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## Article

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## THE GREEN DEAL – DYNAMIZER OF DIGITALIZATION IN TOURISM: THE CASE OF CLUJ-NAPOCA SMART CITY

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### Abstract

Global tourism activity reached high levels before the outbreak of the pandemic, but it was also one of the most affected economic sectors in 2020 when there was a real collapse of tourism activity. Tourism is an activity with a high degree of pollution, with many studies highlighting the fact that the hotel industry is a high-energy consumption and polluting sector. The Green Deal (GD), a bold project of the European Union, aims to make Europe carbon-neutral by 2050. Tourism is not an objective explicitly presented in the GD but because tourism is an activity with a high degree of pollution it must align to the new requirements. Targeting the hotel market of Cluj-Napoca, the article aims to analyse the activity of the hotels in terms of their adaptation to the new recommendations of the European Commission, implementing the GD, and moving to digitalization, as a new stage, for a cleaner environment. The research combines descriptive and inferential statistical methods to test the hypotheses formulated and to investigate the links between the variables studied, through unifactorial one-way ANOVA analysis. At the same time, the internal consistency of the 62 items of the questionnaire, filled in by the 38 hotels participating in the study, was analysed, obtaining a high Cronbach-Alpha score (0.88). The main conclusions drawn indicate a low degree of familiarity of hotel employees with the provisions of GD. In addition, especially in the case of internationally affiliated and of 4- and 5-star (\*) hotels, the existence of a sustainable development policy is associated with a focus on local producers for both the supply of agri-food products and cosmetics and personal care products. The COVID-19 pandemic accelerated the digitization process of Cluj-Napoca hotels.

**Keywords:** Green Deal (GD), tourism, digitalization, smart city.

**JEL Classification:** Q20, Q30, Q53, Z30

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## **Introduction**

The beginning of the 21<sup>st</sup> Century is marked by changes and transformations generated by the progress of society but also by adapting to new challenges. Among these challenges, climate change tends to become a priority, given that the world's population has reached 7.9 billion (The World Counts, 2021), population mobility has reached accelerating rates, and the National Centers for Environmental Information (NCEI, 2021) recorded July 2021 as the hottest month ever recorded on earth.

One of the activities that stand out because of the high mobility of the population is the tourist activity. Tourism has increased dramatically, reaching 1.5 billion tourists in 2019, before the COVID-19 pandemic. Global tourism activity reached high levels before the outbreak of the pandemic but was also one of the most affected economic sectors in 2020, when there was a real collapse of tourism activity, with a decrease of 74% compared to 2019 and only 381 million registered international tourists, continuing at a slower pace in 2021. It is difficult to say when it will be possible to return to the situation of 2019, which was a peak year for tourism (third place, after fuels and chemicals) in total exports, worth USD 1.7 trillion (UNWTO, 2021).

A major problem facing humanity is that of climate change, which is becoming more and more felt from day to day, and the fight against this phenomenon, must be a concerted effort of all actors around the world. Among the regional actors that are clearly involved in taking action to combat climate change, the European Union (EU) has taken the lead at the regional level by developing several documents to support this bold goal. The Green Deal (GD), a bold project that aims to make Europe carbon neutral by 2050, was launched in December 2019 (European Commission, 2019). This project has several directions for action, including the replacement of traditional energy systems with modern systems, based on alternative energy, better-implemented waste management, increased attention to agricultural products but also faster digitalization, so as to reduce waste of water, food, energy, reduce carbon emissions, and be able to protect and preserve the environment.

As an integral part of the European Commission's strategy for implementing the 2030 UN Agenda and the Sustainable Development Goals (European Commission, 2020), the GD has set an ambitious agenda, based on the concept of green resilience. The GD pursues transformative goals, such as increasing the EU's climate ambitions for 2030 and 2050, providing clean, accessible, and secure energy, mobilizing industry for a clean and circular economy, building and renovating energy and resources efficiently, accelerating change toward sustainable and smart mobility, promoting a fair, healthy and ecological food system, conserving and restoring ecosystems and biodiversity, and achieving climate neutrality, with zero pollution, by 2050 (European Commission, 2019).

Tourism is not an objective explicitly presented in the GD, but, because tourism is an activity with a high degree of pollution (Ștefănică and Butnaru, 2019), which mainly concerns transport, food consumption, and accommodation, it must adapt to the new requirements. Many studies have approached tourism sustainability, including Dabija and Băbuț (2013), and have highlighted the fact that the hotel industry has high energy consumption and is a polluting sector (Ștefănică and Butnaru, 2019). Thus, tourism is not only vitally interested in most of the objectives of the GD but also has the potential to actively contribute to their implementation.

Scott and Gössling (2018) reveal that the energy used in tourism comes mostly from fossil fuels. It is estimated that three tourism sub-sectors account for 93% of total recorded greenhouse gas emissions from tourism, of which air transport has a 40% share, road transport 32%, and accommodation 21%. Therefore, accommodation is the component with the lowest emissions, and, at the same time, it is the component in which the easiest changes can be made, from adapting energy systems to purchasing products to reduce pollution and even to reducing energy consumption, water, and food losses. According to the Romanian National Tourism Master Plan for 2007-2026 (Guvernul României, 2006), tourism must develop in a sustainable manner. Among the most important objectives of sustainable tourism development are recycling, reuse, and energy efficiency, as well as water conservation and landscape preservation. In addition, supporting the digitalization process in tourism and promoting the implementation of energy efficiency measures are objectives of the Romanian Tourism Development Strategy (Guvernul României, 2018).

