

Article

Exploring Gamification Techniques and Applications for Sustainable Tourism

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Abstract: Tourism is perceived as an appropriate solution for pursuing sustainable economic growth due to its main characteristics. In the context of sustainable tourism, gamification can act as an interface between tourists (clients), organisations (companies, NGOs, public institutions) and community, an interface built in a responsible and ethical way. The main objective of this study is to identify gamification techniques and applications used by organisations in the hospitality and tourism industry to improve their sustainable activities. The first part of the paper examines the relationship between gamification and sustainability, highlighting the links between these two concepts. The second part identifies success stories of gamification applied in hospitality and tourism and reviews gamification benefits by analysing the relationship between tourism organisations and three main tourism stakeholders: tourists, tourism employees and local community. The analysis is made in connection with the main pillars of sustainability: economic, social and environmental. This study is positioning the role of gamification in the tourism and hospitality industry and further, into the larger context of sustainable development.

Keywords: sustainable tourism; gamification; hospitality; applications

1. Introduction

The relationship between tourism and the environment represents one of the main topics in the agenda of tourism stakeholders, all of them being aware of its importance. Academics and researchers focus on it, emphasizing two approaches [1–6]:

- Environment-sensitive tourism: reduce environmental effects and increase sustainability;
- Environment-dependent tourism: the environment represents one of the main inputs for tourism, which must be preserved in order to guarantee long-run success.

Due to its characteristics, tourism is perceived as an appropriate solution for pursuing sustainable economic growth. According to the United Nations Environment Programme and the World Tourism Organisation (UNWTO), sustainable development represents “a process to meet the needs of the present without compromising the ability of future generations to meet their own needs” [7]. This approach can be explained using the three pillars of sustainability: economic, social and environmental. Economic sustainability is related to the efficiency of companies’ activities in the long run; social sustainability refers to providing equal opportunities, respecting different cultures, reducing discrimination and poverty, while environmental sustainability is related to a proper management of scarce resources, especially of those that are not renewable. A sustainable tourism process should take “full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” [7].

Despite the fact that almost all tourists declare they support the idea of sustainable tourism, Budeanu [8] emphasizes that only a small fraction of them are adopting a sustainable behaviour during their holidays. Usually, companies and public institutions are more environmentally aware and focused on implementing methods and techniques to make tourism more sustainable. During holidays, tourists’ attention is focused on experiencing a high level of comfort, or at least higher than in their everyday life. In this situation, it is difficult to convince them to adopt a more sustainable behaviour, because it may be perceived as a factor with a negative influence on their comfort level. Therefore, tourists need a strong incentive to:

- Choose public transportation or other types of transportation with lower environmental impact, because these are more time-consuming, in the sense that would take tourists more time to reach their destination and, therefore, their stay there would be shorter;
- Opt for a certified sustainable accommodation unit as these units are usually more expensive;
- Consume less water, energy or reduce the amount of waste because they would have to change their habits and might not be ready or willing to adapt;
- Purchase domestic products when there are so many international trusted brands.

Fortunately, tourists do not purposely adopt a behaviour that could prove harmful for the environment, therefore proper incentives and techniques could positively influence a sustainable behaviour, a transition to a more sustainable lifestyle during their holidays. One solution could be the use of the Internet and Internet-based technologies. UNWTO [9] considers tourism and the Internet ideal partners, because the latter represents an efficient way to provide services and information, to

target a large number of tourists at lower costs and, most important, to develop adequate communication channels that promote a sustainable lifestyle during holidays.

Lately, the implementation of gamification mechanism has determined a more sustainable approach for tourism development. This is a technique that involves giving rewards and providing entertainment as incentives for different stakeholders, to elicit a specific behaviour from them [10]. This technique has the ability to enhance tourists' experience in an innovative way, combining tourism services with game elements. Due to its characteristics, it increases the added value of the tourism product in a sustainable way [11] and diversifies tourists' experiences at the destination [4].

Gamification is not a new term. It "originated in the digital media industry" [12]. According to Gartner, the interest in gamification started around 2010, "first appearing on Google Trends in September 2010" [13]. The most cited definition of gamification is the one proposed by Deterding *et al.*: "'Gamification' is the use of game design elements in non-game contexts" [12]. Uskov and Sekar define gamification as the "implementation and use of game design elements and techniques, game thinking, game mechanics and analytics, computer game technology in business models, framework activities, processes, procedures, services, *etc.* to improve employee and/or customer/user skills, experience, engagement, effectiveness, and productivity outside pure entertainment area" [14]. Gamification is "not all about giving out badges and points to incentivize behaviour, but needs to apply game thinking to encourage and motivate for further activities" [15].

Gamification can be applied in any industry, yet the hospitality sector is not taking full advantage of gamification as other sectors do. Many well-known companies have already adopted gamification to increase customer engagement, gain customer loyalty, improve employee performance or gain competitive advantages. Companies will continue to adopt gamification and by 2016, it will be "an essential element for brands and retailers to drive customer marketing and loyalty" [13]. The research conducted by M2 Advisory Group estimates that the market expenditures on gamification solutions will reach \$2.8 billion by 2016 [16]. Also, a study developed by the Pew Research Center's Internet & American Life Project, in which participated 1021 technology stakeholders and critics, supports the same idea: 53% of the respondents agreed that by 2020 "there will have been significant advances in the adoption and use of gamification" [17].

