too, while the effect on customers satisfaction regarding customers' analysis is negative but not significant, this indicates that customers may question those practices at the beginning but after subjecting those practices to an authentic experience, their situation will turn to a positive on and become a positive loyalty.

Resource management could be the next step, as it has positive and significant effects on customer satisfaction and loyalty, employee satisfaction and attitude, which gives it a lot of importance regarding employee analysis, even if it has a negative impact on financial performance, but this effect is not significant. For customers' analysis, the effect was negative on the hotel performance, but this effect was not substantial and shallow. Regarding the points mentioned, this change could be postponed and delayed slightly. The fact is that the negative effects of customer analysis are generated due to the idea of the correlation between resource management and reducing service quality and luxurious level; This idea could be changed after the hotel provides the required marketing and education.

Waste management as the last part of GSCM would be recommended to leave it to the last, the analysis shows the negative and significant effect on the financial performance, and other performances, except for customers' loyalty regarding employees' analysis, which was positive, but not significantly. Those results indicate that more enhancement and marketing of waste management practices are required.

5.3 Limitations

The questionnaire of this study was distributed from March 2024 to the end of August of the same year. It would be better if it were possible to keep collecting the data for one year, but that would require more cooperation from targeted hotels because Budapest has seasonal tourism traffic, and the highest number of visitors comes during spring and autumn. Also, the study could not limit which hotels would cooperate with this study and distribute the questionnaires; the researcher had to keep the hotels' names anonymous so that participants would feel more comfortable answering. Additionally, the small number of answers prevents the researcher from doing further analysis based on respondents' nationalities, as each country or world region has a different level of development and different culture regarding environmental protection and applied green practices in daily life, which has affected their answers. The same issue applies to the level of education, visiting time, gender, and economic situation. The employees' segment also would be subjected to further analysis regarding work experience and working management or department. The study could not organize a sufficient number of meetings that are considered suitable to make a qualitative analysis, which could add considerable value to this study and reveal more results and points of view, as well as a better explanation of the statistical analysis results. The perfect situation would be if this study could be applied for one hotel or the same hotel chain, answers then results would be 100% accurate and reflect a well-known situation, this study dealt with all green hotels as if they were at the same level of applying green practices which might be a weakness point. Unfortunately, after distributing the questionnaires to 90 hotels, a humble number of replies were received.

This research presents only the suggestions and recommendations of the first step, while the second step must be based on postponed practices which had negative impacts on the hotel's performance at the beginning.

6. New scientific results

This study presents a sufficient number of results, and each relation between variables could be considered a result. The main new scientific results could be summarized in the following points:

1- Implementing green practices regarding managements mentioned in the hotel industry must be applied in a planned sequence and with enough preparation to guarantee positive effects and achieve desirable performance.

2- Adopting green human resources management practices is the best first step if the hotel wants to become eco-friendly. If these practices are applied correctly, this management will transform the human forces into green entities and provide them with sufficient preparation and training to do their tasks appropriately.

3- Product and supplier relations management positively affect hotel performance. Resources and waste management should be postponed to avoid negative effects on hotel performance and prepare the required background for them by the other management to fulfill the requirements that guarantee the best understanding and education for customers.

4- Obtaining a green certificate did not noticeably affect customers' preferences. Meanwhile, according to customers' and employees' replies, green marketing practices obtained by employees, whether directly or indirectly, had better effects on customers' satisfaction, loyalty, and financial performance. At the same time, both customers and managers indicated that green marketing as a whole has a positive effect on the hotel's performance in general.

5- Green human resources management positively affects the hotel's performance; all the segments revealed the same result. Furthermore, it will have a positive impact on customers' satisfaction and loyalty, as well as on employees' attitude and satisfaction.

6- The moderator effect of green human resources management on the relation between green marketing and the hotel's performance strongly confirms the further importance of having qualified human forces regarding green practices in order to implement direct and indirect marketing.

7- Green marketing had a negative, moderate effect on the relationship between green supply chain management and the hotel's performance, even though this relation was negative in the first place; the moderator effect made it worse.

8- Additionally, the study presents two different models and two path maps of the analyzed three green managements in the hotel industry. Each map or model presents a different point of view based on its segment.

7. Summary

Environmental protection is considered one of the primary and urgent problems facing all industries, including the hotel industry, due to its huge negative effect on the environment, and as one of the biggest industries, especially for its pivotal role in the tourism and hospitality industry. Many hotels are swinging between staying in the regular type or changing and becoming eco-friendly due to the cost and massive efforts required to transform into an environmentally friendly form, as well as the acceptance and success in delivering the green message accurately. This study aimed to analyze how adopting the lowest cost practices would affect the hotel performance, and which of these practices have more feasibility to be applied first, those practices have been organized and divided into three main groups based on related management which are green human resources management, green marketing and green supply chain management. The aim of this study was to present an extensive analysis of the green practices in the hotel industry. A quantitative method was employed by this study in order to analyze the effect of green practices on hotels' performance, including financial performance, customer satisfaction, loyalty, employee satisfaction and attitude. The study focused on two segments that represent the two main direct stakeholders, including customers and employees. Two different questionnaires were distributed, and each group had its own questionnaire. Five hypotheses have been formed to test the relations and the effects of the selected green practices on the hotel performance and how those practices would affect each other. A multiple regression analysis method was employed to analyze the responses of each segment regarding the main variables, where the path analysis method was employed to perform a deeper analysis of the sub-variables. Additionally, exploratory meetings with the management of three different star-rated hotels were conducted. Questionnaires came in three main steps in order to enhance them, starting with pilot questionnaires, then previewing those questionnaires by some hotels' managers and modifying some questions in order to reach the final stage of questionnaires in the enhanced form. Those meetings helped to improve the questionnaires and provide a better understanding of the results. This study had many findings regarding the research's main question. Applying green practices has a lot of positive points and effects on the hotel performance, but there are also adverse effects. However, these adverse effects can be avoided by giving more attention by the decision makers to some essential practices and applying them appropriately:

1- Customers' answers showed negative results in some parts of green supply chain management; those points are related to waste management and resources management, which means that the hotel must work more to teach and educate customers about green practices or try to solve the problem when those practices have been applied.

2- Even green marketing has a positive effect on hotel performance, which does not mean everything is okay. According to the results regarding green supply chain management, there is a problem with the service quality, or with the missing information that could not reach the customers.

3- Green supply chain management will have a negative effect on the hotel's financial

performance. If the hotel cannot handle such an issue, then green supply chain management could be postponed completely or partially. It is true that green practices reduce the use of resources, which will lead to saving some costs, but on the other hand, waste management is costly, and green products are sometimes more expensive than regular products.

4- Obtaining green certificates or applying green practices is useless without practical green marketing tools. Alone, this will have a negative effect instead of a positive one.

5- Investing in green human resource management practices and green marketing practices would be the main foundation if the hotel wants to succeed in becoming an eco-friendly hotel. The green human factor is very important to gain customer loyalty and achieve their satisfaction when they receive the green service. It is also the main method to apply the indirect green marketing which will be recognized by customers and create a deep effect.

According to the results, this study recommends that hotels begin by applying green human resources management, then green marketing and green supply chain management. Some green supply chain management practices or sub-managements could be applied in steps.

APPENDICES

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A2. Tables, figures, list of publications and Acknowledgment:

Appendix 1. Interviews and meetings' questions with hotels managers

Q1. What are the fundamental and lowest cost eco-friendly practices?

What I mean is: would there be any first step practices to adopt which are not cost full to the hotel, such as training employees to use machines and electrical in the most efficient way or reducing the amount of the waste by using products with the quantity and quality I need without additional amount that will not be used and expired.

Q2. How would the adoption of green practices reduce the cost? What about the environmental taxes, and the financial facilities and support from the government? And did this adoption generate a good saving due to reducing and planning consumption?

Q3. What roles can GHRM (Green Human resources management) and GSCM (green supply chain management) play to enhance the hotel's financial performance? And how would that affect customers and employees?

Green Human resources management includes all typical human resources management practices, for example: with the right environmental training for the employees, they will understand their important roles and then they will be encouraged to apply green practices, turning off machines, lights, air conditions after finishing, do not waste so much material whether while preparing food, cleaning….

The Green supply chain management is wider than the typical supply chain management, it starts with creating and choosing the services based on what type of materials it will need and what is the type of the providers. It also extends to include how the hotel uses the resources and energy, and what type of waste management it uses. Also how do adopting these green practices affect the employees, did they like it? How did they react with those practices?

One of the most important questions about the cost is: how becoming green reduced environmental taxes, and did you get any support or financial facilitates from the government, such as reducing the tax for renovation to become green, taxes on needed materials and equipment needed in the renovation, reducing business fees, loans with low profit rates in case you needed to apply the upgrades?

Q4. Would customers be interested in local environmental certifications? Do they care about tangible services or just environmental words on papers?

Q5. How would the application of GHRM and GSCM affect hotels?

In general, was the effect of becoming green (environmentally) positive on the hotel?

How long did it take to touch the difference from been non-environmental hotel to an environmental one. Not only about the cost, but also about the working atmosphere, customers reacting….

Q6. Are managers interested in applying to GHRM and GSCM? And would this encourage non-green hotels to adopt this change as a first step towards becoming green?

In other words, were the managers interested in applying green practices, did they argue about it, and

how?
Q7. What are the direct and indirect effects of applying eco-friendly practices in hotels and on stockholders? Were the stockholders interested in this change? Because it is not a free cost change, it requires some additional investment.