The city of Cluj-Napoca is one of the most important cities in Romania, the third largest city (INS, 2021), and the most important city in the North-West Development Region of the country; it has a rich tourist heritage, being an important cultural and university centre. The city of Cluj-Napoca is notable for being a modern city, a smart city, a genuine IT hub, which has many projects designed to support digitalization. It is the first city in the country to introduce electric buses, it has a smart street, and in 2021, it ranked first in the category of smart city development in Europe, according to Emerging Europe (2021). Smart tourism is closely linked to the smart city, which, according to the Dubai Smart City Destination model (Subramania, 2015) has a number of features, which are entirely met by the concerns and completed or ongoing projects of the municipality (Primăria Cluj-Napoca, 2021): waste management, e-governance, secure and fast financial services, buses and stations used at full capacity streamlining traffic, environmentally sustainable reporting, reducing aviation operating costs, and safety and security as priorities, efficient public lighting services, the importance of education and digitization, smart parking. In addition, the development of the Cluj IT sector benefits from the establishment of *Cluj IT Innovation Cluster*, one of the main local clusters, giving “the city a competitive advantage, since companies with foreign capital choose to develop branches in Cluj, which later offers the community expansion and investment resources in the field” (Bolog and Mathe, 2015). Furthermore, the strategic planning document of the city (Primăria Cluj-Napoca, 2021) points out that from the perspective of the local community, a positive aspect is that most of the capital in this sector is local, which diminishes withdrawals of profits.

By analysing the international literature, a series of studies have been identified that focus on the sustainable development of the hotel sector, its digitization and on adaptation strategies to the context caused by the COVID-19 pandemic (Hao, Xiao and Chon, 2020; Sigala, 2020; Garrido-Moreno, Garcia-Morales and Martin-Rojas, 2021). The impact of digitalisation on the sustainability of the hotel industry is a topical issue, still little researched, although of interest.

This study combines the provisions of the GD with digitization in the context of policies to adapt to the new conditions caused by the COVID-19 pandemic, similar studies not yet identified for the Romanian hotel market, in the context of the gap between the domestic and international hotel industry. The purpose of the article is to investigate how the objectives of GD in general and of digitization in particular are implemented, in the Romanian city of Cluj-Napoca, considered a European leader in terms of digitalization.

Throughout the coming sections, the paper includes a part dedicated to the review of the literature, followed by the one detailing the research methodology; the results and discussions are further presented, and finally, the main conclusions and recommendations are summarized; as well, the limits of the current research, respectively, the potential future research directions are pointed out.

## **1. Literature Review**

Digitalization in tourism is dealt with from various angles. A more recent approach is related to the COVID-19 pandemic and the way it has influenced the acceleration of digitalization. António and Rita (2021) highlight that the COVID-19 pandemic accelerates the digital transformation in tourism and especially in the hospitality industry, highlighting the benefits of digitalization that can reduce costs by up to 90%. Also, digitalization can be efficient both in front- and back-office operations. Săseanu et al. (2020) address the aspects of digitalization in European countries in relation to green tourism, but also the preferences of tourists regarding ecological accommodation that can contribute to the sustainability of tourism. The transition from sustainability assessment to smart city goals, focused on modern and smart technologies, was achieved in the 21st century, with the general objective of improving sustainability with the help of technologies. In this regard, Ahvenniemi et al. (2017) recommends the use of the term “sustainable smart cities” instead of smart cities, because the first term is more precise.

Regarding the definition of smart city, experts have different views, but most definitions address mainly six dimensions: smart governance, smart people, smart housing, smart economy, smart mobility, and smart environment. Caragliu, Del Bo and Nijkamp (2011), Mosannenzadeh and Vettorato (2014), Neirotti et al. (2014) aimed at clarifying the definition of a smart city by developing their own definition and addressing smart cities in the 27 member states of the European Union. Allam and Newman (2018) provide a classification of articles that primarily address the main dimensions analysed in smart cities. They present a review of the literature on smart city using a table and circumscribe its main dimensions by the help of some definitions. Most definitions consider smart governance, smart people, smart environment, and smart economy (Dameri, 2012; Mosannenzadeh and Vettorato, 2014; Neirotti et al., 2014; Petrolo, Loscri and Mitton, 2015), while dimensions such as smart education, safety, and culture are less frequently addressed (Washburn et al., 2010; Neirotti et al., 2014).

In Romania, the concept of a smart city is strongly linked to the improvement of infrastructure and sustainability at the national level (Ivan, Beu and van Hoof, 2020). A smart city is a connected city. In the case of the city of Cluj-Napoca, the advantageous geographical position that it occupies also contributes to its status as a smart city. Although progress in the development of smart cities is modest, recent trends highlight the acceleration of infrastructure development, smart economy, and smart governance. These transformations also occur against the background of the impact of deindustrialization (Ianoş et al., 2021).

Numerous arguments that support the city of Cluj-Napoca as a smart city highlight its image in terms of its dynamic economy that attracts many multinationals, but also cultural features. Due to the IT and software centres present in Cluj-Napoca and due to the companies desiring to invest in the area, an association with Silicon Valley was even made

(Androniceanu and Ivan, 2012). Digital infrastructure and national education programs can also be implemented through public policies to reduce digital gaps in Romania (Papuc and Andrei, 2018). Starting from the concept of smart city, some authors have extended this concept (Boes, Buhalis and Inversini, 2015) to a new notion of smart tourist destination, focusing largely on the importance of Information and Communication Technology (ICT) within the destination. The skilful way in which technology is used supports the hospitality industry, as it is an industry with an extremely interconnected network, generating a new term, that of smart hospitality (Buhalis and Leung, 2018).