Some of the technologies that influenced the development of gamification are mobile technologies (mobile applications, location-based services), cloud computing, Web 2.0 and Augmented Reality. Knowing that by 2030 half of the world population will be online and mobile, it becomes vital for the tourism and hospitality industry to integrate Information and Communication Technologies (ICT) in their services [18]. ICT provide strategic tools for sustainable tourism development, creating opportunities to enhance the positive effects of tourism and to reduce its negative impacts at destination [19]. Bennett and Williams [20] are going further stating that there is a synergy between gamification and sustainability, based on the fact that both focus on emotional responses. According to UNWTO [21] game mechanisms have the capacity to create positive experiences in tourism—fun, excitement, arousal, pleasure, sense of achievement—and to provide tourists with both entertainment and information. Furthermore, there are good chances that tourists will adopt a more sustainable behaviour if provided with: a way to measure their progress and reasons to move on—collect points to obtain discount vouchers; goals to achieve—new levels for new facilities; the opportunity to compete with other tourists—leaderboards and special rewards for the best scores.

The gamification market is developing exponentially as companies are becoming more aware of its benefits [13,16,17]. This represents an important incentive for gamification solution providers to increase the quality of the products and develop more efficient solutions. The best proof is the fact that, even if at present gamification is less developed in tourism and hospitality than in other sectors, there are many producers and platforms (online and mobile) on the market (see Table 1).

Table 1. Gamification platforms used in hospitality and travel.

Product	Vendor/Producer	Use	Game Mechanics Features	Social Features
Badgeville	Badgeville Inc. (Redwood City, CA, USA) (badgeville.com)	Customer engagement Marketing campaign	Competition	Activity feed
			Feedback	Ratings & reviews
			Levels & missions	Social media login
			Profiles	
Bigdoor	Bigdoor Media Inc. (Seattle, WA, USA) (bigdoor.com)	Customer engagement	Ranks & badges	Activity feed
			Economy/Marketplace	Community forums
			Feedback	Likes & comments
			Profiles	Ratings & reviews
Gigya	Gigya Inc. (Mountain View, CA, USA) (gigya.com)	Customer engagement Marketing campaign	Progress Bar	Share plugin
			Ranks & badges	Activity feed
			Economy/Marketplace	Likes & comments
			Levels & missions	Live chat
Keas	Keas Inc. (San Francisco, CA, USA) (keas.com)	Customer engagement	Profiles	Ratings & reviews
			Ranks & badges	Share plugin
			Competition	Social login
				Likes & comments
Bamboo	Manumatix Inc. (Redwood City, CA, USA) (manumatix.com)	Customer engagement Marketing campaign	Competition	Ratings & reviews
				Social login
Pluck	Demand Media Inc. (Santa Monica, CA, USA) (demandmedia.com)	Customer engagement Marketing campaign	Competition	Activity feed
			Economy/Marketplace	Social login
			Feedback	Community forums
			Ranks & badges	Likes & comments
				Ratings & reviews

Source: [22].

The purpose of this study is to analyse the areas in which gamification has the potential to improve tourism sustainability. In particular, the paper concentrates on gamification success stories in tourism and hospitality and emphasizes the benefits of using “game design elements”. To achieve this goal, the authors use three methods: analysis based on a broad bibliography, content analysis and observation. In the first part, the paper analyses the relationship between gamification and sustainability, identifying the links between these concepts and the mechanism that triggers a more sustainable behaviour in tourism.

In order to draw connections between the main stakeholders and to visually represent the value of gamification for sustainable tourism, an interpretative framework was developed (see Figure 1). The initiators of gamification in tourism are the providers of gamification services from ICT and business

consultancy industries. The buyers of gamification services are the organisations with an interest in the tourism industry, like companies (hotel chains, restaurants, tour-operators), local institutions (mayor's office, tourism ministries, public employment offices) and NGOs (concerned with social, environmental and political issues). The providers and the buyers are the developers of the phenomenon. The purpose behind this endeavour is to engage and persuade the players (tourists, employees, community) to change or reinforce their behaviour through enhancing specific organisational activities (marketing, human resource management, public relations), a process carried on with the help of game mechanics (instant rewards, feedback, levels and missions, ranks and badges, *etc.*). The challenge is to do all this in a sustainable way, taking into account economic, social and environmental components.

In the second part of the paper, the focus is on identifying success stories in tourism gamification and analysing the impact of gamification. The paper ends with conclusions and the limitations of the present study.

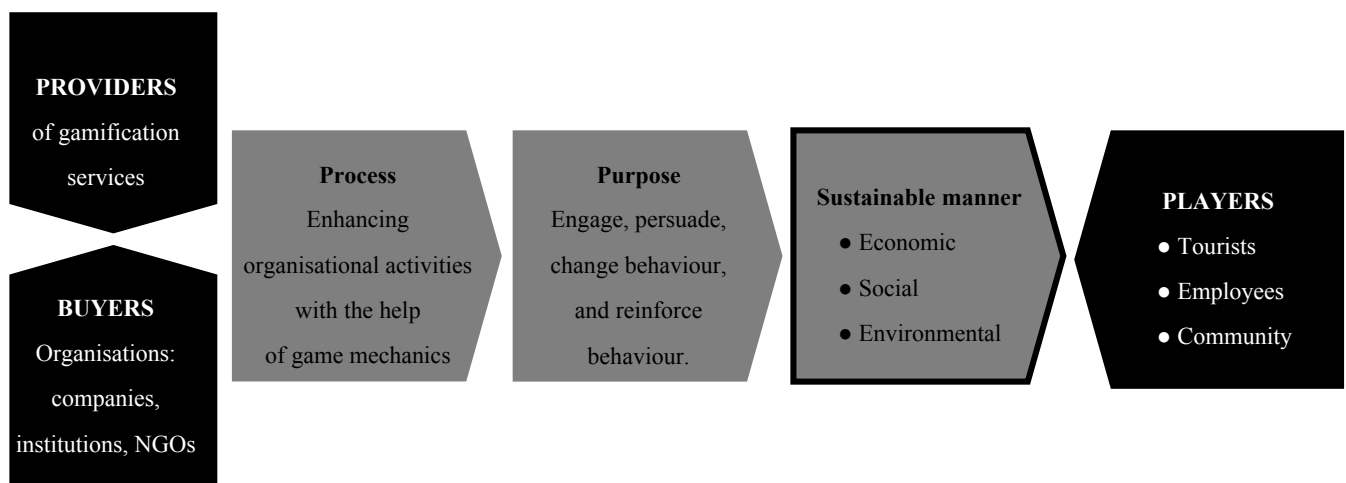


Figure 1. The mind map of a sustainable gamification process in tourism.

