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**SUSTAINABLE HOSPITALITY: EXAMINING SUSTAINABLE
PRACTICES IN HOSPITALITY AND CONSUMER PERSPECTIVES**

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ABSTRACT

Sustainability has emerged as a critical concept across various sectors, including tourism and hospitality. Environmental degradation has accelerated in the 21st century, with all industries contributing to environmental degradation, albeit to varying degrees, and tourism is no exception.

The study employs quantitative surveys conducted among consumers and hotel representatives to examine their perceptions regarding environmental sustainability practices. This study examined how hotels in Hungary, which are members of HHRA, implementing green practises, and what are the most common taken actions. Key objectives to determine the consumers' environmentally conscious habits in both their daily lives and during hotel stays, as well as how they attribute to green initiatives in hotel operations.

The demand analysis shows that environmental sustainability, especially energy related green initiatives are of high importance to consumers, but the hotels' green practises do not play a prominent role in their decision makings. In the supply analysis, results highlight that within the examined categories, the energy saving practises are the most common ones, and most important ones due to both examined sides.

Furthermore, the research explores the relationship between supply and demand sides in the context of sustainability, determine motivations and perceptions from both perspectives. The results highlight that the perceptions of consumers are not totally matched by the actual actions of hotels.

Ultimately, the research highlights the importance of sustainability, underline the need for collaborative efforts between consumers and hotel establishments to foster environmentally responsible practices and promote sustainable tourism.

Based on this research, future research could be investigate other tourism sector service providers with environmental sustainability aspect or even compare international hotel sectors with Hungary.

Keywords:

sustainability, sustainable tourism, hotel industry, consumer behaviour

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INTRODUCTION

Linking tourism with environmental awareness is a major issue today. This is a new problem worldwide, for which no comprehensive solution has yet been found.

By the 21st century, our environment has been affected by emissions of pollutants to such an extent that it has become essential to make a green transition in economic sectors as soon as possible. All industries, however in different degrees, contribute to environmental degradation, and tourism is no exception (Abbass *et al.*, 2022). To reverse and mitigate this, the drive for sustainability is gaining momentum internationally as well as in Hungary (Csete and Pálvölgyi, 2011).

Sustainability nowadays can increase significantly the competitiveness of a business (Hermundsdottir and Aspelund, 2021). Sectors whose operations are based on natural resources, such as tourism, have a particular responsibility towards sustainability (IUGN, UNEP, WWF, 1991, pp. 96-103).

Making the hotel sector as sustainable as possible is one of the most important issues of the future, as the problems of waste production, raw material supply and food waste are just a few examples of the many problems that must be mentioned. Both the hotel operations and consumer behaviour can contribute to environmental degradation, as guests are not expected to focus on saving resources during their holidays (Acampora *et al.*, 2022).

The hotel sector is a large consumer sector, with a centuries-old history that makes it difficult to adapt to the principles and operations of sustainable businesses and can therefore be particularly damaging. It is crucial to raise awareness of sustainability in the hotel industry and among consumers (Han, 2021a).

The aim of this thesis is to examine both the demand and the supply side of green hotel practises. During the supply side analysis, the research aims to determine what kind of green services and products are used in Hungarian hotels and what kind of green practises are important for them. The research aims to find out the hotels' motivator factors, and how does it affect the hotels environmentally sustainable actions.

On the demand side, the research aims to identify the expectations of domestic consumers, their consistency on following sustainable practices during their holidays and their perceptions of hotels offering sustainable services. The research aims to identify what are the differences in

the consumer behaviour when they are staying at a hotel or living at home. The present study focuses on the environmental dimension of sustainability in tourism.

Lastly, this research is looking to find the correlation between the supply and the demand side of hotels' green practises. The objectives are to find if the sustainable practices implemented by the hotels are matching the expectations of consumers.

In this way, the hotel sector can improve its offer of more sustainable services in line with consumer expectations, thus contributing to the development of sustainable tourism in the country.

Based on that 4 research questions were formulated:

Q1: What environmentally sustainable practises are most commonly used by the Hungarian hotels?

Q2: What kind of green practises are important in the hotels operation according to hoteliers?

Q3: Is there a difference in the frequency of sustainable practices in the consumer's behaviour in their daily life and during a hotel stay?

Q4: Are Hungarian hotels meeting consumer expectations regarding their green practices?

1 THE DEFINITION OF SUSTAINABILITY

By the 21st century, the impact of the modernisation processes of the 20th century became impossible to overlook. The depletion of raw material supplies are slowly exhausting (Bartlett, 2012), extreme weather events and temperature fluctuations are now regularly impact our daily lives (Besenyei, et al., 2016.).

Today, sustainability and sustainable development are becoming increasingly important and popular terms, but their meanings are often confused with other concepts (Fleischer, 2014). These terms have evolved since the 1980s, adapting to economic and environmental changes (Faragó, 2013).

By the 20th century, sustainability emerged as a global movement tied to environmental conservation (Láng, 2003). While environmental concerns had been recognized earlier, it wasn't until the 1970s that they gained significant attention. (Fleischer, 2014). A fundamental problem in the pursuit of sustainability is that our environment suffers damage faster than decision makers can achieve results, so that our environment is always one, but rather several, steps ahead of us in its degradation (Kerekes, 2011).

Sustainability has diverse definitions depending on context and environmental interpretation (Pezzey, 1992). Sustainability is understood as an activity that can be sustained, moreover can continue indefinitely (Santillo, et al., 2007).

In 1987, the Brundtland Commission's report, "Our Common Future," was a pivotal moment in shaping global sustainability. According to the report: *"Sustainable development is development that meets the needs of present generations without compromising the ability of future generations to meet similar needs."* (Brundtland, 1987). This was the first formal formulation of sustainable development. This marked a shift towards viewing sustainability as a process rather than a state, emphasizing economic growth alongside environmental protection (Láng, 2003).

According to another definition, due to Herman E. Daly (1996), sustainable development is the achievement of continued social betterment without increasing ecological carrying capacity. Growth means getting bigger and development means getting better (Herman, 1996).

The book *Caring for the Earth: A strategy for sustainable living* (IUGN, UNEP, WWF, 1991) summarises the basic elements of sustainability, which are:

- Respect and protection of living communities;

- Respect for and protection of natural communities, respect for the environment, and enhancement of the quality of human life;
- Respecting and respecting human life, respecting human communities, preserving the vitality and diversity of the Earth;
- Minimising the use of non-renewable resources;
- Growth within the carrying capacity of the Earth;
- Changing individual behaviour and habits;
- Empowering communities to take care of their own environment;
- Developing national frameworks to integrate development and conservation;
- Developing worldwide (global) cooperation (IUGN, UNEP, WWF, 1991).

It must be stressed out, that the whole concept of sustainability should be characterize and leads the systems, and not to only aims to reach some goals (Virtanen, Siragusa and Guttorm, 2020).

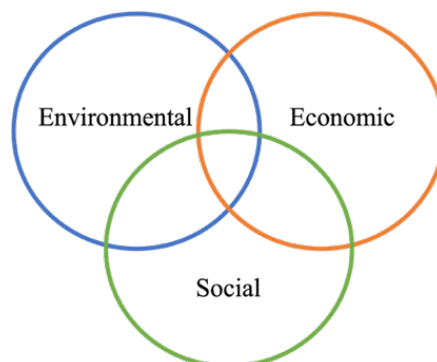
1.1 The pillars of sustainability

A common representation of sustainability is a list of three pillars:

- environmental sustainability,
- economic sustainability,
- social sustainability (Fleischer, 2014)

However, there are different approaches about the connections of the three dimensions, there is no doubt that the three dimensions are closely interrelated (Purvis, Mao and Robinson, 2019). The most widespread is that the three factors are equally important (*Figure 1*).

1. Figure: The three pillars of sustainability



Source: own editing

From the three pillars of sustainability, this research only focusses on the environmental sustainability, because the aim is to examine the green practises of hotels, and the perceptions of consumer in this area.

1.2 Sustainability nowadays

The journey toward global sustainability is marked by numerous conferences, often representing turning points and addressing gaps (Láng, 2003). Global organisations such as the European Union and the United Nations aim to collectively raise awareness of sustainability issues and help change public attitudes (Láng, 2003).

Organizations like the European Union and the United Nations work to raise awareness and shift public attitudes. The UN Summit in September 2015 was particularly significant, as it set the Sustainable Development Goals (SDGs) for the period up to 2030, signed by leaders of 193 member states (including the Government of Hungary) (Bruyninckx, 2015). This framework is crucial as it applies globally and doesn't differentiate between countries' development statuses. It outlines 17 development goals, known as Agenda 2030, emphasizing the need to recognize interconnected problems and seek solutions. However, it's important to acknowledge cultural and conceptual differences among nations when pursuing these goals (Gyulai, 2012). However, these goals cannot be taken as universal aims, it should also examine the conceptual differences among cultures and countries (Virtanen, Siragusa and Guttorm, 2020).

2. Figure: Sustainable Development Goals (United Nations, dátum nélkül.)



2 SUSTAINABILITY IN THE TOURISM

Tourism includes all free movement of people outside their homes and workplaces, and the services created to meet the needs arising from it (UNWTO, 2010).

The concept of sustainable tourism has gradually emerged over the last decades and is still expanding today (Weaver, 2013). The concept of sustainability is also the starting point for sustainable tourism. Tourism can be called sustainable if it seeks to meet the needs of the present without compromising the needs of future generations, thus ensuring that it remains viable in the long term (Weaver, 2013). This approach should not be a subset of tourism but should involve the global tourism sector as a whole (UNWTO, 2013). Usually tourism increase foreign exchange income, revenue of the government and it support employment. In 2014, the UNWTO calls the governments to develop strategy to achieve sustainable growth in that sector (Ravinthirakumaran, 2015).

According to the UNWTO, sustainable tourism is:

- The optimal use of environmental resources essential for tourism development,
- Respect the social and cultural values of the communities involved in tourism,
- Ensure viable long-term economic activity, provide socio-economic benefits for all and distribute them equitably, and contribute to poverty eradication (UNEP, UNWTO, 2005).

In summary, sustainable tourism is the tourism sector's pursuit of sustainability, based on the same three factors as sustainability: environmental, economic, and social sustainability (Weaver, 2013).

Service providers have recognised the importance of operating in an environmentally responsible way (IUGN, UNEP, WWF, 1991). This can make a major contribution to accelerating the change in consumers' attitudes (Hegedüs, et al., 2022). However, for tourism to be sustainable, all stakeholders must take responsibility and strive to ensure that sustainable growth is actually achieved (Happ, 2014).

The tourism sector has a special role to play in sustainability because governments and conservation organisations need to work together to achieve the goals (IUGN, UNEP, WWF, 1991). This includes regulating the tourism sector, controlling development to protect the environment, and protecting the culture of local people. In addition, the United Nations

Environment Programme (UNEP) emphasises the importance of educating consumers and service providers about their responsibilities (IUGN, UNEP, WWF, 1991).

It is a dynamic process to develop tourism in a sustainable way, and it is constantly experiencing new challenges, due to the applied technologies and the changing needs of consumers (Streimikiene *et al.*, 2021).

In Hungary, the National Tourism Development Strategy 2030 adopted in 2017, it was stated that by 2030 Hungarian tourism will be a key sector of sustainable economic development (MTÜ, 2023.). In January 2023, the document was supplemented with the concept of green transition. It refers to a shift in the environmentally conscious operation of tourism service providers, and the possibilities for its widespread feasibility were formulated (MTÜ, 2023.). In this document, the consideration of environmental pressures and the use of renewable energy sources in tourism development were given a prominent role.

3 THE HOTEL INDUSTRY AND THE ENVIRONMENTAL SUSTAINABILITY

The development of the tourism sector is highly dependent on the preservation of its environmental, cultural, and historical heritage, so there is a strong need to focus attention on sustainability (Happ, 2014).