Source: author's own editing. 2023

Appendix 2. Questionnaires questions

	Latent variables		seg*	question
GSCM	Water mang	GSE1, GSC1	g	hotel applies an integrated water resources management (e.g., towel & linen reuse program, doing needed maintenance ASP)
		GSE2	e	hotel Applies effective water management methods (e.g, Gray water to wash toilets, planned gardens watering, low flow shower).
	Energy mang	GSE3, GSC2	g	the hotel is applying energy efficiency solutions and reduced energy consumption (e.g., using LED light bulbs, card system, controlling the air condition temperature, doing the needed maintenance ASP, Installing energy efficient appliances).
	Waste mang	GSE4, GSC3	g	the hotel uses reusable items to reduce solid waste (e.g., glass cups and bottles instead of plastic).
		GSE5, GSC4	g	hotel applies a responsible waste management policy to minimise waste and handle generated waste environmental.
	Suppliers' relations mang	GSE6, GSC5	g	dealing with environmental suppliers cannot be ignored in order to become truly environmental business.
		GSE7, GSC6	g	cooperation with suppliers to better environmental performance and general performance for both sides (Supplier integration)
		GSE8	e	we depend on local suppliers as a source for many materials and supplies we use in the hotel
	Food & beverage mang	GSE9, GSC7	g	the hotel present food in planed portion and menu that guarantee customers satisfaction and minimize the waste as much as possible at the same time. it is presenting food in the right way to eliminate the waste (e.g., meals meet customers' requests, meal size is enough to serve its purpose...)
		GSE10	e	food waste is not completely avoidable. We try to maximize the benefits from this waste by recycling, reusing in different ways, etc.
		GSC8	c	food waste is not completely avoidable. Hotel has to have an effective way to maximize the benefits from this waste by recycling, reusing in different ways, etc.
	purchasing, material, inventiry mang.	GSE11 ,GSC9	g	the hotel uses ecological products (e.g., less packaging, environmentally produced, can be either recycles, reused, or disposed, its process needs less resources till reach its final shape)
		GSE12 ,GSC10	g	env. produced and Materials must have a certain level of quality to be accepted
		GSE13 ,GSC11	g	hotel reduces using of harmful effect materials on the environment (e.g., type of soup, cleaning chemicals_

G. marketing	G. marketing practices	GME1, GMC1	g	the hotel follows and applies a clear environmental protocols and green practices
		GME2, GMC2	g	hotel is marketing for updated environmental practices and environmental certifications it has.
		GME3, GMC3	g	the hotel created formal or informal communication channels serve to spread green culture
		GME4	e	we inform the guests about the implemented environmental practices and why it is important.
		GMC4	c	we have been informed about the implemented environmental practices, and the importance of protecting the environment
	Envi. Certifications	GME5, GMC5	g	environmental certifications are important to support hotel's image
		GME6, GMC6	g	environmental practices and performance are more important than environmental certification to identify an environmental hotel.
GHRM	GHRM practices	GHE1, GHC1	g	it is very important to reward and encourage employees with unique environmental performance.
		GHE2	e	I have an important role as a part of hotel's environmental performance.
		GHE3	e	I received the needed training and feel confident to play your part to protect the environment and provide new ideas and suggestions.
	Green culture	GHE4, GHC2	g	trained employees are the key elements to apply successful green practices, and services.
		GHE5, GHC3	g	employees are the key elements to introduce the services and reflect the hotel's environmental commitment.
		GHE6	e	I am so enthusiastic to achieve a high environmental performance and be rewarded.
	Working atmosphere	GHE7	e	cooperation and good communication with departments and employees is a key element for the environmental activities' success (Internal integration)
		GHE8	e	we got the needed support, directing, help and resources to apply green practices in the best ways
		GHC4	c	hotel's employees were capable to solve my problems and requests, and marketing for green practices and products.
Hotels Performance	Financial performance	HPE1, HPC1	g	obligatory government regulations and environmental tax had a good effect on hotels regarding environmental transformation.
		HPE3, HPC2	g	eco-friendly activities have a positive impact to reduce the risk of accidents and legal action
		HPE2	e	Sales have increased after adopting green practices, and new segment has been attracted
	Customers satisfaction	HPE4	e	hotel's image has been improved by green practices, and customers satisfaction raised
		HPE5	e	we try to collect all customers feedback and services evaluations to evaluate their experience and try to fill the gap.

		HPC3	c	environmental practices has a positive effect on the hotel's reputation
		HPC4	c	I am happy to participate in reducing environmental impacts while I am staying in the hotel
		HPC5	c	green products and services might be more expensive, but I understand that, and I will pay more as a small part I can do to reduce environmental impact. The cost meets the value.
		HPC6	c	green services and products meet our needs by quality, time, expectations
		HPC7	c	hotel asked for our feedback and services evaluations, this shows how great value customers are for the hotel.
	Customers loyalty	HPE6, HPC8	g	customers' loyalty is gained after they trust the green hotel through their experiences.
		HPE8, HPC11	g	understanding customers' needs and notes and feedback is very important to improve the hotel's performance and actively involve them (Customer integration)
		HPE7	e	the hotel aims to provide customers with high quality green services and products to achieve their satisfaction and gain their loyalty.
		HPC9	c	I prefer to use environmental services and products. This Green hotel will be one of my choices for staying in the future.
		HPC10	c	hotels green products and services were satisfying, staying in this green hotel should be recommended for everyone.
	employee's satisfaction	HPE9, HPC12	g	employees' attitudes reflect a high level of satisfaction
		HPE10	e	I feel more satisfied in the hotel especially regarding to environmental practices
		HPE11	e	I am more interested to be part of eco-friendly programs in the hotel
		HPE12	e	I feel self-estimated and belonging to this hotel and I am welling to achieve more toward environment
		HPE13	e	I am more confident doing my job

*g (for both segments), e (employees), c (customers).