2. Literature Review

According to UNWTO, sustainable tourism should use environmental resources efficiently; promote biodiversity and the conservation of natural resources; respect the culture and values of host communities; encourage inter-cultural understanding and tolerance; provide stable employment, income-earning opportunities and social services to residents; reduce poverty and ensure long-term efficiency [7]. Similar approaches are available in the literature: sustainable tourism development is the growth that maintains a state of health necessary for survival at a higher level of quality, where quality means “the state of health in a tourist destination, sustaining the benefits of local community, satisfaction of tourist experience, and conservation of natural resources” [23].

However, tourism, like any other economic activity, generates both positive and negative effects. Being impossible to eliminate the negative ones, it is important to decide which aspects of tourism development can be considered sustainable. The destination's carrying capacity represents the first approach to sustainable tourism—natural resources are scarce, so there will always be a maximum number of tourists a destination could host without causing irreversible damage to the environment. As tourism evolves, the destination may increase its carrying capacity through different methods, like

improvement of tourism products, introduction of new products or infrastructure development. Because the industries' interests and resource consumption may be in conflict, the local community should have a say regarding the acceptable level of changes a destination can go through because of tourism development [24]. Therefore, stakeholders represent the main component in the implementation of sustainable tourism. Their perception will influence their involvement in the tourism sustainable development strategy [25]. The decision to focus on more sustainable activities could be influenced by two types of factors:

- Exogenous, like environmental regulation, societal values and norms, and market factors—results of customers, suppliers, competitors and shareholders' decisions/interest regarding sustainability;
- Endogenous or internal factors, like company's strategy and its ability to integrate sustainability, the company's culture and resources [26].

ICT is considered a powerful tool used to improve sustainability in the case of both public and private companies [19,27–29]. Among all types of ICT applications, the location-based services are recognized as being one of the main sources of tourism sustainability. This type of applications, including the gamification tools using them, will generate important benefits for the destination community [19,28]:

- Increase the efficiency of resource consumption as a result of the information provided to tourists;
- Improve tourist flow management (*i.e.*, reduce the length of waiting queues, traffic congestions);
- Support an adequate interaction between members of local communities and tourists, and
- Diminish the physical degradation of the environment and support biological diversity.

Furthermore, Ali and Frew [27] consider that the relation between ICT and sustainable tourism is symbiotic, as ICT tools have a significant contribution to the amelioration of tourism negative impacts. In this respect, ICT represents a way to improve the organisation's management and control, facilitates the identification of environmental sensitive areas and provides information for decision makers and offers to community the opportunity to protect and promote its endogenous resources [27]. Schieder, Adukaite and Cantoni [29] see ICT tools as the best option for public institutions to promote cultural enrichment and, at same time, to protect cultural attractions from degradation or tourists' negative influence. They explain the case of UNESCO World Heritage sites, emphasizing the dilemma faced by their administrators, who had to choose between protection and preservation of the sites for the future generation and education and cultural enrichment of the present generation of tourists.

Gamification represents the intentional use of game elements for a gameful experience of non-game tasks and contexts [12,30,31]. Relating the concepts of sustainability and gamification, Seaborn and Fels consider that sustainability applications “seek to support and encourage sustainable behaviours, such as reducing the amount of resources used, investing in recycling initiatives and renewable forms of energy, and reusing material wherever possible” [30]. Therefore, as other authors [31–33] mention, gamification can focus on business processes or outcomes with the purpose to change or engage specific behaviour of employees, customers or communities of interest. Tourism and hospitality companies can combine game elements and use them to induce certain types of behaviour. They have the possibility to determine tourists to reduce the level of energy and water waste, to use public

transportation or to rate services *etc.* Furthermore, companies may determine their employees to engage in learning and to improve their productivity.

According to Robson *et al.* [31], the key drivers of gamification stay into motivational drivers of human behaviour: reinforcements (extrinsic and intrinsic) and emotions. These elements encourage the players to learn and repeat the desired behaviour due to the fact that most of the gamification solutions are competition-based [33], while the game itself represents an intrinsically incentive for the player, sometimes more powerful than traditional motivation [30]. The developers of gamification applications, together with the managers of the companies using gamification applications play the role of the designers in the game design process. They are the ones who should customize the companies' goals into game mechanics, develop the structure of the gamified experience and create the reinforcements that will motivate players' actions or trigger behaviour changes [31].

Loong sees gamification as a complement of destination authenticity [34]. Together, these two elements create an artificial ecosystem where tourists' experience will be enhanced and shared with their social network. Due to the intangible nature of the services provided, sharing these memorable experiences is very important for the sustainability of tourism [34]. Tourists would like to see different places, taste the atmosphere, know different people or learn about the places they visit. Virtual interaction between stakeholders represent the best way to find and learn about destinations, imagine the services provided, rate experiences and develop tourists' brand awareness [35]. Sharing experiences through virtual interaction will help potential tourists to reduce the intangible nature of their holiday. Moreover, using a gamified application, the tourist has the opportunity to feel the emotion of a game progressing, share his or hers results with friends and even know new people and become a part of that game community. By combining these incentives, tourism and hospitality companies have the opportunity to create a mix of reinforcements to enhance tourists' experience [11,33].