A hotel, according to the Government Decree 239/2009 (20.X.), is a type of accommodation established exclusively for the purpose of providing accommodation services, in which, in addition to accommodation and breakfast, other services are provided as part of the accommodation service and where the number of rooms used is at least eleven (LXXVI. törvény, dátum nélk.).

In recent decades, there has been a growing focus on sustainability in the hotel sector (Goldstein & Primlani, 2012). In the hotel industry, all three sustainability pillars are explicitly interlinked. Among them, environmental and economic factors are particularly close (Jurigová, et al., 2016). The pursuit of environmental sustainability guarantees a huge added value, not incidentally, financial benefits can be attracted by sustainable efforts (Jurigová, et al., 2016). In the hotel sector, are trying to adapt to sustainability trends and consumer expectations (Goldstein & Primlani, 2012).

Reasons in support of the implementation of environmental initiatives in the hotel sector include the following according to Moise and others (2021):

- increase its competition in the market (Kularatne *et al.*, 2019),
- improving competitive position in the market (Yadav and Pathak, 2016),
- demonstrating better social responsibility and good reputation (Chen *et al.*, 2018),
- reducing costs (Bohner and Schlüter, 2014),
- complying with government regulations designed to protect the environment (Han, 2015) (Moise, Gil-Saura and Ruiz Molina, 2021)

In another point of view, sustainability is also important for cost-effective operations, corporate social responsibility (CSR) towards investors, reducing turnover, increasing employee satisfaction, and raising guest satisfaction to higher levels (Goldstein & Primlani, 2012). Research shows that in the hotel's competitiveness the green practices implementation takes a huge role (Han, Hsu and Lee, 2009)(Manaktola and Jauhari, 2007).

Sustainable development measures in the hotel industry aim to reduce the impact on the environment and society and increase the resulting benefits to the surrounding area

(Prud'homme & Raymond, 2013). The sustainability of the accommodation service is reflected in the fact that it not only allows its employees, guests, and other stakeholders to enjoy the same experience, but also future guests and employees (Sloan, et al., 2012). The orientation towards sustainability is beginning to come to the forefront among consumers, while at the same time they need to be educated about the sustainability of hotels (Ásványi & Komár , 2018). It has been researched and proven that sustainable measures taken by hotels have a positive impact on guest satisfaction (Bruns-Smith, et al., 2015) (Millar and Baloglu, 2011).

Opinions differ on the economic drivers for the environmental performance of hotels. Irena Peršić-Živadinov's research (2009) states that a sustainable hotel requires 10% more capital investment than a conventional one. However, the good news is that within 5-10 years, the return on green investments can be high, even in terms of energy recovered (Peršić-Živadinov, 2009). This of course depends on the commitment of management, the type of sustainable practices, and how they are incorporated. According to research by Prud'homme and Raymond (2013), there are green hotel measures that do not necessarily entail economic sacrifices, and some measures - most obviously around energy management - are explicitly cost-reducing (Prud'homme & Raymond, 2013).

A hotel has an impact on its environment on two levels. Locally, it impacts on the people and the environment, given its geography, but it also has a global impact on our world, affecting other sectors and the level of emissions (Kirk, 1996). In the hospitality industry, there are many measures to achieve more sustainable operations (Hegedüs, et al., 2022).

In hotel operations, minor damages add up, such as the daily use of raw materials, energy, water, food, paper, and the like. However, when these small individual operations all add up, and thus the sector has an explicitly large impact on the global resource stock (Kirk, 1996).

The damage the hotel industry does to the environment:

- CO2 emissions,
- CFC emissions,
- Noise, smoke, odour,
- Health of workers,
- Energy wastage,
- Waste of water,
- Waste of food,
- Disposable waste,

- Agricultural ecology (lack of support for local products, production),
- Setting guidelines,
- Selling souvenirs of endangered species,
- Hotel location in a poor location (Kirk, 1996)

Of course, it is inevitable that the environment will be affected by a tourism service, whether it is a cultural or natural attraction or the operation of a hotel. The emphasis is on the extent and quality of the impact (Kirk, 1996).

Different operators have different capabilities and opportunities: location has a strong influence on the range of suppliers available or on labour management; the age and condition of buildings and the availability of renewable energy sources influence energy efficiency; and the awareness of the guest base and marketing communication influence the uptake of sustainability measures, to name but a few examples (Hegedüs, et al., 2022).

In Hungary, accommodation certification is currently underway, with the aim of providing uniform information on the quality of accommodations (Magyar Turisztikai Minőségértékelő Testület, 2021). It is important to note that the general criteria already include sustainability measures, such as the processing of regional food, as the narrowing of the supply chain means reducing the damage to our environment. This is worth only 5 points, unlike obtaining a sustainability certificate, which is worth 20 points, almost the highest available. The Green Hotel Award (provided by the Hungarian Hotel & Restaurant Association) and the ISO14001 certification can entitle the hotel for the extra points (Magyar Turisztikai Minőségértékelő Testület, é. n.).

3.1 Greenwashing in the hotel industry

As the previous chapter shows, there are many reasons to make a hotel more environmentally sustainable and unfortunately greenwashing is not an exception. Greenwashing is misleading the public to believe that a company or other entity is doing more to protect the environment than it is, greenwashing promotes false solutions to the climate crisis that distract from and delay concrete and credible action (United Nations, dátum nélk.).

Hotels greenwashing involves various practices such as misleading guests with fake or unreal environmental initiatives (Alyahia *et al.*, 2024). These tactics aim to increase customer support and profitability (Ling and Aziz, 2021). Greenwashing can affect variously the relationship between hotels and consumers. It can undermine trust, the guest doubts the green

initiatives of hotels and guests became sceptical about the claims (Alyahia *et al.*, 2024). According to Nimri et al (2017) every one in three costumers doubtful about the hotels real aims towards sustainability (Nimri, Patiar and Kensbock, 2017). Another important research by Nguyen and others show that greenwashing of the hotels negatively affected the consumers green behaviour intentions (Nguyen *et al.*, 2019).

Greenwashing and consumer behaviour has a significant connection, costumers' trust and willingness to pay more to stay in a sustainable hotel also influenced by their perceptions of the hotel greenwashing (Alyahia *et al.*, 2024). The relationship between the greenwashing and consumers' behaviour is apparent.

4 MEASURING GREEN PRACTISES IN HOTELS

As awareness for environmental protection grew, both individuals and hoteliers have initiated a number of environment-friendly actions (Lee and Cheng, 2018). However, the hoteliers agree on those environmentally sustainable actions needs to be taken, according to the literature, green practises do not have the same importance.

Opinions differ on which measures are important in the operation of a hotel. In the case of hotels, sustainable water and energy use, waste management, hygiene measures and procurement constitute the environmental sustainability measures (Hegedüs, et al., 2022). Others argue that only energy, waste and emission reduction are important for the hotel, as these measures are important for increasing its profit (IUGN, UNEP, WWF, 1991). Cornell University (2015) reports that energy, water, waste reduction, market impact and guest satisfaction constitute the importance of sustainability measures in the hospitality sector (Bruns-Smith, et al., 2015). Others have argued that energy, water, and waste management in the hotel industry are most important for sustainability (Goldstein & Primlani, 2012), and some argue that the sustainability of hotels lies in the use of local labour and support for local communities (Sheldon & Sun-Young, 2008). According to Baloglu and Millar (2008) indicate that the most important attributes sought by conscious customers are as follows: energy-saving light bulbs, water-saving toilets, and reusable towels, linen changes on demand only, waste separation, light sensors and key-cards (Lee and Cheng, 2018). In a hotel's operation, green practises were usually randomly selected by the hotels, without further research on how these practises might influence customers' satisfaction (Millar and Baloglu, 2011). Overall, there is no globally determined indicator scale, which are the most important actions what need to be taken, there is no guide for hotels, what are the possible areas for improving their sustainable efforts.

Based on the above literatures and from validated, previously published studies were adopted and utilized 5 categories are examined as the following:

1. Table: Examined categories

CATEGORY	SOURCE
Food usage	(Hegedüs, et al., 2022)
Waste usage	(Moise, Gil-Saura and Ruiz Molina, 2021)
Water usage	
Energy usage	
Responsible consumption	(Han and Yoon, 2015)

Source: own editing

I adapted according to Moise and others (2021) and Brezan and others (2013) a 7-point Likert scale (where 1= not important at all and 7 = very important) to examine the importance of different indicators (Moise, Gil-Saura and Ruiz Molina, 2021) (Berezan *et al.*, 2013).

After defining the indicators, the minimum and maximum score in each category is calculated. The minimum point is the minimum score in the category and the maximum is the maximum possible score. The maximum and average points need to be normalized to make the categories' scores comparable.

4.1.1 Indicators of the hotels' questionnaire

Based on the above literatures, the following indicators were examined in the questionnaire for hotels. Nineteen (19) items were used to measure green practices, grouped into the previously presented five categories:

2. Table: Indicators of the hotels' questionnaire

	INDICATOR	SOURCE
FOOD USAGE	The hotel offers vegan alternatives	(The European Consumer Organisation, dátum nélkül.)
	The hotel mostly offer seasonal fruits and vegetables	
	Purchases locally produced food	
WATER USAGE	Has water-saving devices and appliances	(Fukey and Issac, 2014)
	Reuse of grey water (water from washing fruit and vegetables) to water the lawn	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Guests are encouraged to reuse bed linen and towels	
	The hotel collects rainwater and uses it to irrigate the garden	(Fukey and Issac, 2014)
ENERGY USAGE	The hotel uses renewable energy systems such as solar and wind power	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Installation of timers and motion detectors to reduce lighting time in less used rooms (storage rooms, corridors and bathrooms)	(Madžar and Petrović, 2022)
	Use of energy efficient light bulbs (LED) everywhere	(Fukey and Issac, 2014)
	Good quality shutters with little or no energy loss	(Madžar and Petrović, 2022)

WASTE USAGE	Separate waste bins are provided in both the guest and staff areas	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Composting	
	Digestible collected separately (vegetables, fruit, food waste)	(Fukey and Issac, 2014)
	Buying green products such as biodegradable products (e.g. cutlery, cleaning products, etc.)	
	Waste production is measured in each department	
RESPONSIBLE CONSUMPTION	The hotel has a strategic plan to manage sustainability	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Donate excess food waste and bed linen	(Fukey and Issac, 2014)
	Encouraging guests to participate in reducing the hotel's environmental impact.	

Source: own editing

5 CONSUMER BEHAVIOUR AND HOTEL INDUSTRY

Environmentally responsible behavior (ERB) matters a great deal for the long-term success of tourist destinations (Su, Hsu and Boostrom, 2020). Based on the simple fact, that customers and hotels affects each other (Zhang, 2022), the behaviour of sustainable consumption leading to a more specific and long-lasting results (Banytè *et al.*, 2020)

Consumer behaviour can be defined as certain decisions, activities, ideas or expectations that satisfy consumer needs and wants (Solomon, et al., 2010). These behaviours driven by repetition and habit, not so often by conscious choices, so of course they have an impact in our natural environment (Versplanken, 2011).

It is accepted that sustainable development requires long-term engagement and economic change. This requires changes in many aspects from technologies through politics, and last but not least, new consumption patterns (Linscheidt, 1999). According to David Kirk, however much effort is made to reduce the damage to the environment of a hotel, success can only be achieved by involving consumers and without harming tourists in the process of implementing the measures (Kirk, 1996). This is why, for the last few decades, environmentally sustainable consumer behaviour has been a huge focus (Han, 2021b).