By imposing social distancing, the COVID-19 pandemic has hit the hospitality industry in its very essence that of generating unique experiences, often based on the interaction between tourists and staff. Thus, in the hotel industry, it has become compulsory to rethink processes and operations by implementing contactless procedures (Sigala, 2020; Garrido-Moreno, Garcia-Morales and Martin-Rojas, 2021).

A complex study of the international literature dedicated to the hotel industry and tourism in the context of the COVID-19 pandemic and beyond indicates the change in the behaviour of tourists, respectively, six basic pillars of tourism in the new normality: (1) sustainability; (2) interest in local development; (3) technology and smart cities; (4) luxury services; (5) hygiene protocols; as well as (6) emotions. From a managerial point of view, the impact of COVID-19 on tourism and implicitly on the hotel industry translates into the implementation of new strategies; hygiene protocols; proposing new values; tourist platforms; and new employee relationships (Casado-Aranda, Sánchez-Fernández and Bastidas-Manzanoc, 2021). In the same line, Jiang and Wen (2020) recommend that the hotel industry include artificial intelligence, cleanliness, and hygiene in their future strategies (Casado-Aranda, Sánchez-Fernández and Bastidas-Manzanoc, 2021). Sigala (2020) discusses the need for cooperation between the business environment of the tourism industry and hospitality with academia to research and maximize the transformative potential of the pandemic, by identifying and implementing reactive and proactive solutions to recover responsibly, sustainably, smart, and for the well-being of this sector.

## 2. Research Methodology

The current study focuses on investigating the digitalization of hotels and their attitude towards the implementation of GD. To achieve these two goals, the entire population of hotels and apart-hotels, active on the market of the Romanian city of Cluj-Napoca, considered a leader in Europe in the field of digitalization, was targeted. Thus, given the provisions of the GD, three research hypotheses were derived from studies dedicated to the digitalization of the hotel industry or focused on issues of its sustainability in the context of the COVID-19 pandemic situation (Buhalis and Leung, 2018; Carlisle, Ivanov and Dijkmanas, 2020; Jiang and Wen, 2020; OECD, 2020; Sigala, 2020; Casado-Aranda, Sánchez-Fernández and Bastidas-Manzanoc, 2021; Garrido-Moreno, Garcia-Morales and Martin-Rojas, 2021).

*Hypothesis 1 (H1):* The employees of most hotels in Cluj-Napoca have heard of GD.

*Hypothesis 2 (H2):* Hotels in Cluj have adopted measures to implement GD to reduce energy consumption and better waste management.

*Hypothesis 3 (H3):* Digitization has been accelerated by the COVID-19 pandemic, through measures imposed by social distancing and reduced physical contact between employees and tourists.

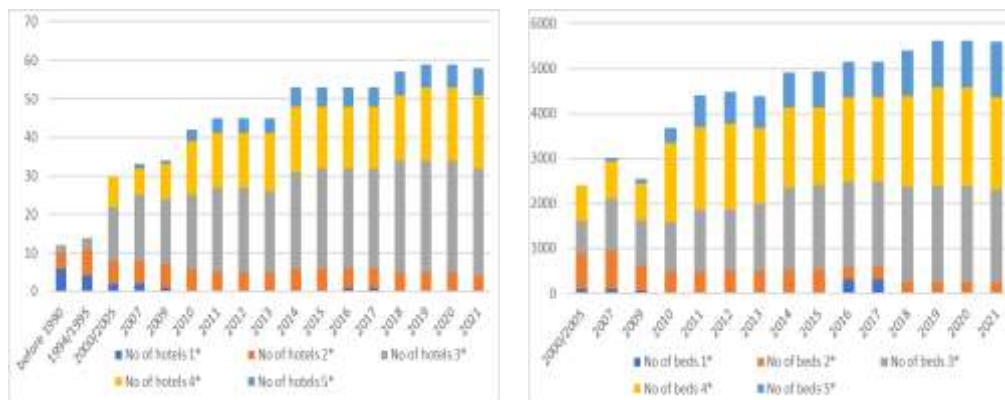
To test these hypotheses, a three-part questionnaire was designed consisting of 12 questions that address the two directions of the investigation, plus 6 identification questions. Five questions were multiple-choice questions with a single valid answer; two questions involved the possibility to pick more than one answer and to also add other options; the remaining five questions were evaluation questions based on Likert scales.

In the first part, the objective was to learn whether hotel staff is aware of the GD and its content; the second part focused on how hotels have implemented or are going to implement the recommendations of the GD on reducing carbon emissions and waste; and the third part deals with digitalization and accelerated digitalization in the context of pandemic. To facilitate the collection of responses, the survey was designed so that both reception desk personnel and front office managers could provide the answers. The research took place between August 1<sup>st</sup> and September 27<sup>th</sup>, 2021.

The research combines several methods of statistical analysis aimed at tourist demand and supply. Therefore, descriptive methods are used for the analysis of the evolution of the number of hotels and number of beds in two-, three-, four-, and five-star (\*) hotels in Cluj-Napoca; the second stage analyses the results obtained based on the questionnaire, as well as to illustrate the way in which the hotels in Cluj-Napoca relate to the GD provisions. Inferential methods are used to investigate the results obtained based on the questionnaire. Given the small size of the sample, it was decided to calculate simple regressions (one-way ANOVA) at the level of variables relevant to the present approach. The use of these methods is common in studies dedicated to the hospitality and tourism industry (Carlisle, Ivanov and Dijkmanas, 2020; Liu, 2020).