The factors promoting users' involvement in gamification applications can be divided into utilitarian (usefulness, ease of use) and hedonic (enjoyment, playfulness) [36,37]. Enjoyment, usefulness and ease of use stimulate the willingness to use gamification, but the effectiveness of these factors diminishes as the time of using the application rises [36,38]. As a result, to obtain an improvement in the sustainability of tourists' behaviour, both utilitarian and hedonic incentives should be included in the gamification mechanism. Rapp [39] recommends to adjust the game mechanics to the player's motivational stage. At the beginning, the game mechanics should provide extrinsic rewards for tourists, like accommodation discounts, free drinks *etc.*; as the game progresses and the desired behaviour becomes more and more frequent, the rewards should be intrinsic and focus on special titles, social recognition, *etc.*

For a critical analysis, another important aspect is to review the challenges and disadvantages brought about by implementing gamification. According to Meloni [16], Anderson and Rainie [17], too much competition and a too strong game-style approach could determine an overall loss in employees' productivity and other negative outcomes.

Froehlich [40] mentions that in many situations, companies use gamification to build a green or eco profile meant to improve their brand image awareness or to promote new technologies rather than a sustainable behaviour. In addition, companies have to be aware of the "challenges initiated by the over-gamification of life" [15]. Not all the activities in a company can be gamified. Furthermore, it is not recommended to transform everything into competition or to make players expect to collect points

for every human move [17]. In the case of gamified loyalty programmes, companies can reach the situation where it is not possible to differentiate loyal guests from “so-called programme bargain hunters” [41]. Another important aspect is that personal profile data are collected through gamified applications, without users being aware of it, and can be used by companies to gain intelligence or for behavioral manipulation [17,32].

3. Methodology

Despite the fact that there are many studies trying to measure the level of tourism sustainability, there is no universally accepted method for it. Starting from the UNWTO system of Indicators of Sustainable Development for Tourism Destinations (2004) to different scientific papers or operational systems, different approaches for evaluating sustainability can be identified, at different levels (see [10,23,42], or the Accor Planet 21 system).

This is an exploratory study based on a detailed industry survey of self-identified case studies of gamification applications in the tourism and hospitality industry. According to Yin [43], a case study analysis should be considered an appropriate approach under the following conditions:

- When the research questions focus on “how” and “why”;
- When one of the main purposes is to study how contextual conditions influence the phenomenon, because you believe they are relevant to it;
- The boundaries between the phenomenon and context are not clear.

Besides, in exploratory research, case studies offer the possibility to investigate causal mechanisms and the specific contexts in which they are activated [44].

The case study approach is a good choice for this research because it is an important aid for in-depth exploration and for studying the gamification phenomenon in the context of organisation and sustainability. Mapping a range of diverse cases of gamification applications gives the possibility to incorporate all aspects and key players in an overall picture. It outlines the role of gamification, adding sustainability features to organisations activating in the tourism and hospitality sector.

In this respect, the study was designed based on a multiple case analysis, which allows conclusions to be better grounded and offers the advantages of a cross-case comparison. In the case selection process, the best practices of gamification presented in the literature and documentary sources were taken into consideration. This criterion was used because the knowledge incorporated in best practices is usually well-defined and already tested. Best practices are defined as processes and/or methods that were successfully carried out and adjusted, leading to increased productivity and efficiency [45]. In the selection process, other criteria were established: organisations’ area of activity and benefits of gamification for stakeholders. Because any example of good practices is described based on a general set of elements, these were used for collecting and analysing data about industry study cases. This approach made possible the uniform collection of data for a multiple case research and ensured the reliability of the cross-analysis carried out. Direct observation of the gamification platforms was useful in providing additional information about the topic.

In order to prove the progress in sustainability connected with gamification implementations, 37 case studies of gamification applications from different sectors of tourism and hospitality were

analysed. From the selected case studies, 17 included all the three pillars of sustainability (economic, social and environmental) but to different degrees.

Due to the fact that gamification is a creative endeavour, it was difficult to create a common and completely codified framework of analysis. As in any other qualitative study, the data collection and analysis occur concurrently and in the present study the following elements were taken into account:

- Stakeholders and partners—Who are the beneficiaries or the target group of the good practice? Who are the users of the good practice?
- Context—What is the context (initial situation) and challenge being addressed?
- Validation—Confirmation by the beneficiaries that the practice addresses the needs properly. Has the good practice been validated with the stakeholders/final users?
- Impact—What has been the impact (positive or negative) of this good practice on the beneficiaries?
- Lessons—What are the key messages and lessons learned to take away from the good practice experience?
- Sustainability—What are the elements that need to be put into place for the good practice to be institutionally, socially, economically and environmentally sustainable?

In this study, tourism organisation was used as a generic term which includes, beside private companies, public institutions (city halls, tourism information centres, other public institutions in charge with tourism), NGOs and Destination Management Organisations (DMOs) because examples of gamification were identified both in the public and private sector. Further on, these relations were studied from the perspectives of sustainability changes driven by the implementation of gamification.

To review the applications, a structured analysis was conducted focusing on the relationship between tourism organisations and three main tourism stakeholders: tourists, tourism employees and local community. To emphasize the relation between stakeholders, the analysis was concentrated on a set of questions which had the role to identify what benefits gamification applications have for sustainability:

- Which is the scope or final objective of the implementation of gamified applications?
- Which is the player target group?
- What types of behavioural changes could gamification trigger?
- How much is the tourism experience influenced?
- Does it have the capacity to support local community and environment?

To conclude, the primary defining feature of a case study is represented by the multiplicity of perspectives that are rooted in a specific context [46]. The multiplicity of perspectives in our case deals with clients, employees and local community, and these perspectives are embedded in the specific context born at the intersection of gamification, tourism and sustainability.