Research shows that sustainable practises are becoming increasingly important for costumers, (Robinot and Giannelloni, 2010). Researchers agree that the problematic issues can be managed and resolved by correcting the human behaviours an environmentally-sustainable way (Han, 2021)(Steg and Vlek, 2009). Environmentally sustainable consumer behaviour is a concept that highlights an individual's various actions saving natural resources (e.g. water, energy), reducing environmental harm (e.g. waste decrease), meeting the green needs of society, and improving his/her life quality (Han, 2020). Increasing walking and cycling, reduce of the single use items and switching off monitors are small examples of a more conscious behaviour, however these are small changes, it can cause a huge positive impact on our environment (Grilli and Curtis, 2021). Knowledge is the key issue pushing consumers towards sustainability, then, they are more likely to purchase sustainable apparel products (Okur and Saricam, 2019). In case of this research, the knowledge about hotels which are developed with green practises.

If the consumers behaviour can change in the everyday life, not only the environment, but the hotel industry could take advantage on that. The key construct according to MacInnes (2022) that it would be more effective in achieving behavioural changes such as breaking bad vacation habits through disrupting automaticity, such as reducing plate size to prevent overfilling of

plates at the buffets, and re-establishing good habits people enact at home, such as by asking people to treat the hotel the same way they do their own home (MacInnes, Grün and Dolnicar, 2022).

5.1 Measuring sustainable consumer behaviour at home and during holidays

Demand side measures mostly focus on the footprints of consumption (Smetschka *et al.*, 2019). Measuring consumer behaviour at daily lives is often analysed by making different indexes or scales (The European Consumer Organisation, dátum nélk.) (Dimitrova, Ilieva and Angelova, 2022). Research shows that the change of consumer behaviour is in progress not only in consumers everyday lives, but even in their behaviour in the workplace (Banytè *et al.*, 2020). The basic method was to find out how sustainable the consumers was the online carbon footprint calculators, new ways of personal carbon footprint calculation aims to change their lifestyles (Burgui-Burgui and Chuvieco, 2020)

Research shows that however environmentally sustainable behaviour is nowadays a common awareness in households, does not influence the behaviour in holidays (Barr *et al.*, 2010)(Miller *et al.*, 2010). Even people who are committed to the environment and have pro-environmental beliefs in their home, behave less sustainably on holiday (MacInnes, Grün and Dolnicar, 2022). Research has conventionally focussed on the various choices that individuals can make during their holidays, to reduce environmental footprints, specifically through the use of sustainability (Barr *et al.*, 2010).

It was important to be able to compare, as the aim is to see whether someone who has green behaviour at home is also green in a hotel. I couldn't find one previously published research that was suitable because consumer behaviour in holidays is not in spotlight in the literature. I couldn't find one that compared consumer behaviour in households with during a stay, because (Castellani *et al.*, 2019) only focuses measuring the use of households, (Smetschka *et al.*, 2019) focus on everyday activities, (Gómez-Llanos, Durán-Barroso and Robina-Ramírez, 2020) only focuses on the water consumption. On the other hand, research taken by (Su, Hsu and Boostrom, 2020) focuses environmental consumer behaviour through emotions, and (Hsu *et al.*, 2020) searched the Sustainable Tourism Attitude Scale in cross-cultures.

Consumer behaviour important in this research in two aspects: how sustainable he/she, and how important to her the sustainability. There are no studies which compare the environmentally sustainable behaviour of individuals in both daily lives and hotel stays. Based on the above literatures and from validated, published studies the previously presented 5 categories are

examined by adding 1 category about environmentally conscious habits, asking the consumers separately about their habits during their daily lives and during a stay.

To make the supply and demand analysis comparable, I also used a 7-point Likert scale (where 1= not important at all and 7 = very important) to examine the importance of different indicators (Moise, Gil-Saura and Ruiz Molina, 2021) (Berezan *et al.*, 2013).

After defining the indicators, the minimum and maximum score in each category is calculated. The minimum point is the minimum achievable score in the category and the maximum is the maximum possible score. The maximum and average points need to be normalized to make the categories' scores comparable.

5.1.1 Indicators of the consumers' questionnaire

Based on the above literatures, the following indicators were examined in the questionnaire for customers. Twenty-three (23) items were used to measure green practices, grouped into the previously presented five, plus one categories:

3. Table: Indicators of the consumers' questionnaire

	INDICATOR	SOURCE
FOOD USAGE	Buy locally produced, seasonal products	(The European Consumer Organisation, dátum nélk.)
	I buy/eat seasonal fruit and vegetables	
	I try to get as much food on my plate as I eat	
	I try to avoid overconsumption	
WATER USAGE	Use water-saving appliances	(Fukey and Issac, 2014)
	Use grey water (water from washing fruit and vegetables)	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Wash bed linen only when changing guests	
	If possible, collect rainwater for watering	(Fukey and Issac, 2014)

ENERGY USAGE	Use motion-sensing lights and detectors where possible, to reduce lightning time	(Madžar and Petrović, 2022)
	Use LED bulbs	Fukey and Issac, 2014)
	Use renewable energy sources (solar panels, solar collectors...etc.)	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Have windows and doors of appropriate quality to avoid energy loss	(Madžar and Petrović, 2022)
WASTE USAGE	Composting	(Moise, Gil-Saura and Ruiz Molina, 2021)
	Ensure selective waste collection for all	
	Monitor waste production	(Fukey and Issac, 2014)
	Use green products, such as biodegradable products (e.g. cutlery, cleaning products, etc.)	
	Collect decomposable waste separately	
RESPONSIBLE CONSUMPTION	The leftover food is donated to charity	(Fukey and Issac, 2014)
	Encourage guests to reduce the hotel's environmental impact (e.g. by displaying information in their rooms)	
	The hotel has a strategic sustainability plan	(Moise, Gil-Saura and Ruiz Molina, 2021)
ENVIRONMENTALLY CONSCIOUS HABITS	Energy-saving behaviour (e. g.: swich off the lightning after myself)	(The European Consumer Organisation, dátum nélk.)
	I prefer public transport/walk/bike for my daily travel	
	I avoid travelling by plane when on holiday	

Source: own editing

6 OBJECTIVES AND HYPOTHESIS

In this chapter present the objectives, research questions and hypotheses of this research. The objective of this study is to identify what kind of green practices hotels are using in Hungary and how important they are to them. This study examines the potential consumers' behaviour at their daily life and compare it when they are staying at a hotel. It examines the relationship between the hotels' green practises and the potential tourists' perceptions about green hotel practises. Finally, the study assesses whether Hungarian hotels and consumers prioritize similar green practices.

6.1 Research questions

Q1: What environmentally sustainable practises are most commonly used by the Hungarian hotels?

Q2: What kind of green practises are important in the hotels operation according to hoteliers?

Q3: Is there a difference in the frequency of sustainable practices in the consumer's behaviour in their daily life and during a hotel stay?

Q4: Are Hungarian hotels meeting consumer expectations regarding their green practices?

6.2 Hypotheses

H₁: Hotels that engage in green practices due to the commitment to the environment are achieving higher scores on the green practice scale compared to those driven by other motivations.

H_{1a}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in waste usage compared to those driven by other motivations.

H_{1b}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in energy usage compared to those driven by other motivations.

H_{1c}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in water usage compared to those compared to those driven by other motivations.

H_{1d}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in food usage compared to those compared to those driven by other motivations.

H₂: People who are trying to be more sustainable in their daily lives are also trying to make more environmentally conscious choices during a stay.

H_{2a}: Consumers are influenced in their decision making by the existence of green initiatives.

H_{2b}: Consumers are willing to pay more to stay in a hotel, which has green practises.

H₃: Consumers who are behaving environmentally sustainable in their homes and reached a higher score on the sustainability scale are also behaving more sustainable when staying in hotels.

H_{3a}: Who take attention to the waste usage at home is take attention during a stay.

H_{3b}: Who take attention to be a responsible consumer at home is take attention during a stay.

H_{3c}: Who take attention to the water usage at home is take attention during a stay.

H_{3d}: Who take attention to the food usage at home is take attention during a stay.

H₄: Hotels are doing environmentally sustainable efforts that matter most to consumers.

7 RESEARCH METHODOLOGY

In my research, I put great emphasis on examining both the demand and the supply side. The research was conducted by using LimeSurvey questionnaires. There are three types of questions in questionnaires: closed/structured questions, where the respondent chooses one or more of the predefined answer options; open/unstructured questions, where the respondent gives his/her own words for the answer; semi-open/semi-structured questions, where some answer options may be accompanied by additional textual information in addition to the markings (Molnár, 2010).

7.1 Methodology of the hotels' questionnaire

I put the scale into a questionnaire and assigned demographic questions to it. The anonym, online questionnaire for the hotels contained 18 questions.

I used the database of the Hungarian Hotel and Restaurant Association. The questionnaire was sent to 471 hotels in Hungary. The target group of the questionnaire was general managers and people who take a decision-making role in a life of a hotel. The respondents were selected with unknown probability, so the sample is not representative, but conclusions can be drawn for the population under study.

The questionnaire contains 6 parts:

1. Demographic factors
2. Motivation
3. Water usage
4. Energy usage
5. Waste management
6. Responsible consumption

Firstly, I asked demographic factors of the hotel, and the position of the respondent. I also asked what kind of green practises she/he is doing in their daily life. In the second part I asked what the motivator factors for a hotel are to coming closer to the environmentally sustainable management. All the other factors, I asked indicators, whether they are using it in the hotel, and after that I asked how important these indicators would be in case of the hotel operation.

I synchronized this questionnaire to the questionnaire for the potential tourists and asked questions, which can be answered from a consumer point of view. However, to be easily answered I edited in different structure.

7.2 Methodology of the consumers' questionnaire

The anonym, online questionnaire for the potential tourists contained 13 questions. The questionnaire was sent to people who are interested in travel and hotels. I used the snowball method to determine the sample elements, i.e. I filled in the questionnaire with members of the most accessible forums dealing with travel, wellness, randomly selected destinations, as well as with people I knew with similar or unknown interests, and I extended this further by asking them to forward the questionnaire to other people interested in tourism and wellness hotels or with unknown interests.

The respondents were selected with unknown probability, so the sample is not representative, but conclusions can be drawn for the population under study.

The questionnaire contains 5 parts, which are the followings:

1. Demographic factors
2. Motivation
3. Responsible consumption
4. Responsible consumption during the stay
5. Sustainability in the hotel

In the first part, I asked the demographic factors, and that how important the environmental sustainability for the respondents. In the second part, I asked whether the respondent ever have chosen a hotel because of their green initiatives, and in him/her opinion, why a hotel choosing green practises. In the third part I asked them about what kind of green factors they are doing in their daily life. After that I asked, what are they doing from the previously asked factors during their stay at a hotel. Lastly, I asked how important some factors in a hotel operation.

8 RESULTS

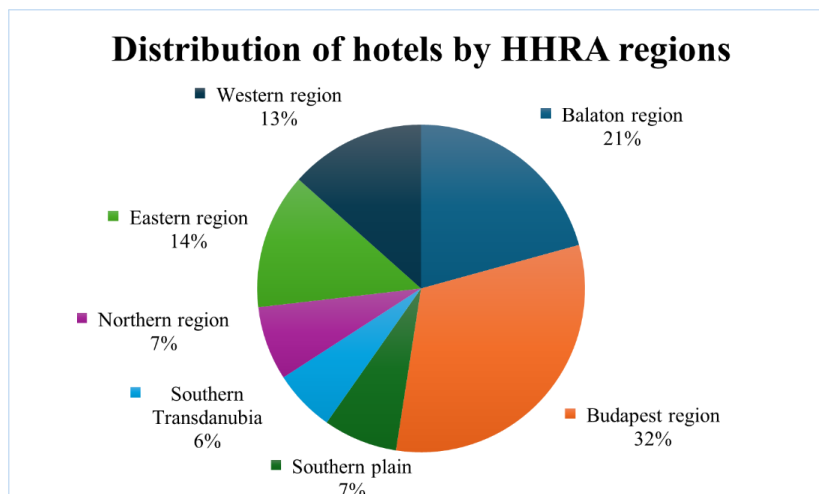
The following chapter focuses on the analysis of the online, structured questionnaires. In the first subchapter, the hotels' answers will be analysed and then the consumers. With the application of them I gathered information about customers' and hotel managers' opinion about the environmentally sustainable hotel practises. The main goal was to get a picture about hotels' green practises in the demand and supply side.