Source: author's own editing. 2024

Appendix 3. Questionnaires questions after the modification

Variable	Latent variables			related questions
	Group	Cus.	Emp.	
GSCM	Water mang		GSE1	The hotel applies an integrated water resources management (e.g., towel and linen reuse program, high-pressure shower, doing needed maintenance as fast as possible)
		GSC1		The hotel applies an integrated water resources management (e.g., towel and linen reuse program, high-pressure shower, etc)
			GSE2	Hotel Applies an effective water management method (e.g., grey water to wash toilets, planned gardens watering, low flow shower).
	Energy mang		GSE3	How seriously does the hotel consider energy efficiency performance? (LED lighting, Air condition control, high-efficiency applications such as monitors, smart cards, doing the required maintenance without delay, smart sensors for lighting, etc).
		GSC2		How seriously did you notice that the hotel is considering energy efficiency performance? (LED lighting, Air condition control, high-efficiency applications such as monitors, smart cards, undamaged applications, smart sensors for lighting, etc).
	Waste mang	GSC3	GSE4	The hotel uses reusable items to reduce solid waste (e.g., glass cups and bottles instead of plastic).
		GSC4		Did you notice that the hotel applies a responsible waste management policy to minimize waste and handle generated waste environmentally?
			GSE5	The hotel applies a responsible waste management policy to minimize waste and handle generated waste environmentally.
	Suppliers' relations mang	GSC5	GSE6	It is important to use eco-friendly products from eco-friendly providers to become a truly environmental business.
		GSC6	GSE7	Hotels and their suppliers should collaborate and understand each party's needs to achieve a high level of environmental performance (Supplier integration).
			GSE8	We depend on local suppliers as a source for many materials and supplies we use in the hotel
		GSC7	GSE9	The hotel presents food in planned portions and a menu that guarantees customer satisfaction and minimizes waste as much as possible at the same time. it is presenting food in the right way to eliminate waste (e.g., meals meet customers' requests, meal size is enough to serve its purpose...)

			GSE14	The hotel depends on certified eco-friendly providers to get needed materials and products.
		GSC8		Food waste is not completely avoidable. Hotels must have an effective way to maximize the benefits from this waste by recycling, reusing in different ways, etc.
			GSE10	Food waste is not completely avoidable. We try to maximize the benefits from this waste by recycling, reusing in different ways, etc. (sometimes by collaboration with a third party)
	purchasing, material, inventory mang.	GSC9	GSE11	The hotel uses ecological products (e.g., less packaging, environmentally produced, can be either recycled, reused, or disposed of, its process needs fewer resources to reach its final shape)
		GSC10	GSE12	Environmental products and Materials must have the same level of quality or better than the regular products to be accepted.
		GSC11	GSE13	The hotel reduces using of harmful effect materials on the environment (e.g., type of soap, cleaning chemicals), And it is trying to replace it with more eco-friendly materials.
		GSC12		The hotel procures the necessary materials and products from certified environmentally friendly service providers.
G. marketing	Envi. Certifications	GMC1	GME1	The hotel follows and applies clear environmental protocols and green practices
		GMC5	GME5	Environmental certifications are important to support a hotel's image
		GMC6	GME6	Environmental practices and performance are more important than environmental certification to identify an environmental hotel.
	G. marketing practices	GMC2	GME2	The Hotel announces for each update on its environmental practices and environmental certifications it has
		GMC3	GME3	The hotel created formal or informal communication channels to spread green culture and present eco-friendly practices (e.g., posters, online hints, ideas and facts, and suggestions by employees)
		GMC4	GME4	We have been informed about the implemented environmental practices, and the importance of protecting the environment
GHRM	GHRM practices	GHC1	GHE1	It is very important to reward and encourage employees with unique environmental performance.
			GHE2	I have an important role as a part of the hotel's environmental performance.
			GHE3	I received the needed training and feel confident to play my part in protecting the environment and providing new ideas and suggestions.
	Green culture	GHC2	GHE4	Trained employees are the key elements to applying successful green practices, and services.

		GHC3	GHE5	Employees are the key elements to introduce the services and reflect the hotel's environmental commitment.
			GHE6	I am so enthusiastic to achieve a high environmental performance to be rewarded.
	Working atmosphere		GHE7	Cooperation and good communication with departments and employees a key element of the environmental activities' success (Internal integration)
			GHE8	We got the needed support, direction, help, and resources to apply green practices in the best ways
		GHC4		The hotel's employees could solve my problems and requests, and marketing for green practices and products.
Hotels Perf.	Financial performance	HPC1	HPE1	Obligatory government regulations and environmental tax had a good effect on hotels regarding environmental transformation.
			HPE2	Sales have increased after adopting green practices, and a new segment has been attracted
		HPC2	HPE3	Eco-friendly activities have a positive impact on reducing the risk of accidents and legal action
	Customers satisfaction		HPE4	The hotel's image has been improved by green practices, and customer satisfaction has raised
			HPE5	We try to collect all customers' feedback and service evaluations to evaluate their experience to fix any problem and provide better services.
		HPC3		Environmental practices have a positive effect on the hotel's reputation
		HPC4		I am happy to participate in reducing environmental impacts while I am staying in the hotel
		HPC5		Green products and services might be more expensive, but I understand that, and I will pay more as a small part I can do to reduce environmental impact. The cost meets the value.
		HPC6		Green services and products meet our needs by quality, time, expectations
		HPC7		The hotel asked for our feedback and service evaluations, this shows how great value customers are for the hotel
	Customers loyalty		HPE14	Customer feedback and service evaluations are very important to make sure the hotel's services meet their expectations and satisfaction
		HPC8	HPE6	Customers' loyalty is gained after they trust the green hotel through their experiences
			HPE7	The hotel aims to provide customers with high-quality green services and products to achieve their satisfaction and gain their loyalty.
		HPC9		I prefer to use environmental services and products. This Green Hotel will be one of my choices for staying in the future.