4. Results and Discussion

4.1. Gamification Effects on Tourism Organisation—Tourist Relationship

Implementing gamification for marketing purposes, the majority of organisations from tourism and hospitality perceive the use of game elements as an opportunity to reshape loyalty programmes, innovate advertising and promotion campaigns and customize and develop new products.

Due to a new generation of tourists eager to compete in the virtual environment for status recognition and build-in rewards, the attractiveness of the traditional loyalty programmes based on frequency of staying in hotel chain or serving dinners at restaurants decreased. As a result, international hotels and restaurant chains introduced game mechanics into their loyalty programmes (see Table 2). The following examples are relevant for this benefit: InterContinental Hotels Group, Starwood Hotels and Resorts, BJ's Restaurant and Brewhouse, Caesars Entertainment and Starbucks.

InterContinental Hotels Group added a daily online trivia game in 2011 to the group's loyalty programme. The trivia game awards participants with free miles based on quick and correct responses related to travel destinations. The marketers observed that this "Win It in a Minute" programme determined the attractiveness among younger consumers, a group which was not normally credited with brand loyalty.

Starwood Hotels and Resorts linked the Starwood Preferred Guest (SPG) loyalty programme with Foursquare, a location-based app. As a result, members were able to receive special promotions, and users with confirmed reservations could earn Starpoints by checking into a Starwood hotel on Foursquare or unlock other potential rewards (including a five-night resort getaway) and badges. Each month, Starwood will declare the member with the most check-ins across all properties as the SPG Mayor. Mayoral duties will include sharing favourite insider travel tips and destination hotspots with fellow frequent travellers around the globe.

BJ's Restaurant and Brewhouse developed Premier Rewards programme allowing clients to earn points for every \$1 they spend on eligible transactions and for signing up for automatic posting on Facebook, Foursquare or Twitter [47].

Caesars Entertainment developed a guest loyalty programme that boasts more than 40 million participants. They were interested not only in improving the brand awareness but also in identifying the spending patterns to be used in establishing a potential, future value for each customer. The company has taken a reverse approach regarding the process of obtaining standard rewards based on past achievements. Instead, Caesars rewards guests instantly based on projection for forthcoming spending activities (e.g., lodging offers, special food and beverage opportunities based on potential play in casinos).

A similar example comes from Starbucks. The company has recently begun implementing quick response (QR) codes as part of its mobile gamification strategy for new product promotions. By scanning a product's QR code, consumers are directed to the company's mobile website where they can find information on its products, newsletters, coupons, customer service and other similar benefits. In order to intensify the interaction with consumers, the mobile website is linked to social media outlets. A Facebook link is used to create a social platform for consumers to interact and comment on likes and dislikes. From the company's perspective, accessibility via QR code ensures an analytic

database (e.g., time of day, gender, location, *etc.*) that can be incorporated in future marketing campaigns and product presentations.

On the other hand, the mobile technology offers innovative tools for improving the promotion strategy (see Table 2). One of this is the Gift Cards App that allows consumers to store and redeem gift cards by accessing store data via the phone display. Connecting to Facebook, Twitter and Google+ allows users to send, re-gift and receive gift cards instantly. Beside its explicit benefits, this approach provides an opportunity for an additional sales channel for hotels and restaurants, to advertise directly and sell gift cards through social media. For example, if a customer holds a hotel gift card and accesses a Gift Cards App, the hotel's marketer is able to gain visibility of the cardholder and offer tailored promotions aimed at powerful revitalization bundled purchasing.

The game mechanics could help companies achieve more than sales and promotion related objectives. This concept used in the development of the basic services could have positive impacts on the product diversification and added value strategies. In this way, using gamification for new purposes will result in creating a competitive advantage for the hospitality industry. A good example is Pizza Hut, which is introducing interactive touchscreen tables allowing customers to customize their pizza before ordering. Clients can post orders and choose a payment method. The interactive table can be used to play games while customers are waiting for their pizza [48]. Even if it is experimental, the implementation introduces some benefits such as: redefining the main product, providing the opportunity to customize the service for each client and influencing the restaurant's production flow (see Table 2). The use of gamification in product customization has a positive impact on the environment because clients can order a pizza of a preferred size, with the preferred ingredients, reducing in this way the quantity of food waste. The time for taking orders decreases; the employees don't have to wait for clients to decide what to order and they can focus on other activities.

Another example of gamification application for reshaping the service and creating some unique characteristics is 4food restaurant, a unit which proposed a "de-junking food" concept for burgers. Because the owner considers social interaction as a part of the business concept, the quick service restaurant provided a web-based application allowing clients to create their own type of burgers, name their own creations and market them via social media. They used a suite of web-based technologies which offer the possibility to build customer's profile and match menu items to a particular profile feature and generate incentives. Through this application the restaurant gained those clients who were undecided regarding the healthier food consumption pattern, by shaping their behaviour using communication and social interactions elements. In this case, the gamification example stresses on the intrinsic motivation of customers interested in a healthy diet.

EpicMix used gamification for diversification strategy. This is a popular mobile app between skiers, now being available at 10 ski resorts. The app captures the ski and snowboard experience of skiers based on Radio Frequency Identification (RFID) tags included in ski passes. Users can connect with other people using social media, compete and earn virtual pins. This location-based application offers the following functions: photo sharing, customized guides, ski and snowboard School experience capture, useful information on ski slopes, weather conditions, *etc.*

Meanwhile, the tourism destinations location-based gamified apps use the benefits of Augmented Reality (AR) in order to take visitors on an individual and interactive walking tour to discover the place. Already available in cities like London, Stockholm and Berlin, these applications combine the

tourist interest in discovering the destination (destination's history, events, people and social life) with its competitive spirit and joy of playing.