8.1 Results of the hotels' questionnaire

The questionnaire was available for completion between 2024 February 2 and February 16, during this time 118 hotelier opened the questionnaire total, for which 80 completed. For those respondents who did not complete the questionnaire but got to the second page of the questionnaire where I asked them about their daily habits, their data were analysed. Of those who opened it, 69% completed it successfully. The respondents were selected with unknown probability, so the sample is not representative, but conclusions can be drawn for the population under study.

79% of the respondents are General Managers, the distribution of hotels by HHRA regions are also differ, most of the respondents, 32% of them are operating in the Budapest region (*Figure 3*).

3. Figure: Distribution of hotels by regions



Source: own editing

In terms of hotel star classifications, the following table represents the questioned hotels (*Table 4*). From that 17 hotels are members of a hotel chain. Due to the respondents, 51% of them are experienced financial benefits from the implemented environmentally sustainable practises, however 49% of them not.

4. Table: Distribution of hotel classification

Number of hotels	Star classification
2	2*-2* superior hotels
20	3*-3* superior hotels
54	4*-4* superior hotels
6	5*-5* superior hotels

Source: own editing

Motivation of hotels'

The hotels responded quite different to the question what the motivation behind is moving towards sustainability. From the questioned hoteliers, 32% of them responded by decreasing the operational costs of the hotels, 28% of them responded because of the commitment to the environment, 21% of them to increase its competitiveness in the market, 17% of them to increase the image of the hotel, and only 2% of them answered that they are not moving consciously towards sustainability (*Figure 4*). This results indicates that however, because of different causes, hotels moving close to sustainability.

4. Figure: Hotels' motivation towards sustainability

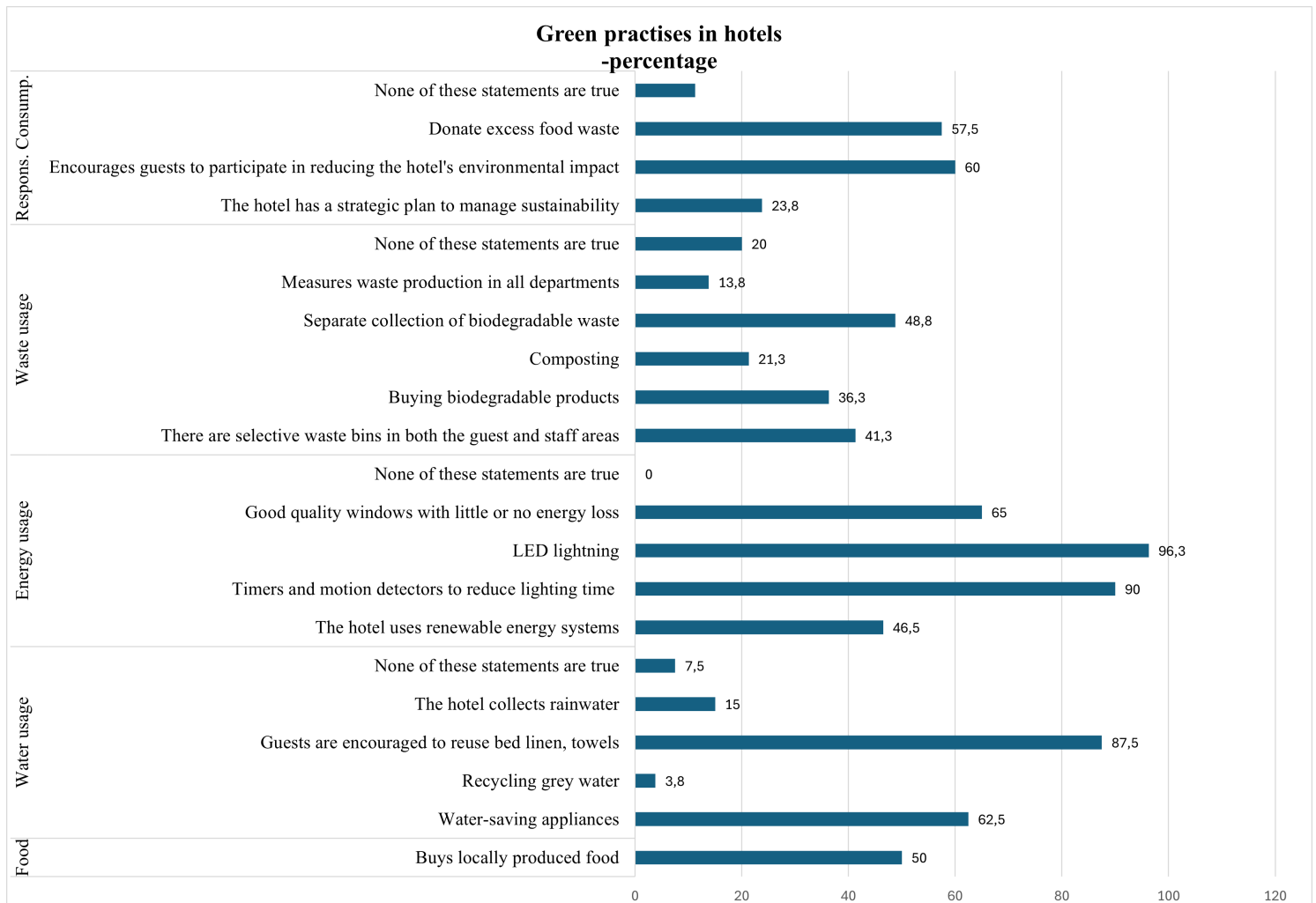


Source: own editing

8.1.1 The most commonly used green practises in hotels

The following figure represents the different green indicators used in the questioned hotels and how percent of the hotels are using them. From the four examined categories the energy usage related green initiatives are the most common used ones. Within that category the LED lightning is the mostly implemented action. This indicates the reason behind that is energy saving, and low costs. The least common green practise is recycling grey water, probably because of the complicated process what need to be implemented (Figure 5).

5. Figure: Distribution of green practises of hotels



Source: own editing

The following table represents the green practices using by hotels by each categories. The first column shows the number of questions in each category. If the hotel does not have any green practice in the given category, no points were given, if there are, each green practice worth 1

point. The minimum and maximum achievable points seen in the second and third column. The mean shows how many points were scored on average for these categories. I normalized the data to make the categories comparable. Analyzing the scores of the following table, energy usage has the highest score, while waste usage has the least (*Table 5*).

5. Table: Indicators of hotels

CHATEGORIES	Nr. of questions	Min. points	Max. points	Mean	Mean -normalized data
Food usage	1	0	1	0,6	0,6
Waste usage	5	0	5	1,6	0,3
Water usage	4	0	4	1,7	0,4
Energy usage	4	0	4	2,9	0,7
Responsible consumption	3	0	3	1,3	0,4
TOTAL	17				

Source: own editing

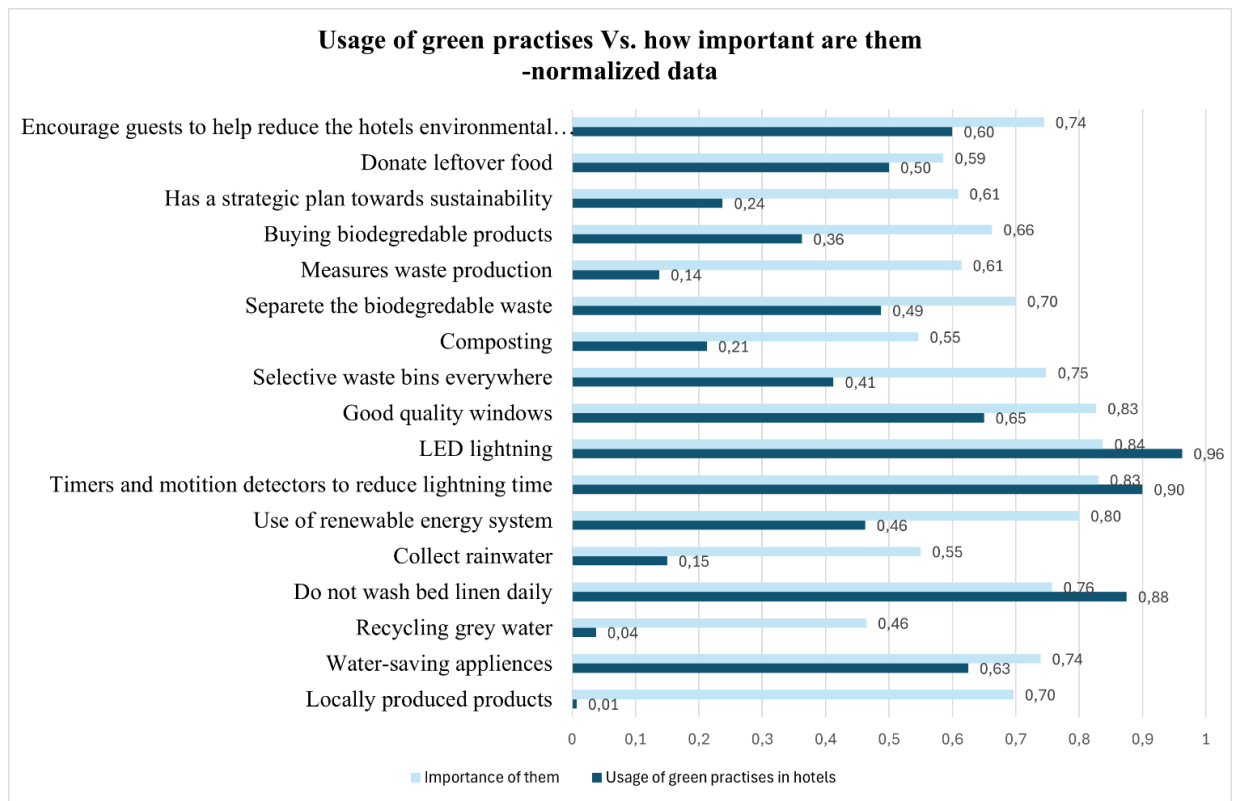
8.1.2 The importance of the indicators and the usage rate of the green practises

In the following figure, the comparison shown of the importance of the indicators and the usage rate of the green practises. All data normalized, to make the indicators comparable.

This shows that the green practises used by hotels are less then what hoteliers think they should be. The biggest deviation is about the locally produced products, hoteliers think that this is an important action, while not so many of them are actually doing it. There is the smallest variation in the use of timers and motion detectors to reduce costs (*Figure 6*).

Overall and in general, all measures are important to hoteliers, although they are not practised to the extent that they are important to them. This may be due to the cost of introducing the practises (solar panels, developing new processes ... etc.) or to management decision-making.

Figure 6: Usage of green practises and how important are they



Source: own editing

H₁: Hotels that engage in green practices due to the commitment to the environment are expected to achieve higher scores on the green practice scale compared to those motivated by other reasons.

To analyse the first hypothesis, I used independent t-tests examining the given scores of the categories and the hotels motivation implementing green practises. The t tests determine if there is a significant difference between the means of two groups and how they are related (Ludbrook, 2013)

The following tables shows the independent t-test, presenting if there are any statistical significances between the examined categories and the hotels' motivations.

H_{1a}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in waste usage compared to those driven by other motivations.