		HPC10		The hotel's green products and services were satisfying, and staying in this green hotel should be recommended for everyone.
		HPC11	HPE8	Understanding customers' needs, notes and feedback is very important to improve the hotel's performance and actively involve them (Customer integration)
	employee's satisfaction		HPE9	Hotel's employees show a high level of satisfaction while doing their tasks
		HPC12		Hotel's employees show a high level of satisfaction while doing their tasks
			HPE10	I feel more satisfied in the hotel, especially regarding environmental practices
			HPE11	I am more interested in being part of eco-friendly programs in the hotel
			HPE12	I feel self-estimated and belong to this hotel.
			HPE13	I am more confident doing my job
			HPE15	I am willing to achieve more toward the environment inside and outside the hotel.

* emp. (employees), cus. (customers).

Source: author's own editing. 2024

Appendix 4. Main variables, sub-variables and items with coding

main variable	Sub-variable	Employees	Customers
GSCM	resources mang.	GSE1	GSC1
		GSE2	GSC2
		GSE3	GSC9
			GSC10
			GSC11
	Products mang.	GSE11	
		GSE12	
		GSE13	
	Wast mang.	GSE4	GSC3
		GSE5	GSC4
		GSE9	GSC7
		GSE10	GSC8
	Suppliers' relations	GSE6	GSC5
		GSE7	GSC6
		GSE8	GSC12
		GSE14	
Green marketing	Env. Certificates	GME1	GMC1
		GME5	GMC5
		GME6	GMC6
	Green marketing	GME2	GMC2
		GME3	GMC3
		GME4	GMC4
GHRM	GHRM practices	GHE1	GHC1
		GHE2	GHC2
		GHE3	GHC3
			GHC4
	Green culture	GHE4	
		GHE5	
		GHE6	
	working atmosphere	GHE7	
		GHE8	
Hotel performance	Financial perf.	HPE1	
		HPE2	
		HPE3	
	Satisfaction	HPE4	HPC4
		HPE5	HPC5
			HPC6
			HPC7
	Loyalty	HPE6	HPC8
		HPE7	HPC9
		HPE8	HPC10

		HPE14	HPC11
	Employees sat.	HPE9	HPC12
		HPE10	
		HPE11	
		HPE12	
		HPE13	
		HPE15	

*GSCM: green supply chain management, GHRM: green human resources management.