The analysis of the previous best practices emphasizes four important aspects. First, gamification reinforces the economic sustainability in gaining brand loyalty, especially in the case of young customers. For a company, tourists' loyalty is extremely important for achieving its strategic objectives. Even if loyalty programs have been used by tourism companies since 1981, when American Airlines initiated AAdvantage [41], the implementation of gamification can be considered marketing innovation in the tourism and hospitality sector. Because loyalty is determined by quality, perceived value and satisfaction [49], the companies have to collect data about tourists' behaviour and their perception regarding the services consumed during the holiday. Many gamification applications provide a sustainable way to do that, allowing companies to customize their products in accordance with clients' needs and their economic objectives. This approach responds better to the preferences of a new generation of clients, more oriented towards ICTs.

Table 2. Benefits of gamifying the relationship tourism organisation—tourist.

Type of Gamification Applications by Activities	Economic Effects	Social Effects	Environmental Effects
1. Loyalty programmes (InterContinental Hotels Group, Starwood Hotels and Resorts, BJ's Restaurant and Brewhouse, Caesars Entertainment and Starbucks)	<ul style="list-style-type: none"> • Increase young customers' loyalty • Sharing travel tips • Improving the knowledge about customers behaviour • Identifying the future values/costumer 	<ul style="list-style-type: none"> • Social recognition—special status (<i>i.e.</i>, “mayor”) • Increased visibility on social networks 	Easier, quicker and less resource consuming interactions between customers and supporting systems
2. Advertising and promotions (gift cards apps)	<ul style="list-style-type: none"> • Alternative sales channels • Improving brand awareness • Improving promotions strategy 	Increased visibility on social networks	Resource consumption reduction
3. Developing or creating new services (Pizza Hut, EpicMix, 4food)	<ul style="list-style-type: none"> • Product diversification • Increased added value • Improving production flow 	Learning about nutrition facts, tourism destinations, <i>etc.</i>	<ul style="list-style-type: none"> • There is no need to print menus or tour guides • Resource consumption reduction

Second, gamification brings new hedonic incentives to engage customers' brand recognition. As Rapp [39] suggests, the game mechanism is customized to the level of brand recognition, providing clients with more appealing rewards as their loyalty increases. Extrinsic rewards and utilitarian facilities are used at the beginning, like discounts for the services consumed and an easier and quicker interaction between customers and supporting systems but also interactions among different users of the same system [50]. As the loyalty increases, virtual interaction and loyalty statutes are used to reward clients and achieve companies' objectives.

By analysing the type of incentives used by gamification mechanism of the studied best practices, there can be identified both intrinsic and extrinsic motivations. Loyalty programmes and advertising and promotion campaigns focus more on extrinsic motivation, providing external benefits to tourists in order to engage them in the desired behaviour, while the development of new products and services in tourism and hospitality focus mostly on intrinsic motivation, including in the tourism products

elements of social and environmental responsibility—eating healthier products, buying local products, reducing waste. This represents a successful way to exploit the tourists' awareness for sustainability and to activate the incentives which will bring to a sustainable behaviour.

Third, all the applications of gamification with mechanism focusing on marketing goals imply social interaction between guests. According to Gigya's internal study, the implementation of gamification increases the number of website comments by 13% and social sharing by 22% [51]. The potential of increasing tourism organisations' visibility on social networks is linked to several directions: increasing brand notoriety, getting local prosperity and becoming an important local player with a significant influence role for the community's members.

Finally, the effects of applying gamification at the level of the relations between tourism organisation and tourists are mostly economic. Loyalty programmes are one of the four main reasons for selecting a hotel brand [41]. According to Forgacs [52] brand performance can be linked with marketing and operations. Thus, in operations, a well-managed brand can generate maximum revenue, ensure better training to its employees, and create a consistency in delivering their service. In marketing, the hotel can build its brand more effectively, conduct broader and more coordinate promotion, and develop a more advanced product. In this case, a brand can reach a penetrated market more effectively and offer a higher or premium price [52]. The increase in clients' loyalty determines an increase in overnight stays or service consumption, an improvement in cash flows and a rise of companies' notoriety [53,54]. Moreover, due to the fact that gamification is applied to services, improvements in production flows are possible as a result of clients' involvement in the game mechanism. The increase in the length of stay at the same location also has an important environmental effect, reducing the amount of consumed resources like water, energy, and working time and leads to a stronger socio-cultural interaction between tourists and residents. Gamification is an excellent way to strengthen brands' image as customer-friendly, socially-minded and community-involved. Some companies engage clients into different causes associated with the main purpose of the business unit by donating a part of the price to these types of actions.

The final objectives of gamifying the relationship tourism organisations—tourists are related mostly to the economic dimension of sustainability—more loyal clients, higher consumption frequency, increased brand awareness or new products development. The tourists and the hospitality units' clients represent the target group of players, companies being interested in determining specific behavioural changes that will lead to an increased profitability. Gamification boosts tourists' satisfaction, as they facilitate access to additional opportunities and services at the destination—customized products, further information, social recognition, better ways to use their travel time, increased virtual interaction with other tourists from that destination, *etc.*

Positive externalities at the level of social dimension of sustainability may arise from the tourists' behavioural changes or from the facilities created for them: learning effects for both tourists and residents; involvement of tourists in charitable acts or in tourism activities focused on reducing poverty and bringing positive changes to the places where residents live; improvement of destination ICT infrastructure, the residents thus having the possibility to benefit from it for personal use; the facilities for disabled tourists will be available for disabled residents, *etc.* Furthermore, there is a positive environmental externality, because, in general, digital media reduces the usage of physical resources

regarding manufacturing and distribution compared to print media but, on the other hand, at the consumers' level, it implies higher energy due to the use of electronic devices [55].