6. Table: Group statistics - waste usage

Group statistics					
	Commitment to the environment	N	Mean	Std. Deviation	Std. Error Mean
Waste usage	No	28	1.16	0.8	0.15
	Yes	53	1.84	1.18	0.16

7. Table: Independent t test - waste usage

Independent Sample test											
		Levene's test for Equality				t-test for Equality of Means					
						Significance				95%. Confidence interval of the difference	
		F	Sig.	t	df	One-sided	Two-sided	Mean Dif.	Std. Error difference	Lower	Upper
Waste usage	Equal variance assumed	5.663	0.20	-2.738	76	0.004	0.008	-0.6843245	0.2499280	-1.1817937	-0.186852
	Equal variance not assumed			-3.069	73.720	0.002	0.003	-0.6843245	0.2229642	-1.1296184	-0.240305

Source: own editing

The analysis shows that there is a statistically significance difference between hotels doing green practises because of their commitment to the environment compared to those who choose a different motivation when it comes to waste usage initiatives because $p < 0,05$. As it is visible in table 6 group statistics, those who are committed have a 0.68 greater mean.

There is a statistically significant difference in waste usage between hotels motivated by commitment to the environment and hotels motivated by other factors, therefore H_{1a} can be accepted.

H_{1b} : Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in energy usage compared to those driven by other motivations.

8. Table: Group statistics - energy usage

Group statistics					
	Commitment to the environment	N	Mean	Std. Deviation	Std. Error Mean
Energy usage	No	28	3.14	0.931	0.176
	Yes	54	2.83	0.946	0.128

9. Table: Independent t test - energy usage

Independent Sample test											
		Levene's test for Equality of Variances				t-test for Equality of Means					
						Significance				95%. Confidence interval	
		F	Sig.	t	df	One-sided	Two-sided	Mean Dif.	Std. Error difference	Lower	Upper
Energy usage	Equal variance assumed	0.002	0.968	1.417	80	0.080	0.160	0.31066659	0.21925277	-0.1256998	0.74699349
	Equal variance not assumed			1.424	55.539	0.080	0.160	0.31066659	0.21925277	-0.12638180	0.74771566

Source: own editing

The independent t-tests suggest that there is no relationship between the hotels whose motivation is the commitment towards sustainability compared who have other motivator factors in case of energy usage because $p > 0.05$, so there is no significance in both cases. As it is visible in table 8 group statistics, those who are committed have a 0.31 smaller mean, therefore H_{1b} can be rejected.

H_{1c} : Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in water usage compared to those compared to those driven by other motivations.

10. Table: Group statistics - water usage

Group statistics					
	Commitment to the environment	N	Mean	Std. Deviation	Std. Error Mean
Water usage	No	28	1.89	0.786	0.149
	Yes	53	1.55	0.822	0.113

11. Table: Independent t test - water usage

Independent Sample test											
		Levene's test for Equality				t-test for Equality of Means					
						Significance				95%. Confidence interval	
		F	Sig.	t	df	One-sided	Two-sided	Mean Dif.	Std. Error difference	Lower	Upper
Water usage	Equal variance assumed	1.274	0.262	1.827	79	0.036	0.071	0.346	0.189	-0.31	0.722
	Equal variance not assumed			1.853	57.286	0.035	0.069	0.346	0.187	-0.028	0.719

Source: own editing

Analysing the one-sided test with a significance level of 0.036 indicates that there is evidence to support the hypothesis that in case of water usage the hotels whose motivation is the commitment towards sustainability and between whose motivation is other, there is significant

relations in the specified direction. However, the two-sided test with a significance level of 0.071 suggests that there is insufficient evidence to conclude that there is a significant difference between the groups in either direction (Ludbrook, 2013).

In summary, the one-sided test provides evidence of a significant difference, while the two-sided test does not provide enough evidence to conclude a significant difference in either direction, therefore H_{1c} is rejected.

H_{1d} : Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in food usage compared to those compared to those driven by other motivations.

12. Table: Group statistics - food usage

Group statistics					
	Commitment to the environment	N	Mean	Std. Deviation	Std. Error Mean
Food usage	No	28	0.449	0.4975	0.09402
	Yes	53	0.6415	0.4841	0.06650

13. Table: Independent t test - food usage

Independent Sample test											
		Levene's test for Equality		t-test for Equality of Means							
						Significance				95%. Confidence interval	
		F	Sig.	t	df	One-sided	Two-sided	Mean Dif.	Std. Error difference	Lower	Upper
Food usage	Equal variance assumed	0.555	0.459	-1.685	79	0.048	0.096	-0.192402	0.115164	-0.419687	0.034882
	Equal variance not assumed			-1.671	53.784	0.050	0.101	-0.192402	0.115164	-0.423313	0.38508

Source: own editing

The Independent Samples Test shows that there is a difference between the hotels whose motivation to use environmental practices is originated from their commitment to the environment as $p = 0.048$.

It shows for example, that hotels who are commitment to the environment are scoring higher on the green practices scale than hotels with other motivations, therefore H_{1d} can be accepted.

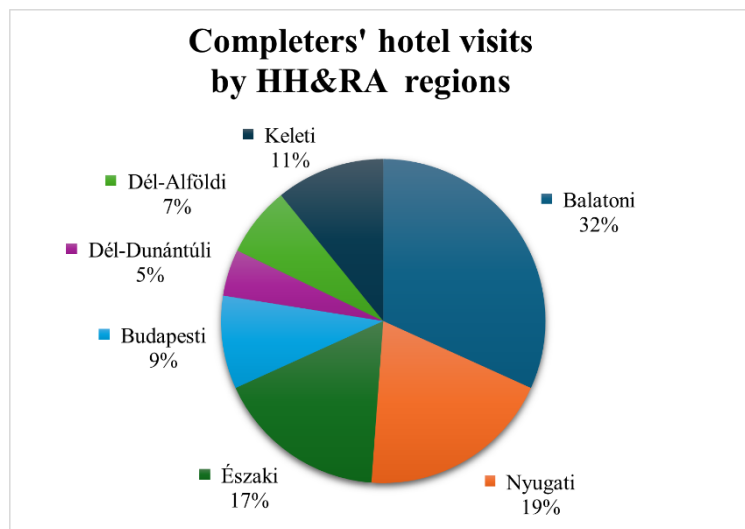
Analysing the four subhypothesis of H_1 , this indicates that H_1 can partially be accepted, out of the four categories, there are a significant difference in three categories in hotels motivation whose motivation is the commitment towards sustainability comparing who has other motivator factors.

8.2 Results of the consumers' questionnaire

The questionnaire was available for completion between 2024 February 6th to 2024. March 8th, during that time 194 people opened the questionnaire in total, from which 118 completed. Two respondents were removed from the dataset because they completed the questionnaire focusing on hotels abroad. For those respondents who did not complete the questionnaire but got to the second page of the questionnaire where I asked them about their daily habits, their data were analysed. The size of the sample 129. The respondents were selected with unknown probability, so the sample is not representative, but conclusions can be drawn for the population under study.

Of the respondents, there were 23 men, 105 women and 1 individual who classified themselves in the “other” category. The variety where the respondent's hotel visits were lastly is quite colourful, most of them, 32% of the respondents last stayed in a hotel in the Balaton region classified by HHRA regions (*Figure 7*).

6. Figure: Respondents' last hotel visits by regions



Source: own editing

Out of the respondents, 27% of them stayed in a small hotel, 48% stayed in a middle-sized hotel and 23% of respondents stayed in a big sized hotel. In terms of age, 38% of respondents belong to Generation Z (born between 1997 and 2012), 26% belong to Generation Y (1981-1996), 32% belong to Generation X (1965-1980) and 4% belong to the Baby Boomer generation (born between 1946-64).

I assessed through a 7-point Likert scale reflecting the degree of importance, (where 1 was “not important at all” and 7 was “very important”) and asked how important the environmental

sustainability for them, The importance of environmentally sustainability for potential tourists got a 5,37 mean, which says that in general, it is somewhat important for them.

To the question whether the guests ever noticed any green practises during a stay, 71% of respondents have not seen any green initiatives, but 29% of have noticed. That is not necessarily a bad thing, but at the same time, given that a lot of hotels implementing green practises in terms of marketing, which is about being seen, according to the consumers, in most cases green practises are not noticeable to the guest.

H_{2a}: Consumers are influenced in their decision making by the existence of green initiatives.

Of those surveyed, 112 people (87%) did not choose a hotel because of its green efforts, while 17 people (13%) did.

Analysing the first sub hypothesis of the second hypothesis, this indicates that the presence of green practices at a hotel are not influencing the booking decision processes, so this hypothesis is rejected.

H_{2b}: Consumers are willing to pay more to stay in a hotel, which has green practises.

To the question whether the consumers willing to pay more for a hotel where there are green efforts, 30% of the respondents are not willing to pay more, 62% of the respondents said it depends on the amount of money, and only 8% of the respondents are willing to pay more to stay in a more sustainable hotel.

Thus, the second sub hypothesis of the second hypothesis (H_{2b}), according to them, the majority is willing to pay more, se this hypothesis is accepted.

8.2.1 Environmentally conscious habits in their everyday lifes

Assessing the environmental sustainability behaviours of tourists involves examining their daily behaviour. This aspect of my research involved gathering data on 17 indicators derived based on accredited studies.

These indicators are quantified on a scale where the minimum value represents the lowest observed behaviour within a given question group, and the maximum value represents the highest observed behaviour. The normalization of this data facilitates comparison across different categories. Database normalization is the process of structuring a relational database

in accordance with a series of so-called normal forms to reduce data redundancy and improve data integrity.

The following table represents the green practices using by hotels by each categories. The first column shows the number of questions in each category. If the hotel does not have any green practice in the given category, no points were given, if there are, each green practice worth 1 point. The minimum and maximum achievable points seen in the second and third column. The mean shows how many points were scored on average for these categories. I normalized the data to make the categories comparable.

Analyzing the scores of the following table, the average that water usage is 5.58 out of 14 questions, I used normalized data to make it more comparable. And indeed, the water usage normalized mean is the lowest. The categories food and waste usage have more questions, 4 and 5, consumers scored above 0.5, here the number of questions is closer to the average, these categories are more important because these are the categories that can most influence their consumption during a stay as well (*Table 6*).

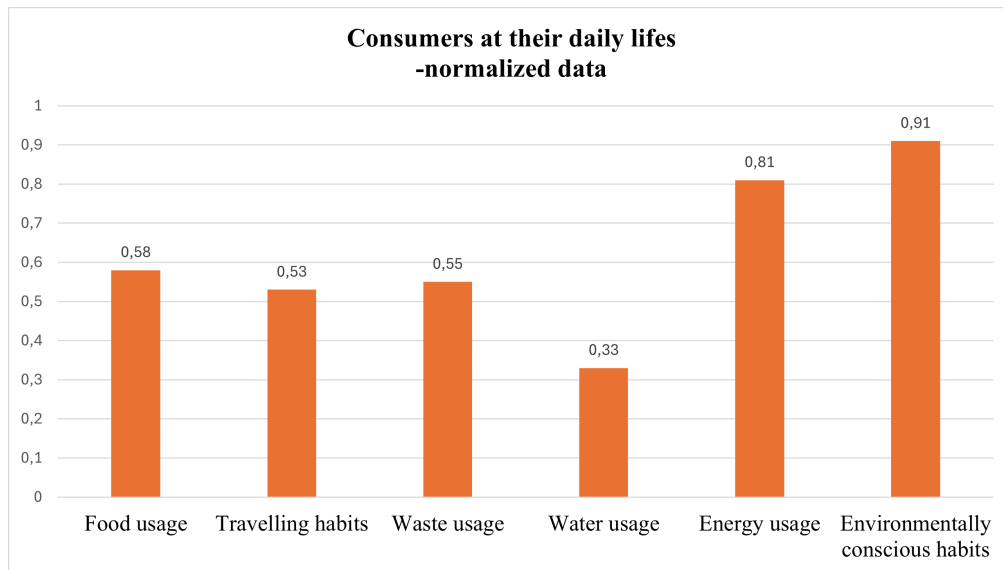
6. Table: Consumer behaviour at their daily lives

CHATEGORIES	Nr. of questions	Min. points	Max. points	Mean	Mean -normalized data
Food usage	4	4	28	18,1	0,58
Travelling habits	2	2	14	7,87	0,53
Waste usage	5	5	35	20,72	0,55
Water usage	2	2	14	5,58	0,33
Energy usage	2	2	14	11,06	0,81
Environmentally conscious habits	2	2	14	12,17	0,91
TOTAL	119				

Source: own editing

The higher the score, the more the respondent pay attention to that indicator in their everyday life and trying to be live in an environmentally sustainable way. The following table shows the normalized mean in the different categorizes (*Figure 7*).