For a better understanding of the hotel market of Cluj-Napoca, an analysis of the development of hotels and apart-hotels on the local market of Cluj-Napoca has been carried covering the entire timespan since the fall of communism in December 1989 until today. Some hotels located in the metropolitan area of Cluj-Napoca have been included in this analysis, as their activity is closely related to the city and is influenced by it; it is the case of the West City hotel from Florești, the two Sungarden Resort hotels from Baci, and the Premier Resort Vâlcele and Premier Garden hotels from Feleacu. Sunny Hill (formerly, Tulip Inn Sunny Hill) was initially also located in the outskirts of Cluj-Napoca, in the Făget area, which has in the meantime become a residential area of the city.

A first step was that of investigating the changes that have occurred on the market. Thus, relying on the official catalogue of OJT Cluj (1982) and on the databases of officially ranked accommodation units issued by the MT/ANT (2021) in 2005, 2007, 2009, sixty-seven hotels have been identified as having been active on the local market during the analysed timeframe. Of these, twelve were hotels established before the Romanian Revolution of December 1989 (some dating back at least to the 18<sup>th</sup> and 19<sup>th</sup> Centuries).



1a. Number of Hotels by Ranking-Level

1b. Number of Beds by Ranking-Level

Figures no. 1a. and 1b. The Development of the Hotel Market of Cluj-Napoca

Source: Authors' determination based on MT/ANT data (2000-2021).

Over the past more than three decades, hotels have increased 4.83 times, while their lodging capacity has more than doubled since 2000/2005, both rooms and beds registering a growth rate of 2.33 (Figures no. 1a and 1b). Furthermore, the qualitative shift is also visible, as over the analysed timeframe investors have oriented towards increasing capacity of the midscale (2.99 times), upper midscale (2.54 times), and luxury lodgings (13.76 times). The first aparthotel registered as such appeared in 2013 (Cabrio, 4\*), and was followed five years later by Platinia Luxury Suites (5\*) and a year afterwards by UBA Accommodation (4\*). The international affiliation to hotel chains and the penetration of international hotel brands positively influenced the qualitative level of the local lodging service. Thus, the first brand was Best Western (currently absent from the local market), followed by Golden Tulip, Wyndham, Select Hotels, and Hilton. Radisson Blue, Marriott, and Sheraton are expected to enter the market soon.

According to the most recent database of Romanian lodgings (MT/ANT, 2021), 58 lodgings are ranked as hotels and aparthotels on the local market; the hotels that have already closed are still included in the database. To establish the real supply of lodgings in Cluj-Napoca this number was reduced to 51 hotels (accounting for 2,635 rooms and 5,082 beds), after having excluded the seven hotels that are permanently closed (Cristian 2\*, Gala 3\*, Melody Central 3\*, Norm Hill 3\*, Granata 4\*, Opal 4\*, and Opera Plaza 5\*). In three cases, the same family owns or operates two or three hotels, and in another case two hotels are located at the same address and are promoted via a single website. After discussions with the owners/managers of these units, the number of hotels was further diminished with 5 units, by treating these hotels as a single unit (Capitolina Chic Hotel 3\* and Lol et Lola 3\*, operated by Bon Ton Hotels SRL; Premier 4\*, Premier Resort Vâlcele 3\*, and Premier Garden Vâlcele 3\*, operated by Real Hospitality SRL and Premier Garden SRL, both enterprises belonging to the same family; Onix I 4\* and Onix II 3\*, located at the same address and operated by AB Onix Hotel SRL; and the two Sungarden Resort 5\*, located at the same address and operated by Sunset Tour Inn SRL and Sungarden Resort). Thus established, the total population of hotels operating on the local market includes 46 hotels (three 2\* hotels, 6.5%; 21 3\* hotels, 47.5%; 17 4\* hotels, 37%; and five 5\* hotels, 10.9%).



After the hotels were contacted in eight rounds (four times via e-mail, once via their Facebook pages, once in person at their reception desk, once via phone, and once via WhatsApp), by the date of closing the study, only 38 hotels have accepted to respond. The remainder explicitly refused to participate in our study and consequently have been removed from the sample. The total population includes all the internationally branded hotels active on the local market. The structure of the investigated sample, in fact the entire population, is: one 2\* hotel (2.6%, covering 33.3% of all 2\* hotels); seventeen 3\* hotels (44.7%, accounting for 81% of all 3\* hotels); fifteen 4\* hotels (39.5%, representing 88.2% of the total 4\* hotels); and five 5\* hotels (13.2%, covering 100% of the 5\* hotels).

Given that the hotels ranking in the upper-scale and luxury segments are more likely to develop sustainability policies and invest in their digitalization, we consider that the participants in the study are representative of their peers and that the results are not distorted. In addition, to determine the internal consistency of the responses received, the Cronbach's Alpha coefficient was computed; it has a value of 0.88 for the answers provided by the 38 respondents in the case of the 62 items considered. The score being high, it indicates a good to very good internal consistency of the items of the questionnaire. The studied sample also presents the following features: it includes a percentage of 13.2% of internationally affiliated hotels; most hotels (44.7%) report a percentage of international tourist arrivals between 0 and 25%, respectively 36.8% for foreign tourists between 26 and 50%, followed by a generous percentage (15.8%) of arrivals of foreign nationals of more than 50% and no more than 75%, as well as arrivals of more than 76% to 100% for 3% of respondents. Based on the main reason for travel, the profile of the destination Cluj-Napoca was determined. Therefore, most hotels declare business tourism as the main reason for the arrival of Romanian tourists (78.9%) and foreign ones (55.3%); followed by event tourism with a share of 10.5% for both Romanians and foreigners; leisure and city break tourism appear with equal quotas in the case of foreigners (15.8%) but are not of no interest to Romanians (2.6%). Transit tourism is present in a higher proportion for Romanians (5.3%) and in a lower proportion for foreigners (2.6%). Medical tourism does not appear to be the main reason for accommodation in any of the hotels in Cluj.