4.2. Gamification Effects on the Tourism Organisation—Employee Relationship

Gamification is used in HR mainly to facilitate a playful and motivated environment (intrinsic and extrinsic) during an array of HR activities like training, recruiting, monitoring and stimulating productivity, with the help of elements commonly associated with game mechanics. Some of these elements are player profiles, competition between individuals or teams, feedback, levels and missions, ranks and badges. In HR practices, serious gaming is less used than casual gaming. Serious gaming means that the player will immerse in a game situation where the real environment is recreated “with all the complexities of the technical and social interactions typically found there” [56]. Casual gaming “tends to emphasize rote behaviours, puzzle solving, simplistic graphics, and straightforward play mechanics” [56]. HR activities invest less in environment reconstruction and more in the educational and pragmatic component.

Gamification in training can be defined as the addition of elements commonly associated with games to an educational or training programme in order to make the learning process more engaging [56]. One relevant example for gamification in tourism training is Costa Cruise. The company, with the help of Hydra-New Media, used gamification in order to inform travel agents, retailers and sales staff about travel, ships, destinations and special offers, *etc.* They planned to use e-learning for its unifying power and especially to overpass the fact that classical e-learning was considered boring by employees, because of the inherent lack of interaction, feedback, competition and rewards. They developed three games (“Exploring the world with Costa”; “Dream destination”; “Aboard our new cruise ship”) each aimed at different levels of learning. Some e-learning topics were designed to blend e-learning with classroom training and other events, to integrate the virtual learning space with the real one. The following successes were reported: the average time spent by users on the platform was 20 min; most of them visited the platform several times; most of the tasks were completed successfully; content-related questions were answered correctly [57].

Gamification in recruiting can be defined as the addition of elements commonly associated with games to the hiring process (job analysis, recruiting and selection) in order to market the job openings to the potential employees in a funnier and more engaging way. One of the first companies to use gamification in the tourism industry was Marriott International Inc (Bethesda, MD, USA). Their online game My Marriott Hotel, was launched in June 2011 [58]. The game was developed as a Facebook app in English, Spanish, French, Arabic and Mandarin to address the rapid expansion outside the US and to reach out for new recruiting targets, such as the Millennials. Users from 120 countries were simultaneously caught in the game executing tasks and 30% of the users clicked on the “try it for real” button that redirected them to the Marriott's career website [59].

Gamification in stimulating and monitoring productivity can be defined as the addition of elements commonly associated with games to the stimulation and monitoring process, in order to increase competition and performance. The third example deals with a delicate area of gamification. The case study reflects the unintended consequences of gamification or what can go wrong when companies don't “zoom in” on ethical details. Such is the case of using scoreboards or leaderboards in Disneyland

where public monitors displayed the work speed of housekeeping employees, for instance who was the quickest at loading pillow cases, sheets and other items into a laundry machine. Their names were displayed with efficiency numbers: green if the performance was high and red if it was lower than expected. The purpose of the gamification process was to measure and increase employees' productivity, but fierce competition between the employees started. Some employees skipped bathrooms and breaks out of fear; low-paid workers felt they were controlled; co-workers felt badly for a pregnant employee and the system got the name “electronic whip” [60].

The analysis of these three examples of using gamification in HR practices brings to the foreground some important issues in terms of gamification and sustainability.

First, from the three pillars of sustainability, the most important for tourism are the economic and social. As mapped by UNWTO, they merge together under the concept of “*employment quality*”, which aims “to strengthen the number and quality of local jobs created and supported by tourism, including the level of pay, conditions of service and availability to all without discrimination by gender, race, disability or in other ways” [7].

Table 3. Benefits of gamifying the relationship tourism organisation—tourism employees (HR).

Type of Gamification Applications by Activities	Economic Effects	Social Effects	Environmental Effects
1. Training (Costa)	<ul style="list-style-type: none"> Improving learning, better knowledge regarding facts, rules, procedures at lower costs Improving clients' experience as a result of observable skills improved in daily activities. 	<ul style="list-style-type: none"> Increasing employee's confidence in their knowledge and skills. Increase the employability on the labour market for trained employees. Provide an element of fun. 	Reduce resource consumption for trainings in terms of money, traveling (carbon footprint) and manpower.
2. Recruiting (My Marriott Hotel)	Innovative way to market job openings bypassing classical methods. Increase brand awareness and target performance. Targeting specific recruiting sources (the Millennials).	Gamification practices in recruitment and selection can promote equal opportunities by focusing on performance and not on race, experience, education, <i>etc.</i>	Targeting simultaneous potential employees at international level, lower resource consumption.
3. Stimulating & monitoring productivity (Disneyland)	Increased labour productivity. Ability to monitor performance and compare “players”. Inject adrenalin into the company.	Delicate area considering the potential adverse effects: fierce competition between employees—they tend to work individually not as a team members; discrimination (e.g., for pregnant employees).	Reduction of resource consumption.

Second, when the training is delivered in disadvantaged areas and positively contributes to the development of the human capital, the sustainable benefits of gamification diffuse into society to a greater level (see Table 3). In the majority of cases, training and gamification can be business-centric, aimed at the needs of the business, but considering the next level, they can become sustainable if the

developers, organisations and gamification service providers integrate the process into the bigger picture of the local community and personal development. Personal development pursued in the organisational setting, but disconnected from the local community's needs, lacks the sustainability component and social legitimacy. In the majority of cases, the employers are reluctant to and disengaged with the training process because they see the company as interested only in the “bottom line” and not in the genuine development of the main stakeholders. Gamification creates a learning environment which activates the employees' intrinsic motivations to learn and to progress—they may satisfy their curiosity on different topics, compete with other colleagues and gain self-esteem and colleagues' recognition for their achievements.