7. Figure: Consumers at their daily lifes



Source: own editing

The normalised data shows the difference between the categorizes, consumers are most likely to adopt environmentally sustainable behaviour and energy use in their daily lifes. These two of course have a strong connection, because with the proper behaviour (e. g.: always switching off the lightning) not only they are saving energy, but also the cost. The least common practises are the water related green efforts. The reason behind that is that these actions (e. g. water saving equipment) can be costly, and they are not easy to install, especially in a rental.

8.2.2 Environmentally conscious habits during a hotel stay

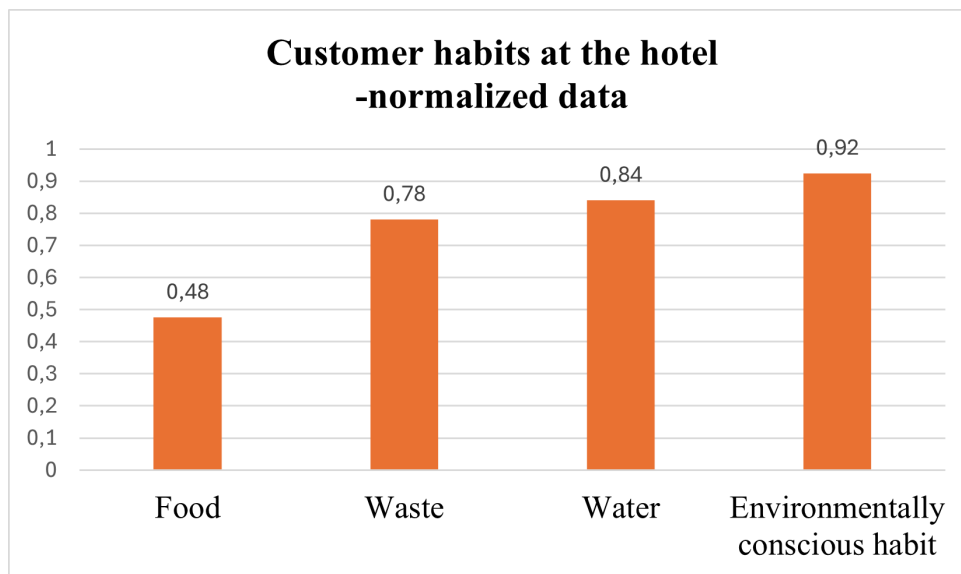
The following table represents the green practices using by consumers during stays divided into categories. The first column shows the number of questions in each category. If the consumer does not use any green practice in the given category, no points were given, if there are, each green practice worth 1 point. The minimum and maximum achievable points seen in the second and third column. The mean shows how many points were scored on average for these categories. I normalized the data to make the categories comparable (*Table 7*).

Table 7: Indicators of hotels

CHATEGORIES	Nr. of questions	Min. points	Max. points	Mean	Mean -normalized data
Food usage	3	3	21	14	0,58
Waste usage	1	1	7	5,6	0,55
Water usage	1	1	7	6	0,33
Environmentally conscious habits	2	2	14	11,88	0,91
TOTAL	49				

Source: own editing

8. Figure: Consumer habits during a stay



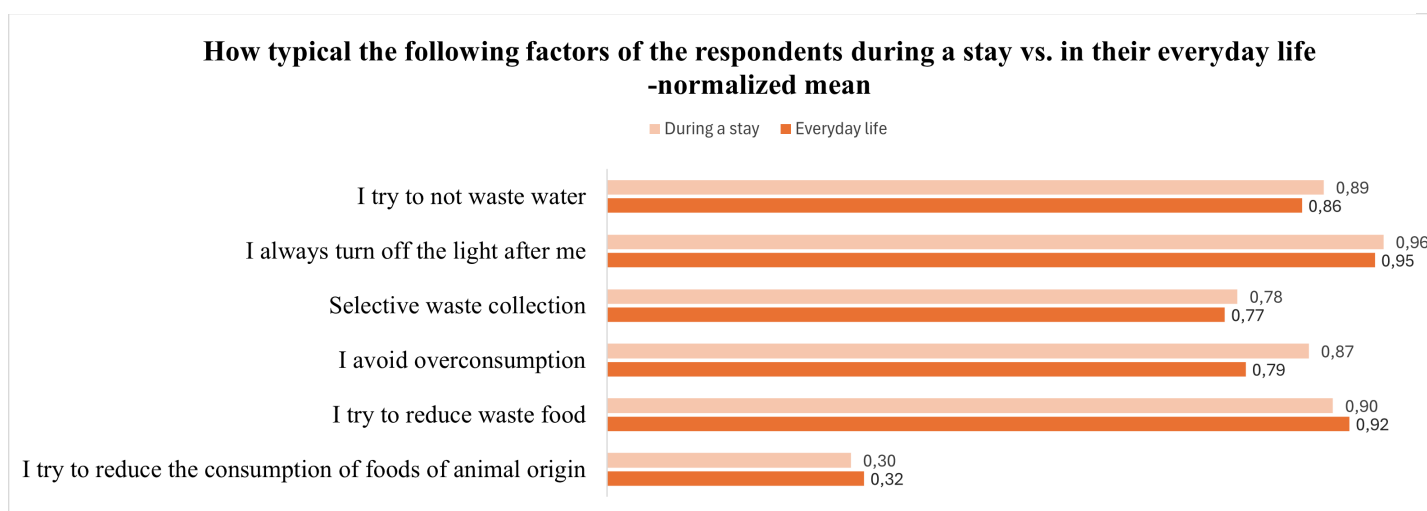
Source: own editing

Of the respondents, they are not taking special attention in food usage during a stay, as avoid food from animal origins, however, while the score of the environmentally conscious habit is almost the maximum, which represent such things as swich off lightning, and not waste water (Figure 8).

8.2.3 Comparing consumer habits at their daily lives and during a stay

In the following step, I examined the indicators whether they have different rate of typicality during a hotel stay than at their daily lives. The following table represents the mean of the normalized data (*Figure 9*).

9. Figure: Typicality of the different green practises in the respondents daily lives and during a stay



Source: own editing

According to the respondents the typicality of the following indicators is very similar. It shows that there is no significance difference between the consumers everyday life habits and the behaviour during a stay. It shows that the least typical thing is to avoid the consumption of foods of animal origin. The most typical for them is related to energy saving and conscious behaviour pattern, as to always turn off the light. Due to the respondents, they are more environmentally conscious when they are in a hotel in case of water usage, energy saving, selective waste collection, and in the decrease overconsumption. It should be remembered, however, that respondents filled in the questionnaire on their own admission.

To determine how strong the relationship between the consumers' daily habits and their habits during a stay Spearman rank correlation was used.

The following table shows the results of the correlation (*Table 8*).

8. Table: Spearman rank correlation

Indicators	Coefficient	Correlation	Significance
Food usage in daily life	0,45	Moderate	<0,001
Food usage during a stay			
Waste usage in daily lifes	0,36	Weak	<0,001
Waste usage during a stay			
Water usage in daily lifes	0,054	Very weak	0,553
Water usage during a stay			
Environmentally conscious habits in daily lifes	0,54	Moderate	<0,001
Environmentally conscious habits during a stay			

Source: own editing

H₃: Consumers who are behaving environmentally sustainable in their homes and reached a higher score on the sustainability scale are also behaving more sustainable when staying in hotels.

H_{3a}: Who take attention to the waste usage at home is take attention during a stay.

Analysing the first sub hypothesis of the third hypothesis, presents that the Spearman correlation analysis shows significant moderate correlation between consumers' daily habits in waste usage and their habits during a stay at hotels. Therefore, H_{3a} can be accepted.

H_{3b}: Who take attention to be a responsible consumer at home is take attention during a stay.

Environmentally conscious habits in daily lives have a moderate (0.54) significant correlation with conscious habits during a stay, therefore H_{3b} can be accepted as those who are conscious at home are more likely to be conscious in the hotel.

H_{3c}: Who take attention to the water usage at home is take attention during a stay.

Table 8 presents, that there is a weak (0.36) non-significant relationship in water usage at home and during a stay, so this indicates H_{3c} is rejected.

H_{3d}: Who take attention to the food usage at home is take attention during a stay.

The Spearman correlation analysis revealed that there is a moderate (0.45) significant ($p < 0,001$) relationship between the food usage at home and in the hotel, which means that those who take attention to it at home is also conscious at the hotel, therefore H_{3d} is accepted.

After analysing the four subhypothesis, the results indicates that the third hypothesis (H_3) is accepted only partly, because individuals who exhibit environmentally conscious habits in their daily lives tend to maintain similar habits during their hotel stays, except water usage (*Table 8*).

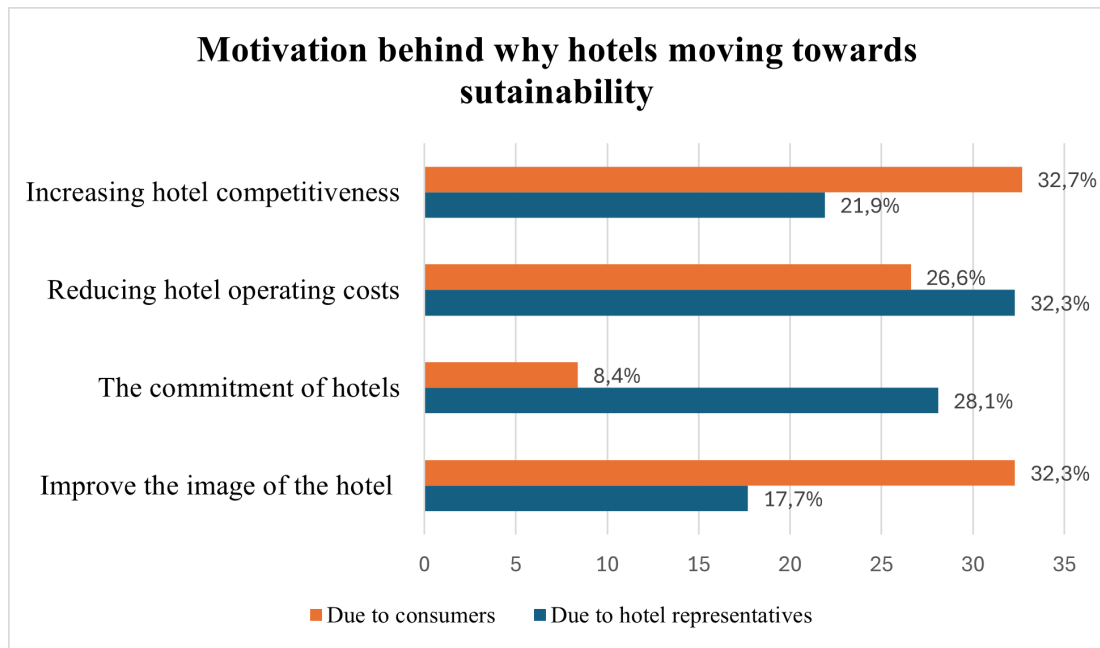
8.3 Exploring the relationship between supply and demand

My goal was to make the two questionnaires as similar as possible, to make the demand and supply side comparable.

8.3.1 Motivation

I ask the consumers and the representative of the hotels the exact same question about the hotel's motivation towards environmental sustainability. After I summarized the data, I optimized it, because the number of the consumers and the respondents from the hotels are not equal. The opinions of the consumers are significantly different from the hotels' responds.