### **3. Results and Discussion**

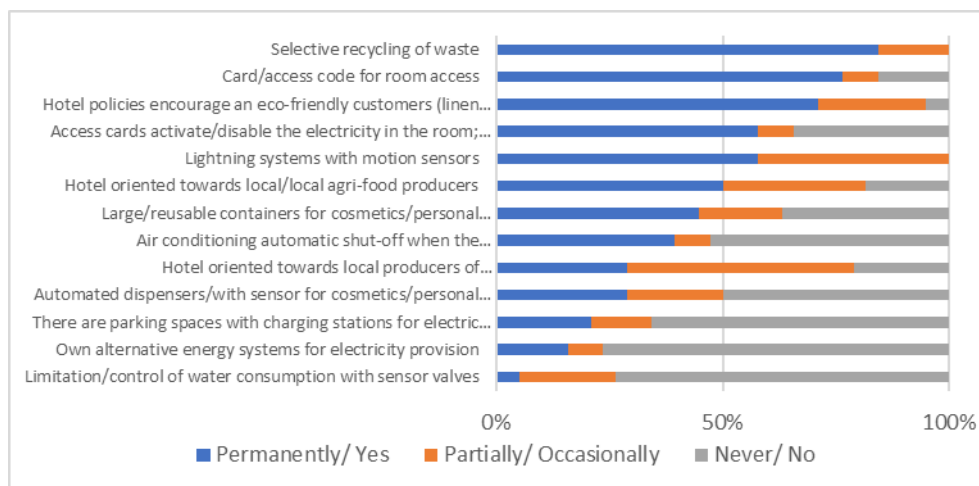
Given the importance of the GD, the first investigated aspect regarded the familiarization of the hotels with the GD, respectively, their orientation towards sustainable development. The study revealed that 57.9% of the respondents are not familiar with GD but, at the same time, over 65% of hotels consider themselves to be environmentally friendly (10.5% to a very large extent, 55.3% to a large extent, while the remaining 34.2% are environmentally friendly only to a low extent). The results are similar to those shared by Musavengane (2019), which showed that most of the hotels studied had fragmented sustainable development policies, the implementation of which has not been verified.

A somewhat higher percentage is registered in the case of the existence of a sustainable development policy, with 68.4% of the respondents admitting the existence of a sustainable development policy for their hotel. At the same time, if any, the implementation of the policy is carried out to a very large extent by only 7.9%, respectively, to a large extent by 50% of the hotels, and to a small extent among 23.7% of the respondents; at the same time, the policy is not implemented in the case of 18.4% of hotels, while internationally it has

been observed that some managers have understood that the sustainable development of hotels is conditioned by the adherence to environmental policies (Erdogan and Baris, 2007), and Schaper (2002) indicated the need for education in this regard.

When asked whether the hotels invest in training their staff for acquiring and applying the hotel's own sustainable development policy, the results are surprising, as only 37% of the respondents (here included three of the five internationally branded hotels) confirm such training. Furthermore, 42% (with two internationally affiliated hotels) neither admit nor deny the provision of such training, and a fifth of them denying the fact that they benefit from such training sessions. This situation is paradoxical, as Schaper (2002) showed that the decision to implement environmental policies belongs to the management and combined hotel-level education with its sustainable development, nearly 20 years ago.

It seems that hotels focus more on educating their tourists about sustainable development, rather than increasing the awareness of their employees in this regard. Thus, 50% of the respondents (all internationally branded hotels included) agree that they have developed and implemented procedures to ensure the education of the tourist/client in the spirit of sustainable development; further, 34% neither admit nor deny the existence of such procedures, while only 16% deny the existence of such procedures. Unlike foreign tourists (61% in general and 80% for branded hotels), Romanian tourists show to be less educated on the adoption of sustainable development policies for hotels (32% in general and 60% of branded hotels). In the same line, the respondents neither agree nor disagree with the fact that Romanian tourists are open to the adoption of sustainable hotels policies (45%); the percentage drops to 26% for international visitors.



**Figure no. 2. Sustainability practices adopted by hotels**

*Source: Authors' determination based on research results.*

Several remarks ought to be made regarding the sustainability practices adopted by the hotels (Figure no. 2). A positive aspect is that almost 85% of hotels recycle their waste in a selective manner. Still, it is quite surprising to notice that two of the internationally branded hotels, respectively, two 5\* hotels, three 4\* hotels, and one 3\* hotel select waste only occasionally, despite this activity being law-enforced.

The use of access cards is important both for tourist security and energy saving purposes; therefore, the fact that 76% of hotels have implemented access cards on a regular basis and that nearly 10% use them occasionally is another positive fact; this situation occurs only mainly in 3\* hotels. Still, only around 60% of hotels use access cards, mainly permanently, to control and limit electricity consumption. Furthermore, only less than half of hotels use such cards to save energy by turning off air conditioning systems when windows and/or doors are open, with 39% (all internationally affiliated hotels included in the study) of hotels doing so permanently and 8%, occasionally.