Source: author's own editing. 2024

Appendix 5. Cross loadings table

	resc	wast	supp	products	cert	GreenM	GHRM	green cult	Atmos phere	fin	sat	loy	emp
GSE1	**0.899**	0.421	0.299	0.498	0.183	0.268	0.409	0.398	0.430	-0.070	0.471	0.514	0.580
GSE2	**0.898**	0.377	0.358	0.486	0.073	0.283	0.339	0.280	0.321	0.077	0.561	0.511	0.597
GSE3	**0.604**	0.315	0.388	0.433	0.306	0.231	0.349	0.383	0.321	0.016	0.268	0.303	0.351
GSE4	0.429	**0.891**	0.202	0.334	0.319	0.239	0.366	0.439	0.254	-0.183	0.292	0.427	0.366
GSE5	0.391	**0.796**	0.247	0.404	0.205	0.221	0.350	0.330	0.213	-0.054	0.180	0.284	0.272
GSE9	0.189	**0.603**	0.078	0.111	0.380	0.446	0.266	0.425	0.381	0.111	0.022	0.175	0.135
GSE10	0.140	**0.553**	0.037	0.089	0.343	0.347	0.225	0.376	0.193	-0.059	-0.085	0.129	0.064
GSE6	0.338	0.183	**0.694**	0.303	0.343	0.093	0.242	0.242	0.179	0.198	0.066	0.218	0.350
GSE7	0.306	0.219	**0.668**	0.386	0.183	0.089	0.288	0.254	0.289	0.086	0.203	0.215	0.128
GSE8	0.341	0.212	**0.784**	0.363	0.115	0.019	0.338	0.109	0.077	0.125	0.335	0.325	0.325
GSE14	0.205	0.067	**0.768**	0.283	0.144	0.079	0.277	0.222	0.246	0.150	0.141	0.182	0.278
GSE11	0.496	0.372	0.387	**0.841**	0.239	0.165	0.472	0.335	0.302	0.058	0.377	0.426	0.379
GSE12	0.316	0.404	0.300	**0.688**	0.221	0.158	0.358	0.282	0.182	-0.026	0.235	0.372	0.302
GSE13	0.538	0.192	0.393	**0.858**	0.022	0.090	0.301	0.229	0.257	0.174	0.460	0.402	0.410
GME1	0.141	0.357	0.271	0.174	**0.878**	0.278	0.367	0.348	0.150	0.031	0.026	0.255	0.214
GME5	0.057	0.232	0.216	0.073	**0.721**	0.167	0.235	0.341	0.146	-0.019	-0.109	0.048	0.068
GME6	0.219	0.233	0.128	0.144	**0.736**	0.368	0.153	0.241	0.246	0.050	0.004	0.218	0.119
GME2	0.198	0.321	0.082	0.090	0.399	**0.726**	0.182	0.332	0.267	0.042	0.135	0.255	0.205
GME3	0.203	0.196	0.086	0.162	0.353	**0.776**	0.161	0.357	0.440	0.234	0.218	0.357	0.129
GME4	0.331	0.310	0.058	0.144	0.232	**0.897**	0.239	0.344	0.435	0.216	0.365	0.466	0.406
GHE1	0.361	0.390	0.354	0.439	0.310	0.225	**0.848**	0.426	0.299	0.172	0.167	0.304	0.363
GHE2	0.427	0.310	0.351	0.411	0.216	0.159	**0.841**	0.418	0.406	0.096	0.320	0.451	0.494
GHE3	0.220	0.340	0.211	0.227	0.327	0.243	**0.698**	0.314	0.151	0.250	-0.005	0.196	0.290
GHE4	0.330	0.416	0.256	0.351	0.373	0.325	0.399	**0.871**	0.478	0.117	0.250	0.329	0.380
GHE5	0.293	0.367	0.171	0.228	0.206	0.320	0.401	**0.782**	0.399	0.152	0.183	0.306	0.347
GHE6	0.389	0.429	0.215	0.262	0.337	0.376	0.393	**0.780**	0.563	-0.034	0.280	0.355	0.369
GHE7	0.407	0.308	0.251	0.329	0.194	0.508	0.385	0.549	**0.925**	0.118	0.404	0.543	0.358
GHE8	0.375	0.261	0.184	0.224	0.227	0.351	0.304	0.523	**0.877**	-0.009	0.314	0.377	0.373
HPE1	-0.033	-0.049	0.085	0.033	0.010	0.169	0.036	0.063	0.037	**0.731**	0.176	0.039	0.088
HPE2	-0.008	-0.089	0.206	0.091	0.063	0.175	0.179	0.121	0.091	**0.870**	0.153	0.049	0.147
HPE3	0.049	-0.127	0.140	0.096	0.013	0.191	0.197	0.032	0.026	**0.780**	0.161	0.127	0.231
HPE4	0.358	0.134	0.253	0.368	0.025	0.336	0.217	0.215	0.344	0.284	**0.864**	0.570	0.499
HPE5	0.604	0.281	0.230	0.443	-0.016	0.258	0.215	0.302	0.372	0.094	**0.916**	0.597	0.559
HPE6	0.398	0.250	0.248	0.373	0.167	0.349	0.310	0.267	0.401	0.060	0.535	**0.712**	0.472
HPE7	0.522	0.333	0.277	0.459	0.194	0.432	0.343	0.321	0.432	0.086	0.666	**0.866**	0.635
HPE8	0.440	0.391	0.289	0.376	0.312	0.439	0.403	0.439	0.494	0.073	0.474	**0.872**	0.538
HPE14	0.480	0.361	0.280	0.437	0.201	0.318	0.339	0.298	0.379	0.091	0.488	**0.833**	0.482
HPE9	0.452	0.308	0.318	0.441	0.271	0.200	0.423	0.313	0.290	0.080	0.499	0.602	**0.794**
HPE10	0.605	0.314	0.273	0.323	0.017	0.306	0.310	0.384	0.374	0.061	0.389	0.398	**0.713**

HPE11	0.374	0.084	0.349	0.284	0.156	0.223	0.328	0.237	0.178	0.361	0.497	0.496	**0.730**
HPE12	0.523	0.287	0.273	0.400	0.113	0.187	0.415	0.348	0.321	0.094	0.493	0.437	**0.758**
HPE13	0.417	0.342	0.106	0.215	0.079	0.409	0.356	0.373	0.353	0.108	0.264	0.413	**0.688**
HPE15	0.442	0.193	0.397	0.344	0.255	0.171	0.371	0.321	0.239	0.266	0.501	0.527	**0.741**

Source: extracted from smart-pls3. 2024

Appendix 6. Moderator variables' Path Coefficient, F2, t-statistic value, P-value