10. Figure: Why hotels moving towards sustainability



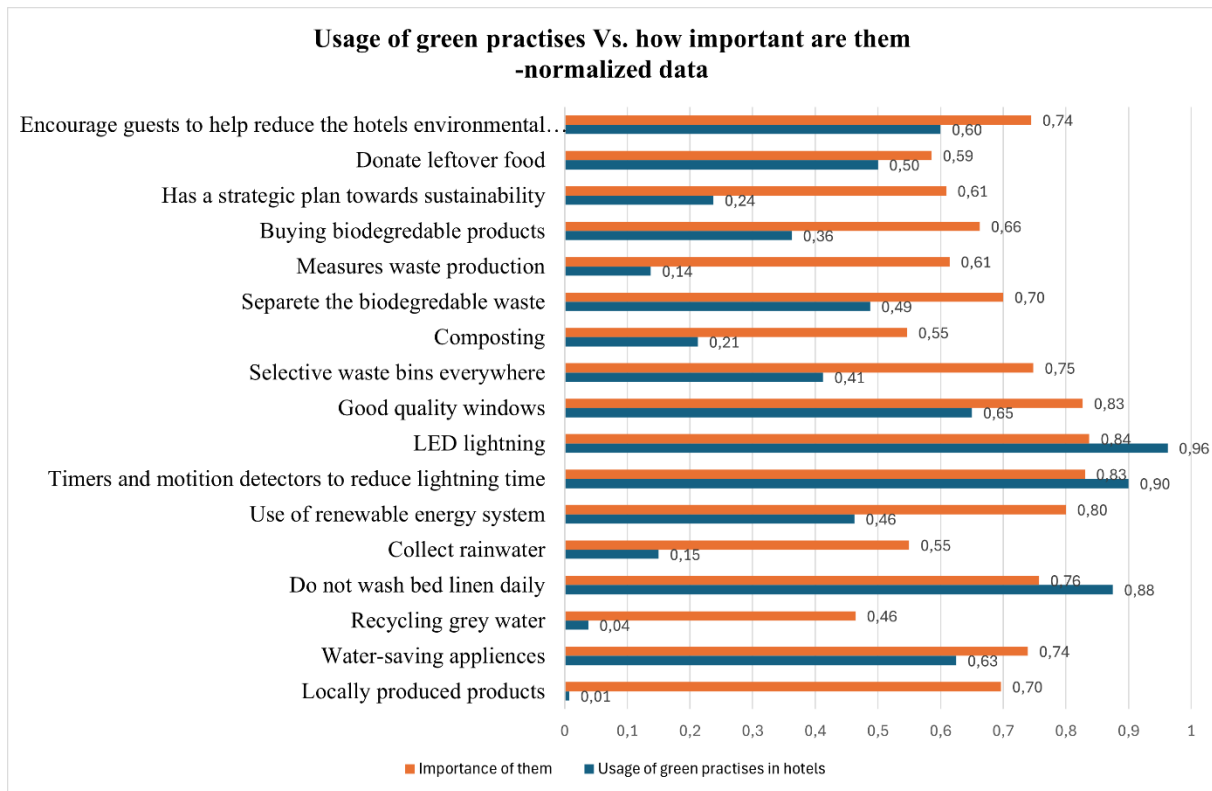
Source: own editing

According to the consumers, the hotels are trying to be more sustainable to improve the image of the hotel and to increase their competitiveness in the market. However, the questioned representatives of the hotels are trying to be more environmentally sustainable to reduce hotel operating costs and more interestingly, because of the commitment to the environment (*Figure 10*).

H₄: Hotels are doing environmentally sustainable efforts that matter most to consumers.

The most important green practises determined according to the consumers and hoteliers, the perceptions of the guests are not followed by hotels. (*Figure 11*). Comparing the guests' perceptions the following figure present that the biggest indifference is in the locally produced products, it would be very important to the consumer, however it is not part of the hotel practices. Hotels overdo the guests' expectations in LED lightning, usage of timers and motion detectors, and in encouraging guests to not wash bed linen daily. In general, according to the consumers all the categories have a huge importance.

11. Figure: : Usage of green practises vs. how important are them



Source: own editing

Analysing the fourth hypothesis, H₄ is rejected. Out of the examined 17 indicators, only in 3 green practises are, where hotels exceed guest perceptions, despite them, green practises are more important to the consumers than hotels doing them.

9 CONCLUSION

In the following chapter, I summarize this research results and findings. Connecting tourism with environmental consciousness is a pressing issue in contemporary times. As we progress into the 21st century, environmental pollution has reached critical levels, urgent actions towards eco-friendly practices across economic sectors are essentials (Abbass *et al.*, 2022). While all industries contribute to environmental decline to varying extents, tourism is no exception. Efforts to address this issue and promote sustainability are gaining traction both internationally and in Hungary (Csete and Pálvölgyi, 2011).

Service providers have recognised the importance of operating in an environmentally responsible way (IUGN, UNEP, WWF, 1991). However, even much effort is made to reduce the damage to the environment of a hotel, success can only be achieved by involving consumers (Kirk, 1996). Studies indicate a rising significance of sustainable practices among consumers (Robinot and Giannelloni, 2010). Scholars agree that the problematic issues can be managed and resolved by correcting the human behaviours an environmentally-sustainable way (Han, 2021b)(Steg and Vlek, 2009). If the consumers behavior can change in the everyday life, not only the environment, but the hotel industry could take advantage on that.

The objective of this research underlines the dynamic relationship between sustainability, consumer behaviour, and the hotel industry. After collecting and acknowledging all the materials in the analysed topic, I implemented my own quantitative research.

9.1 Results of the supply side

To determine the supply side, I asked the members of the HHRA and analysed 82 hotels' responses. In examining the supply side, my aim was to determine which are the most common used green practises in the hotels, and how important environmentally sustainable actions in a hotel's operation.

In examining the supply side, it can be said that for hoteliers all the axamined green practises would be important for implementing, however hotels do not do so to the same extent. From the examined indicators the most commonly used ones are related to energy usage, probably because of its great return-investment and because reducing of costs.

The following research questions were formulated for analysing the supply side:

Q1: What environmentally sustainable practises are most commonly used by the Hungarian hotels?

After the content data, according to the respondent hoteliers, the most commonly used green practises related to energy, within the category, the LED lightning is the most common one.

Q2: What kind of green practises are important in the hotels operation according to hoteliers?

Answering the second research question (Q2), after the content analysis findings indicates that all indicators are important to hoteliers, however, they are not practised to the extent that they are important to them. This may be due to the cost of introducing the practises (solar panels, developing new processes ... etc.) or to management decision-making.

The following hypotheses were formulated for analysing the supply side:

H₁: Hotels that engage in green practices due to the commitment to the environment are achieving higher scores on the green practice scale compared to compared to those driven by other motivations.

H_{1a}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in waste usage compared to those driven by other motivations.

The *first subhypothesis (H_{1a})* was accepted, after the independent t-test analysis, there was a significance relationship in waste usage between hotels whose motivation is the commitment and between whose have different motivator factors.

H_{1b}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in energy usage compared to those driven by other motivations.

The *second subhypothesis (H_{1b})* was accepted, because after the independent t-test analysis, there was significance relationship in energy usage between hotels whose motivation is the commitment and between whose have different motivator factors.

H_{1c}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in water usage compared to those compared to those driven by other motivations.

The *third subhypothesis (H_{1c})* was rejected, because after the independent t-test analysis, there was significance relationship in the one-sided test in water usage between hotels whose

motivation is the commitment and between those who have different motivator factors, however the two-sided test was rejected.

H_{1d}: Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in food usage compared to those compared to those driven by other motivations.

The *fourth subhypothesis (H_{1d})* was accepted, because after the independent t-test analysis, there was significance relationship in food usage between hotels whose motivation is the commitment and between those who have different motivator factors.

After analysing the four subhypothesis, the *first hypothesis (H₁)* was partly accepted, because after the independent t-test analysis, there was positive significance relationship between hotels whose motivation is the commitment to the environment and between those whose motivation is other, however not in all examined categories.

9.2 Results of the demand side

In examining the demand side, my aim was to analyse the potential consumers' behaviour at their daily life and compare it how they behave in a hotel. Last, but not least, to examine the relationship between the hotel and the potential tourist's perceptions about green hotel practises.

Analysing the demand side, it can be said that individuals who exhibit environmentally conscious habits in their daily lives tend to maintain similar habits during their hotel stays, except water usage. Consumers scored particularly high on the sustainability scale with their responsible behaviour both in everyday life and during a stay, this indicates a growing consciousness around sustainability and green practises.

The following research question was formulated for analysing the demand side:

Q3: Is there a difference in the frequency of sustainable practices in the consumer's behaviour in their daily life and during a hotel stay?

After the data analysis, results show that there is no significant difference between the consumers' everyday life habits and the behaviour during a stay. Due to the respondents, they are more environmentally conscious when they are in a hotel in case of water usage, energy saving, selective waste collection, and in the decrease overconsumption.

The following hypotheses were formulated for analysing the demand side:

H₂: People who are trying to be more sustainable in their daily lives are also trying to make more environmentally conscious choices during a stay.

H_{2a}: Consumers are influenced in their decision making by the existence of green initiatives.

The first subhypothesis (H_{2a}) is rejected, because the 87% of the respondents did not choose a hotel because of its green efforts, while only 13% of them did. This shows, that in the decision making, not so important whether there are any green practises of the hotel or not.

H_{2b}: Consumers are willing to pay more to stay in a hotel, which has green practises.

The second subhypothesis (H_{2b}) is accepted. The reason is that however only 8% of the respondents are willing to pay more to stay in a more sustainable hotel, 62% of the respondents said it depends on the amount of money, but the willingness is high.

After analysing the two subhypothesis, the second hypotheses (H₂) after the content analysis of the questionnaire, and the Spearman rank correlation, there was significance difference only in water usage between the habits of the respondents' daily lives and during a stay, thus this hypothesis was partly accepted.

H₃: Consumers who are behaving environmentally sustainable in their homes and reached a higher score on the sustainability scale are also behaving more sustainable when staying in hotels.

H_{3a}: Who take attention to the waste usage at home is take attention during a stay.

The first subhypothesis (H_{3a}) of H₃ is accepted, according to the Spearman rank correlation, there is significant correlation in the waste usage in consumers daily lives and during a stay.

H_{3b}: Who take attention to be a responsible consumer at home is take attention during a stay.

The second subhypothesis (H_{3b}) of H₃ is accepted, according to the Spearman rank correlation, there is a significant correlation in the responsible consumption of consumers daily lives and during a stay.

H_{3c}: Who take attention to the water usage at home is take attention during a stay.

The third subhypothesis (H_{3c}) of H₃ is rejected, according to the Spearman rank correlation, there is a non-significant relationship in water usage at home and during a stay.

H_{3d}: Who take attention to the food usage at home is take attention during a stay.

The *fourth subhypothesis (H_{3d})* of H₃ is accepted, according to the Spearman rank correlation, there is a significant relationship in food usage of consumers daily lives and during a stay.

Thus, after analysing the results of the four subhypothesis, the *third hypothesis (H₃)* is partly accepted, because in case of water usage, there is no significant relation between consumers daily behaviour and their behaviour in the hotels, but in case of the other categories there are.

9.3 Results of comparing both sides

Analysis of consumer behaviour and hotel operations revealed valuable findings. The expectations of domestic consumers and the variables of their behaviour during their stay in a hotel have been defined. Consumers exhibiting environmentally conscious habits in their daily lives tend to maintain similar behaviours during hotel stays, emphasizing the importance of harmonise hotel practices with consumer expectations.

Similarly, hotel's motivations and practices play a pivotal role in shaping the industry's movements towards sustainability. As a result of the research, the most frequently implemented green practices of HHRA member hotels were identified.