To save energy, all hotels have implemented motion sensors to control the lighting system in all public spaces (58%) or certain areas (42%). Almost three-fourths of the hotels have a policy to always encourage customers to adopt an eco-friendly attitude regarding the change of linen and towels, while a quarter opt to do so occasionally. In spite of having and implementing a sustainable development policy, one of the 5\* internationally branded hotels opts not to encourage their customers to accept using linen and towels for more than the legally established number of days (2 days for 4\* and 5\* hotels).

Supporting local agro-food producers is a rather common practice of the mid-scale, upper-scale, and some luxury hotels from Cluj-Napoca, as half of them regularly address local suppliers, while another third of them occasionally buy certain local products. Only one 5\* internationally affiliated hotel never buys local agricultural products. Likewise, in the case of cosmetics and personal hygiene and care products, a fifth of the local hotels, including two of the branded ones, never opt for local products, while half of the respondents occasionally turn towards local producers of such products, and a third of them have permanent collaborations in this respect.

More than a third of the respondents (37%, including three internationally affiliated hotels) do not consider using large containers to provide their customers with cosmetics and personal care and hygiene products, but nearly half of the respondents (45%) always do so, and a little less than a fifth (the remaining two branded hotels included in the study) provide some of the products in large and/or reusable containers, thus acknowledging the importance of reducing plastic waste. Only half of the respondents proved to be aware of the need to reduce water pollution, by limiting the quantities used and by reducing the waste of soap, shower gel and shampoo through the permanent (25%) or partial (25%) implementation of automated dispensers of such products.

Approximately a third of the respondents provide parking spots with charging stations for electric cars. A relatively low quota of the respondents, namely some 25%, indicated the generation of some of the needed electric energy via their own alternative energy systems (16%, permanently/regularly and 8% partially). Despite the fact that at the global level many areas face life-threatening problems related to accessing water resources and that hotels have the reputation of consuming significant volumes of water, the control of water consumption does not seem to be a priority of the hotels in Cluj-Napoca, where only about a quarter of the players on the market have considered investing in automatized and sensor-based taps (5% have invested in all areas, while 21%, including three internationally branded hotels, have covered some spaces).

Very few of the respondents mentioned other measures adopted for their hotel's sustainable development. Worth to mention in this respect are the following ones: the replacement of plastic single-use products with eco-friendly and recyclable products, materials and

supplies in their restaurants or on their terraces (such as straws, cups, napkins, etc.); the diminishing of individually wrapped food products available during breakfast; the use of water tanks for employees and customers instead of bottled water and their encouragement of using reusable and refillable bottles; selective waste processing for paper and cardboard; the care towards water consumption; as well as also the installation of flood and fire/smoke sensors, respectively of open-window sensors.

An encouraging aspect results from the fact that 55% of the hotels use classic heating systems combined with alternative energy; furthermore, a small but important percentage of the hotels (3%) rely only on alternative energy sources, while 42% of the hotels still use fossil fuels for their heating and for providing hot running water.

As table no.1 further reveals, nearly half of the respondents indicate their hotel's intention to invest in alternative sources of energy (21% of those that still rely on fossil fuels and 24% of those who have already begun to use alternative sources of energy combined with classic ones). Given the rather high costs associated to such investments, the percentage of 47% of hotels that have not yet decided whether to invest or not, is reasonable and understandable.

A positive aspect is related to the fact that only 8% of the respondents clearly know that they do not plan to switch to alternative sources of energy. Moreover, 20% of internationally affiliated hotels use only alternative sources of energy, while 60% have already opted for combining classic with alternative sources, and only 20% still entirely rely on fossil fuels.

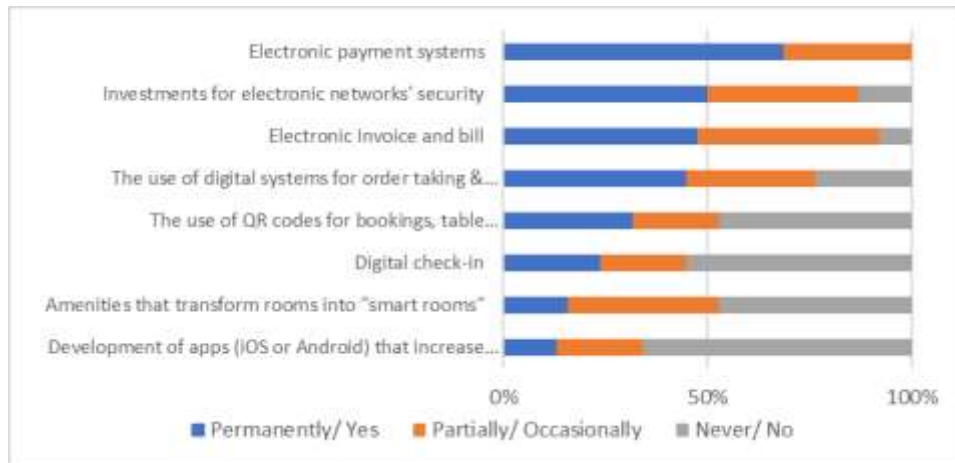
**Table no. 1. Hotels' behaviour and intentions relative to energy consumption**

	Intend to invest in alternative systems	Do not know if they will invest in alternative systems	No intention to change	Total
Fossil fuels	21%	18%	3%	42%
Classic systems combined with alternative sources of energy	24%	26%	5%	55%
Alternative sources of energy	0%	3%	0%	3%
Total	45%	47%	8%	100%

*Source: Authors' determination based on research results.*

Regarding hotel adaptation to the digital age, most respondents (63% and 80% of the branded hotels) agree that their hotels embrace digital innovations quickly, while only one hotel (the remaining branded hotel) considers itself not to be a quick adopter of digital technologies. Once again, when it comes to requesting digitized services (e-payment, smart rooms, electronic menus, self-check-in/electronic check-in, etc.), Romanian tourists (34%) score significantly lower when compared to international ones (58%).