Path	Path Coefficient	f Square	T	P Values	2.5%	97.50%
atm-cert -> fin	0.010	0.000	0.097	0.923	-0.188	0.229
atm-cert -> sat	0.168	0.019	1.674	0.094	-0.056	0.335
atm-cert -> loy	0.189	0.029	2.255	0.024	0.003	0.338
atm-cert -> emp	0.023	0.000	0.197	0.843	-0.211	0.243
atm-gm -> fin	0.026	0.001	0.243	0.808	-0.172	0.242
atm-gm -> sat	-0.236	0.060	3.342	0.001	-0.382	-0.097
atm-gm3 -> loy	-0.222	0.063	3.172	0.002	-0.347	-0.075
atm-gm -> emp	0.147	0.023	1.700	0.089	-0.006	0.337
gc-cert -> fin	0.176	0.009	1.100	0.272	-0.158	0.476
gc-cert -> sat	-0.152	0.009	0.999	0.318	-0.447	0.163
gc-cert -> loy	-0.055	0.001	0.471	0.637	-0.290	0.182
gc-cert -> emp	0.190	0.016	1.312	0.190	-0.093	0.472
gc-gm -> fin	-0.142	0.012	1.113	0.266	-0.385	0.103
gc-gm -> sat	0.073	0.004	0.748	0.455	-0.119	0.266
gc-gm -> loy	0.032	0.001	0.348	0.728	-0.160	0.204
gc-gm -> emp	-0.147	0.019	1.442	0.149	-0.396	0.009
ghrm-cert -> fin	-0.119	0.008	1.187	0.235	-0.313	0.080
ghrm-cert -> sat	-0.041	0.001	0.451	0.652	-0.208	0.156
ghrm-cert -> loy	0.013	0.000	0.154	0.877	-0.147	0.181
ghrm-cert -> emp	-0.071	0.005	0.964	0.335	-0.216	0.079
ghrm-gm -> fin	-0.190	0.033	1.977	0.048	-0.369	0.008
ghrm-gm -> sat	0.035	0.002	0.481	0.631	-0.103	0.185
ghrm-gm -> loy	-0.004	0.000	0.052	0.959	-0.160	0.127
ghrm-gm -> emp	0.069	0.009	1.119	0.263	-0.043	0.201
prod-cert -> fin	0.014	0.000	0.133	0.894	-0.176	0.230
prod-cert -> sat	0.044	0.002	0.432	0.666	-0.147	0.254
prod-cert -> loy	0.014	0.000	0.140	0.889	-0.186	0.215
prod-cert -> emp	-0.072	0.005	0.908	0.364	-0.220	0.094
prod-gm -> fin	0.185	0.017	1.684	0.092	-0.028	0.412
prod-gm -> sat	0.084	0.005	0.834	0.405	-0.105	0.298
prod-gm -> loy	0.072	0.004	0.646	0.518	-0.142	0.294
prod-gm -> emp	-0.050	0.002	0.598	0.550	-0.213	0.114
resc-cert -> fin	-0.171	0.015	1.546	0.122	-0.367	0.071
resc-cert -> sat	-0.005	0.000	0.053	0.957	-0.212	0.187
resc-cert -> loy	-0.032	0.001	0.348	0.728	-0.223	0.146
resc-cert -> emp	-0.042	0.001	0.415	0.678	-0.250	0.141
resc-gm -> fin	0.053	0.002	0.525	0.599	-0.159	0.242
resc-gm -> sat	0.042	0.001	0.462	0.644	-0.146	0.208
resc-gm -> loy	-0.014	0.000	0.150	0.881	-0.222	0.136
resc-gm -> emp	0.051	0.002	0.595	0.552	-0.138	0.208

supp-cert -> fin	0.075	0.004	0.844	0.399	-0.114	0.237
supp-cert -> sat	-0.115	0.013	1.304	0.192	-0.288	0.063
supp-cert -> loy	-0.115	0.015	1.603	0.109	-0.246	0.038
supp-cert -> emp	-0.065	0.005	0.892	0.372	-0.189	0.100
supp-gm -> fin	0.086	0.005	0.965	0.335	-0.086	0.266
supp-gm -> sat	-0.014	0.000	0.161	0.872	-0.197	0.136
supp-gm -> loy	0.015	0.000	0.218	0.827	-0.112	0.164
supp-gm -> emp	-0.004	0.000	0.051	0.960	-0.174	0.128
wast-cert -> fin	0.065	0.003	0.625	0.532	-0.158	0.255
wast-cert -> sat	0.165	0.025	1.614	0.106	-0.068	0.350
wast-cert -> loy	0.108	0.013	1.418	0.156	-0.050	0.251
wast-cert -> emp	0.154	0.025	1.680	0.093	-0.062	0.300
wast-gm -> fin	0.118	0.009	1.081	0.280	-0.112	0.311
wast-gm -> sat	-0.078	0.005	0.740	0.459	-0.285	0.135
wast-gm -> loy	-0.077	0.006	0.943	0.345	-0.252	0.072
wast-gm -> emp	-0.143	0.019	1.707	0.088	-0.306	0.023