When comparing the supply and demand side, the following research question was formulated:

Q4: Are Hungarian hotels meeting consumer expectations regarding their green practices?

According to the content analysis, the hotels do not follow consumer expectations in the extent of green practises.

The following hypotheses were formulated to compare the demand and supply side:

H₄: Hotels are doing environmentally sustainable efforts that matter most to consumers.

Lastly, the *fourth hypothesis (H₄)* was rejected, because however in some cases hotels overdo guest expectations (only in 3 indicators out of the examined 17), hotels green practises are not follow the consumers perceptions.

Out of the 14 hypotheses, 6 were accepted, 5 were rejected and 3 were accepted partly. The following figure summarize the final hypothesis decisions.

12. Figure: Summerized hypothesis decisions

		HYPOTHESIS	DECISION
HOTELS / SUPPLY	H1	Hotels that engage in green practices due to the commitment to the environment are achieving higher scores on the green practice scale compared to compared to those driven by other motivations.	Partly accepted
	H1a	Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in waste usage compared to those driven by other motivations.	Accepted
	H1b	Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in energy usage compared to those driven by other motivations.	Rejected
	H1c	Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in water usage compared to those compared to those driven by other motivations.	Rejected
	H1d	Hotels those doing green practises because of the commitment to the environment tend to score higher on the green practise scale in food usage compared to those compared to those driven by other motivations.	Accepted
CONSUMETRS / DEMAND	H2	People who are trying to be more sustainable in their daily lives are also trying to make more environmentally conscious choices during a stay.	Partly accepted
	H2a	Consumers are influenced in their decision making by the existence of green initiatives.	Rejected
	H2b	Consumers are willing to pay more to stay in a hotel, which has green practises.	Accepted
	H3	Consumers who are behaving environmentally sustainable in their homes and reached a higher score on the sustainability scale are also behaving more sustainable when staying in hotels	Partly accepted
	H3a	Who take attention to the waste usage at home is take attention during a stay.	Accepted
	H3b	Who take attention to be a responsible consumer at home is take attention during a stay.	Accepted
	H3c	Who take attention to the water usage at home is take attention during a stay.	Rejected
	H3d	Who take attention to the food usage at home is take attention during a stay.	Accepted
RELATION	H4	Hotels are doing environmentally sustainable efforts that matter most to consumers.	Rejected

Source: own editing

In summary, while the previously presented findings are promising, there are remain challenges and opportunities for further advancement in sustainability within the hotel industry. For example, shortening the gap between consumer expectations and hotels' actual practices, especially by educating the consumer about sustainability and the impacts of hotels. Collaboration among stakeholders, including policymakers, industry practitioners, and consumers, would be essential in promoting a more sustainable economy and driving collective action towards a more environmentally responsible tourism sector.

The findings reveal a growing awareness and commitment to environmental sustainability among both consumers and hotel managers. For hoteliers, it is important to know that consumers are increasingly opening up to environmental sustainability, and in order for the industry to develop more dynamically, it is essential to involve consumers. While consumers express a desire for environmentally sustainable accommodations, hotels must actively respond by implementing green initiatives to meet these expectations.

For those hotels that are not yet at the forefront of environmental awareness, I recommend the introduction of more environmental sustainability measures that are not capital intensive, but whose success can be easily measured. Such as waste related green practises, which are not require plus human resources and much capital. Implementing a sustainability plan and a sustainability officer is of paramount importance, possibly should be mandatory, especially for a high-quality hotel that should be mindful of the environment. Communication of the hotels have a huge role in educate the consumers and encourage them to take part on reducing the impacts on the environment.

To make the tourism sector even a bit more environmentally sustainable both demand and supply side need to take responsibility and take actions in one time. By understanding the interplay between consumer behaviour, hotel operations, and sustainability, stakeholders can devise more effective strategies for promoting sustainable tourism practices.

This study serves as a foundation for further research and action, urging continued exploration and implementation of sustainable practices within the hotel industry and beyond.

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APPENDICES

Appendix 1: Outline of the anonymous structured questionnaire available online for hotels

1) In which region is the hotel located?

- Budapest region
- Balaton region
- Western region
- Northern region
- Eastern region
- Southern Great Plain region
- South Transdanubian region

2) What is the rating of the hotel?1*

- 1* superior
- 2*
- 2* superior
- 3*
- 3* superior
- 4*
- 4* superior
- 5*
- 5* superior

3) How many rooms does the hotel have? *

4) Please write your answer here:

5) Is the hotel part of a hotel chain?

Yes

No

6) What is your schedule?

Please write your answer here:

7) Please tick the appropriate answer for each item listed:

1-not at all 2 3 4 5 6 7-very important

How important is
environmental sustainability to
you personally?

8) In your personal life, how true are the following statements about you?

Please tick the correct answer for each item listed:

1-not at all 2 3 4 5 6 7-very important

I try to reduce the consumption of foods of animal origin

I eat seasonal products

I avoid overconsumption

**I prefer to use public transport/walk/bike for my daily
journeys**

I avoid travelling by plane on my holidays

**I am energy efficient (avoid excessive use of air
conditioning, turn off the lights after me, don't waste
water...etc.)**

The more I reuse the items I can (e.g. towels)

I collect waste separately

9) Motivation

1-not at all 2 3 4 5 6 7-very important

**How important is
environmental sustainability
to your hotel?**

10) Please indicate the reasons why the hotel is moving towards environmental sustainability.

- To improve the image of the hotel among customers and competitors
- The hotels' commitment to environmental sustainability
- Reducing the hotel's operating costs
- Increasing the competitiveness of the hotel (attracting guests interested in environmental sustainability)
- Can not be said to be taking a conscious approach

11) Have you experienced any financial benefits from the sustainability activities you have implemented?

Yes

No

Other:

Water usage

12) What claims are true about the hotel?

- Has water-saving devices and appliances
- Grey water (water from washing fruit and vegetables) is recycled to water the lawn
- Guests are encouraged to reuse bed linen and towels
- The hotel collects rainwater and uses it to irrigate the garden
- None of these statements are true

13) How important would it be for you to apply the following measures in your hotel?

(1-not at all, 7-very important)

1 2 3 4 5 6 7

Has water-saving devices and appliances

Grey water (water from washing fruit and vegetables) is recycled to water the lawn

Do not wash bed linen and towels daily

- The hotel collects rainwater and uses it to irrigate the garden

Energy usage

14) Which statements are true for your hotel?

- The hotel uses renewable energy systems such as solar and wind power
- Installation of timers and motion detectors to reduce lighting time in less used rooms (storage rooms, corridors and bathrooms)
- Use of energy efficient light bulbs (LED) everywhere
- Good quality shutters with little or no energy loss
- None of the claims are true

15) How important would it be for you to apply the following measures in your hotel?

(1-not at all, 7-very important)*

1 2 3 4 5 6 7

The hotel uses renewable energy
systems such as solar and wind
power

Installation of timers and motion
detectors

LED lightning

Good quality shutters with little
or no energy loss

Waste usage

16) Which statements are true about the hotel?

- There are separate waste bins in both the guest and staff areas
- Composting
- Digestible waste is collected separately (vegetables, fruit, food waste)
- Waste production is measured in each department
- None of the statements are true

17) **How important would it be for you to apply the following measures in your hotel?**

(1-not at all, 7-very important)

1 2 3 4 5 6 7

There are separate waste bins in
both the guest and staff areas

Composting

1 2 3 4 5 6 7

Digestible waste is collected separately (vegetables, fruit, food waste)

Measure waste production in each department

Responsible consumption

18) Which statements are true about the hotel?

The hotel has a strategic plan to manage sustainability

It donates excess food waste and bed linen

Buys locally produced food

Buying green products such as biodegradable products (e.g. cutlery, cleaning products, etc.)

Encouraging guests to participate in reducing the hotel's environmental impact.

None of these statements are true

19) How important would it be for you to apply the following measures in your hotel? (1-not at all, 7-very important)

1 2 3 4 5 6 7

Have a strategic plan to manage sustainability

The leftover food is donated to charity

Buys locally produced food

Buying green products such as biodegradable products

1 2 3 4 5 6 7

Encouraging guests to participate in reducing the
hotel's environmental impact

Appendix 2: Outline of the anonymous structured questionnaire available online for consumers

1) Your gender:

- ☐ Female
- ☐ Male
- ☐ Other

2) What year were you born? Please write your answer here: ____

3) What was the last hotel you stayed in?

- ☐ Small (less than 50 rooms)
- ☐ Medium (100-150 rooms)
- ☐ Large (more than 150 rooms)

4) How important is environmental sustainability to you?(1-Not at all, 7-Very important)

1-not at all	2	3	4	5	6	7-very important
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How important is
environmental sustainability to
you personally?

Motivation

5) Why do you think hotels are moving towards environmental sustainability?

- ☐ To improve the image of the hotel among customers and competitors
- ☐ Because of the hotels' commitment
- ☐ To reduce hotel operating costs
- ☐ To increase the hotel's competitiveness (to attract guests interested in environmental sustainability)

6) Have you ever chosen a hotel because of its environmental commitment?

- ☐ Yes
- ☐ No

7) Would you pay more to stay in a sustainable hotel?

- ☐ Yes
- ☐ No
- ☐ Depends on how much

- 8) Have you noticed if the hotel you are staying at is taking any sustainable measures?
- ☐ Yes
 - ☐ No

Responsible consumption

- 9) How typical are the following factors for you EVERYDAY? (1 - not at all, 7 - very typical)

1 2 3 4 5 6 7

I try to reduce the consumption of foods of animal origin (meat, dairy products, etc.)

I try to get as much food on my plate as I eat

I buy/eat seasonal fruit and vegetables

I prefer public transport/walk/bike for my daily travel

I avoid travelling by plane on my holidays

I avoid overconsumption (I do not buy/unload new products unnecessarily)

I collect waste separately

I have water-saving taps in my household

I use grey water (water from washing fruit and vegetables)

I try to use LED bulbs

I buy green products, such as biodegradable products (e.g. cutlery, cleaning products, etc.)

I buy locally produced, seasonal products

1 2 3 4 5 6 7

Having windows and doors of appropriate
quality (to avoid energy loss)

Composting

Decomposable waste collected separately

I turn off the lights after me

I do not waste water

Responsible consumption in the hotel

10) To what extent do the following factors apply to you when you are STAYING IN A
HOTEL? (1-not at all, 7-very much)

1 2 3 4 5 6 7

I try to reduce the consumption of foods of animal origin (meat,
dairy products, etc.)

I try to get as much food on my plate as I eat

Avoid overconsumption (don't buy/unpack unnecessary new
products)

I use separate waste bins if available (I even take the rubbish from
the room to the separate bin)

If I stay more than one night in a hotel, I refuse to change bed
linen/towels every day

Turn off the lights after myself

I do not waste water

Composting

Decomposable waste collected separately

1 2 3 4 5 6 7

I turn off the lights after me

I do not waste water

The importance of sustainability in hotels

11) How important are the following factors to you in the running of a hotel? (1-not at all, 7-very important)

1 2 3 4 5 6 7

It is important for me to have a plant-based alternative to animal-based foods

Offer locally produced, seasonal vegetables and fruits

Use renewable energy sources (solar panels, solar collectors...etc.)

Provide selective waste collection for all

Use water-saving taps

Use grey water (water from washing fruit and vegetables)

Wash bed linen only when changing guests

Encourage guests to reduce the hotel's environmental impact (e.g. by displaying information in their rooms)

If possible, collect rainwater for watering

Use motion-sensing lights where possible

Use LED light bulbs

Use green products, such as biodegradable products (e.g. cutlery, cleaning products, etc.)

Buy locally grown, seasonal produce

Have windows and doors of the right quality to avoid energy loss

1 2 3 4 5 6 7

Composting

Collect decomposing waste separately

Monitor waste production

Donate leftover food waste to charity