An analysis of the responses received from the hotels in Cluj-Napoca (Figure no. 3) reveals that in terms of digitalization, by far the most frequently implemented systems are linked to the electronic payment systems, with three fourths of the hotels permanently implementing such systems, and the remainder, who have opted for a partial implementation of these, selecting certain features and departments for this purpose.



**Figure no. 3. Digitalization as implemented by hotels**

*Source: Authors' determination based on research results.*

A major concern of businesses relying on the online environment is related to network security; logically, most of the respondents (87%) have allotted budgets for this purpose, half of the hotels consider this a permanent investment (50%), while the other more than a third (37%) occasionally budget such investments. The attitude of the remaining 13% of hotels of not investing in network security but of investing in electronic payment systems and in electronic invoicing and billing is rather odd (47% on a regular basis, 45% occasionally, and 8% never). Almost 80% of hotels have implemented IT&C solutions for order taking and processing and for restaurant inventory management (45% always and 32% occasionally), while nearly a quarter (24%) have not yet adopted such solutions. These last two aspects contradict the initial statement regarding the hotels' statute of early adopters of digital technologies. QR codes are relatively popular tools, used regularly by a third of the hotels (including 40% of the ones internationally affiliated) and occasionally by another fifth of them (of which 40% are branded ones), in one or more of their services (bookings, table reservations, menu accessing & order placement for restaurant/bar/room service). At the same time, there is a significant percentage of hotels (47%, including 20% of the internationally affiliated hotels) that do not use them. Digital check-in is a regular procedure in the case of around a quarter of the respondents, while another fifth implement it as an occasional practice.

Even though customers are increasingly orienting towards digitalized services, most enterprises (55%) do not provide their customers with the possibility of electronic check-in. Facilities and amenities at room level tend to be rather common, as only a little more than 15% of the respondents indicate the fact that they regularly try to endow hotel rooms with smart facilities and amenities, while 37% admit that their hotels invest in this area only occasionally. Nearly half of the hotels seem not to be familiar with the concept of smart rooms, and consequently not to direct financial resources in this area. The development of iOS and Android applications is not a priority for any of the hotels under scrutiny, not even for the internationally affiliated brands. Only a single hotel specified that its facility invests in the implementation of Building Management Systems (BMS) dedicated to the control of lights by means of a dedicated app. There is a significant gap in relation to the international hotel markets; In China, for example,

as a measure to reduce social contact in the context of the pandemic, various solutions have been implemented such as: contactless smart services, including personal check-in or remote check-in, facial scanning, voice control for room service, robotic room service and check-out in zero seconds. Similar measures have been taken since April 2020 by more than 100,000 hotels in 351 cities (Hao, Xiao and Chon, 2020).

When it comes to communication with their customers, it turns out that most of the hotels use online booking platforms (97%), equally their own website and social media (92%). Obviously, these are part of a complex mix that also involves other communication strategies. Thus, nearly half of the hotels have implemented group or private loyalty programs (47%); organize events (42%). Some have developed their own apps or use those of the international brands they have joined (13%) and 5% seem to consider implementing virtual and augmented reality solutions. Close to a quarter still use one or more of the classic advertising media: leaflets (24%), flyers (21%), banners (18%), road signs (13%), and/or catalogues (5%).

Perhaps more than any other sector, hospitality is the most affected by the COVID-19 pandemic. In this context, their activities were influenced by behavioural changes such as an increasing demand for room service, as an alternative to the services offered by the restaurant (in case of accommodated customers) was registered by nearly two thirds of the respondents (61%); it has boosted the digitalization process for half of the respondents (50%); their purchasing departments have turned towards local producers (45%). These changes led to adaptation strategies. Between a fourth and a fifth of the hotels have developed new activities, such as delivering food in a catering system (24%), purchasing organic products (21%), and/or have invested in IT&C solutions for the digitalization of the accommodation sector (18%). Around a quarter of the analysed hotels have also invested in IT&C solutions for digitization in the food/restaurant area (16%), promotion and loyalty programs, and for the financial and accounting departments (13%, each). Only 5% of the respondents invested in the development of the COVID-19 pandemic health safety and security protocols and have purchased robots for cleaning services, while only 3% have invested in the development of apps (for iOS and/or Android, etc.) to increase the degree of independence of their tourists/customers.

Next, the investigation of the influence determined by certain variables upon the behaviour of the studied hotels was considered. In this sense, the authors opted for the unifactorial one-way analysis of variance (ANOVA), with a 95% confidence level. As most hotels rather indicated a business profile, it was decided to only research the influence of the classification level, respectively, the international affiliation on hotel practices. International affiliation is weakly associated with the level of familiarity of employees with the provisions of GD ( $p=0.015$ , adjusted  $R^2=0.1374$ ), while the classification level is not related to this aspect.