***. P<0.01, **P<0.05, *P<0.1

Source: author's own editing based on extracted data from smart-pls3. 2024

Appendix 7. Moderator variables results summary

	result	relation
GHRM H5	atm-cert -> fin	(β=0.01, t=0.097, p=0.9)
	atm-cert -> sat	(β=0.168, t=1.67, p=0.09)
	atm-cert -> loy	(β=0.189, t=2.255, p=0.024)
	atm-cert -> emp	(β=0.0228, t=0.197, p=0.84)
	atm-gm -> fin	(β=0.026 t=0.243, p=0.81)
	atm-gm -> sat	(β=-0.236, t=3.34, p=0.0008)
	atm-gm3 -> loy	(β=-0.222, t=3.17, p=0.0015)
	atm-gm -> emp	(β=0.147, t=1.7, p=0.089)
	gc-cert -> fin	(β=0.176, t=1.0997, p=0.27)
	gc-cert -> sat	(β=-0.152, t=0.999, p=0.318)
	gc-cert -> loy	(β=-0.055, t=0.47, p=0.637)
	gc-cert -> emp	(β=0.19, t=1.31, p=0.19)
	gc-gm -> fin	(β=-0.14, t=1.113, p=0.266)
	gc-gm -> sat	(β=0.073, t=0.75, p=0.45)
	gc-gm -> loy	(β=0.03, t=0.35, p=0.73)
	gc-gm -> emp	(β=-0.147, t=1.44, p=0.149)
	ghrm-cert -> fin	(β=-0.119, t=1.187, p=0.24)
	ghrm-cert -> sat	(β=-0.04, t=0.45, p=0.65)
	ghrm-cert -> loy	(β=0.013, t=0.15, p=0.877)
	ghrm-cert -> emp	(β=-0.07, t=0.96, p=0.335)
	ghrm-gm -> fin	(β=-0.19, t=1.977, p=0.048)
	ghrm-gm -> sat	(β=0.035, t=0.48, p=0.63)
	ghrm-gm -> loy	(β=-0.0038, t=0.052, p=0.96)
	ghrm-gm -> emp	(β=0.069, t=1.1186, p=0.26)
G marketing H4	prod-cert -> fin	(β=0.014, t=0.133, p=0.89)
	prod-cert -> sat	(β=0.044, t=0.432, p=0.666)
	prod-cert -> loy	(β=0.014, t=0.1399, p=0.88)
	prod-cert -> emp	(β=-0.07, t=0.91, p=0.36)
	prod-gm -> fin	(β=0.185, t=1.68, p=0.0922)
	prod-gm -> sat	(β=0.0842, t=0.83, p=0.4)
	prod-gm -> loy	(β=0.07, t=0.646, p=0.52)
	prod-gm -> emp	(β=-0.05, t=0.598, p=0.55)
	resc-cert -> fin	(β=-0.17, t=1.55, p=0.122)
	resc-cert -> sat	(β=-0.005, t=0.05, p=0.96)
	resc-cert -> loy	(β=-0.03, t=0.35, p=0.78)
	resc-cert -> emp	(β=-0.042, t=0.415, p=0.678)
	resc-gm -> fin	(β=0.053, t=0.525, p=0.599)
	resc-gm -> sat	(β=0.0415, t=0.46, p=0.644)
	resc-gm -> loy	(β=-0.0136, t=0.15, p=0.88)

	resc-gm -> emp	(β=0.0512, t=0.595, p=0.55)
	supp-cert -> fin	(β=0.075, t=0.844, p=0.399)
	supp-cert -> sat	(β=-0.115, t=1.304, p=0.19)
	supp-cert -> loy	(β=-0.115, t=1.6, p=0.11)
	supp-cert -> emp	(β=-0.065, t=0.89, p=0.37)
	supp-gm -> fin	(β=0.0859, t=0.965, p=0.335)
	supp-gm -> sat	(β=-0.0136, t=0.16, p=0.87)
	supp-gm -> loy	(β=0.015, t=0.218, p=0.827)
	supp-gm -> emp	(β=-0.004, t=0.051, p=0.96)
	wast-cert -> fin	(β=0.065, t=0.625, p=0.532)
	wast-cert -> sat	(β=0.165, t=1.6, p=0.11)
	wast-cert -> loy	(β=0.11, t=1.42, p=0.156)
	wast-cert -> emp	(β=0.154, t=1.68, p=0.093)
	wast-gm -> fin	(β=0.118, t=1.081, p=0.279)
	wast-gm -> sat	(β=-0.078, t=0.739, p=0.459)
	wast-gm -> loy	(β=-0.0765, t=0.94, p=0.345)
	wast-gm -> emp	(β=-0.1428, t=1.71, p=0.088)

Source: author's own editing based on extracted data from smart-pls3. 2024

Appendix 8. Author (student) list of publications

1- Green Human Resources Management in the Hotel Industry: A Systematic Review. Authors: Alreahi, M. ; Bujdosó, Z. ; Kabil, M. ; Akaak, A. ; Benkó, K.F. ; Setioningtyas, W.P. ; Dávid, L.D. https://doi.org/10.3390/su15010099
2- Green Supply Chain Management in Hotel Industry: A Systematic Review. Authors: Alreahi, M. ; Bujdosó, Z. ; Dávid, L.D. ; Gyenge, B. https://doi.org/10.3390/su15075622
3- Sustainable tourism in the post-COVID-19 era : investigating the effect of green practices on hotel attributes and customer preferences in Budapest, Hungary. Authors: Alreahi, M. ; Bujdosó, Z.; Lakner, Z.; Pataki, L.; Zhu K.; Kabil, M. ; Dávid, L.D. https://doi.org/10.3390/su151511859
4- Covid-19 effects on tourism industry, case of Hungary. Authors: Alreahi, M. ; Bujdosó, Z. https://doi.org/10.33032/acr.6009

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