In the case of environmentally friendly hotels, there is a strong orientation both towards local/local producers of agri-food products ( $p=0$ , adjusted  $R^2=0.7649$ , link) and towards those of cosmetics and hygiene products ( $p=0$ , adjusted  $R^2=0.6262$ ). The same trends appear in relation to the classification level: the orientation towards local agricultural producers ( $p=0$ , adjusted  $R^2=0.7407$ ) and personal care products ( $p=0$ , adjusted  $R^2=0.6943$ ), respectively, towards the encouragement of customers to have an eco-friendly attitude towards the environment in relation to changing bed sheets and towels ( $p=0$ , adjusted  $R^2=0.8506$ ), with high intensities. Furthermore, the association of the classification

level with the orientation towards local producers in general is confirmed by a moderate intensity ( $p=0$ , adjusted  $R^2=0.4146$ ) but also by the purchase of organic products ( $p=0.004$ , adjusted  $R^2=0.1858$ ) and by the provision of catering services ( $p=0$ , adjusted  $R^2=0.4066$ ), with low or moderate intensities.

In the context of the COVID-19 pandemic, the existence of a sustainable development policy is directly but weakly associated with the orientation towards local producers in general ( $p=0$ , adjusted  $R^2=0.3657$ ), respectively with an average intensity towards local farmers ( $p=0$ , adjusted  $R^2=0.5875$ ) and to local cosmetics manufacturers ( $p=0$ , adjusted  $R^2=0.5003$ ), as well as with the stimulation of the ecological behaviour of tourists, through an intense connection ( $p=0$ , adjusted  $R^2=0.7188$ ), slightly with the implementation of electronic check-in ( $p=0$ , adjusted  $R^2=0.2638$ ), but more intense with the issuance of electronic invoices ( $p=0$ , adjusted  $R^2=0.6139$ ), and with the implementation of electronic payment systems ( $p=0$ , adjusted  $R^2=0.6625$ ).

## **Conclusions**

Sustainability is most often approached as a theoretical concept, while digitalization tends to be approached mainly from a practical perspective. The concretization of the theoretical connotations, with which sustainability is usually associated, by identifying the benefits on sustainability derived from digitalization in the hotel industry is the main contribution of this study.

After analysing the research results, it can be concluded that out of the three working hypotheses, only two are being verified. Thus, hypothesis one shows that more than half of the respondents did not hear anything about the GD, which means that this hypothesis is not confirmed. Instead, the second hypothesis is confirmed, more than half of the respondents apply the principles of sustainable development and environmentally friendly policies; the level of classification is the most important triggering factor of this orientation. The third hypothesis has the highest percentage of positive answers, which confirms that the pandemic has accelerated the digitalization process that implicitly contributes to the development of smart cities. Although the presence of the IT sector brings the city of Cluj-Napoca to the forefront, the solutions related to digitalization in the hotel industry are poorly represented. In addition, they are not linked to the implementation of sustainable development in the hotel industry. The study highlights the importance of involving the IT sector not only in the development of digitalization solutions adapted to the current pandemic context (COVID-19), but also in considering their contribution to the sustainable development of the hotel units for which they are created, as well as to sustainable development, in general.

Lodgings have not demonstrated an increased capacity to integrate solutions related to digitalization or sustainability, even if the current context has amplified the need to emphasize the first aspect, and also highlighted the strong human impact generated by unsustainable behaviours. However, only fast digital solutions were sought that would address the problems posed by the pandemic, which were not correlated with sustainability, neither in general nor in particular (with the independent or affiliated hotel policy). We consider that one of the directions that the study highlights is related to the implementation of digital solutions, correlated with policies regarding sustainability, whether they are

simple or complex, and regardless of the level of decision or type of activities involved, based on the principle of local action in the context of global thinking.

According to the opinions expressed by the leaders of the professional and entrepreneurial associations of the Romanian hotel industry, meeting the goals of the GD and having the ability to adapt under the conditions of the pandemic situation are two crucial challenges for the Romanian hospitality sector. Their opinions confirm the main conclusions of our study. Therefore, from a managerial perspective, one of the most important aspects that hotels must consider is to improve their communication process with both their employees and their customers and to increase their awareness of the sustainable development goals they have as businesses. Both the responses received, and the investigation activity have led to the conclusion that hotels need to increase the awareness of their employees about their policies and procedures in general, not only those related to the job descriptions of employees. Other areas that lack awareness among both employees and tourists are the waste management policies of hotels and their implementation, respectively, the digitized services of hotels.

From the perspective of their community involvement, hotels should better cooperate with local producers of both agricultural products and cosmetics and personal care and hygiene products. Furthermore, hotels should reconsider the way they provide toiletries so that they diminish their no recyclable waste. In the same line, the implementation of automatized lightning systems and of water supply systems is also an area to carefully regard by the respondents. For this to be implemented successfully, the state's support intervention is crucial, as in the case of the hotel's orientation towards green energy sources. Additionally, hotel owners and managers must focus on the adoption and implementation of the most appropriate IT&C solutions. Other suggestions can regard the provision of sustainable services, such as: introducing independently or with the support of the city hall of electric shuttles that would connect the lodging facility to the city centre/railway station/airport, etc. The establishment for parks of electric bicycles, scooters, etc. is another environmentally friendly measure to adopt.

The limitations of the current research include several aspects. First, the concrete involvement of the Cluj-Napoca IT sector in the solutions developed for the local hotel industry and for the hotel industry, in general, was not pointed out. An in-depth analysis of the responses received suggests that the respondents' reluctance to participate in research, in general, to some extent limits the correlation of the implications of studies in practice and vice versa. At this stage, there is no certainty that the results obtained in Cluj-Napoca can be extrapolated to other large cities in Romania.

The research enhances not only the extension of the study to the level of other major cities in Romania, but also the drawing of an overview of the domestic hotel market in terms of adaptation to current events, but also its future development. Such a study will lead to the identification of the most sustainable strategic directions that the Romanian hotel industry can adopt.



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