Third, gamification in recruiting goes beyond the classic requirements of ensuring and enforcing labour regulation and surpasses the classical approach to recruiting, delivering results at three levels: employer branding, targeting performance and providing equal opportunities (see Table 3). Employer branding can be skilfully used in gamification as another layer of game mechanics, because the company culture (visible artefacts, norms, values and basic assumptions) are embedded in the game. The Marriott case study presented above was one of the first examples of merging employer/industry branding and gaming with the purpose of attracting young people to the hospitality and tourism industry. In terms of targeting performance in the recruitment and selection process, gamification as a business case competition allows the best performers to step out and be noticed and avoids, at the same time, biases like school name, years of experience, age, race, *etc.* The main aim of these practices is to identify the best performers with initiative and problem solving skills and, how the candidate will behave in terms of organisational fit. It is interesting that these practices challenge the classical approach to recruitment, job advertising and candidate selection. The order is reversed: first the people with interesting and relevant skills are tested or selected without knowing their demographic or professional background and only then are they recruited or informed by the organisation's interest in employing them. Therefore, the classical recruiting methods are bypassed. Furthermore, the focus is on player's intrinsic motivation, its' incentives to play being fully related to the fact that the player likes tourism and hospitality as a field of activity or he/she enjoys similar tasks with the one performed in the game.

Finally, stimulating and monitoring productivity is the most delicate area when it comes to the use of gamification. If the other areas of HR and gamification are not questioned almost at all, a lot of ethical questions arise when it comes to stimulating work and productivity (see Table 3). From a realistic perspective, a performance-focused rhetoric covers the fact that gamification is nothing else than a specific persuasive technology and procedure aimed at reinforcing behaviour with the help of tunnelling, self-monitoring, surveillance and conditioning [61].

Providing mostly extrinsic incentives to employees, gamification could be seen as an unfair mechanism used to increase productivity, with no real costs, via playfulness, but with the cost of increasing pressure on the employees, creating unnatural competition, disregarding work diversity, *etc.* There is an “exploitation-ware” which actually means to use gamification in order to motivate staff to do more than what their job requires [62]. The genealogy of this capitalist process is not a flattering one, gamification having roots in the “socialist competition”. Factories were competing for a medal in order to motivate workers in a society alternative to capitalism [63]. It is difficult not to take into account all these “postmodern” perspectives when it comes to gamification of productivity and sustainability,

because ethics is an inherent component of the company's sustainable development. Sometimes, like in the Disneyland case presented above, the mechanics of the game degenerates. This case and other raised the question of the "thin red line" that gamification can cross.

The objectives of using gamification in HR activities are primarily concerned with partnering, engagement and alignment of a targeted audience with the organisation (private sector, public sector, NGO sector). Partnering means identifying potential external organisations with a higher purpose, ideally NGOs, and involving them in aligning their mission with the society. Engaging means to increase the involvement rate of internal and external stakeholders on various frequencies associated with the organisation. Aligning means to adjust all HR processes to resonate with the values of a sustainable business [64].

The targeted audience or the players are the employees of the company and the potential candidates on the labour market, or members of the community interested in various sustainability dimensions. In the cases aforementioned, the players are the potential employees or candidates on the labour market, the organisation's employees and, in the future, maybe the community. On the pragmatic side, gamification wants to reshape specific behaviours depending on the targeted group. An organisation might want to:

- Stimulate people to apply for a job—candidates or potential employees from the labour market or other companies;
- Increase the assimilation of knowledge and skills of the internal stakeholders—employees;
- Increase productivity levels—employees;
- Increase the degree of control over employees' activities.

These types of behavioural changes are already targeted in tourism gamification practices, but another one, proposed with the specific purpose of enhancing the social and ecological component of sustainability, might enhance employees' willingness to volunteer in social or ecological programmes by using a gamification process or platform.

The touristic experience can be definitely influenced, indirectly, by introducing gamification in HR activities. The influence is hard to be quantified, but critical events with the tourism experience, be they positive or negative can provide some guidelines. Gamification allows performance-oriented recruitment and selection, ensuring a qualified pool of candidates. Besides, gamification of the training process boosts the learning engagement and the employee development. The three HR dimensions ensure the necessary social capital that provides high quality services. Regarding the controlling and performance enhancement component of gamification, the tourists' experience might be influenced in a negative way if the control and performance stimulation programme fails to be balanced and counteract extreme competition, work-life balance, pregnant employee protection and any other equity dimension the job involves. Stressed, overworked employees, lack of empathy, all can backfire and reflect in the tourism experience or in the employer's branding image.

In order to gain legitimacy, the company needs to be a good corporate citizen and address the "triple bottom line": profit, people and planet. Gamification in the HR activities of the tourism industry definitely has the capacity to support certain aspects of the local community in terms of career development, employment opportunities, selection and employer branding. It can develop if companies

create and support volunteering programmes for employees with a gamification layer targeting environmental issues.

Gamification in HR is not necessarily about what it is happening presently but about what it can be in an organisational environment, educated, ethical and playful enough to construct the next level of connections and transparency between stakeholders. It can create an elegant, casual and funny infrastructure, connecting in a proactive manner employees working in tourism with the local community, in a coherent effort to solve social and environmental challenges.

4.3. Gamification Effects on the Tourism Organisation—Community Relationship

Some of the gamification applications were targeted to influence visitors or tourists' behaviour and to promote sustainable consumption. The use of game mechanics can encourage the interest in sustainability and tourism sustainability. Studies comparing resource consumption (water, energy, food, gas, *etc.*) during holidays to everyday life emphasize an accentuated level of consumption and waste during holidays [65–67]. Therefore, raising awareness about sustainable consumption during holidays and creating tools to improve or change tourists' consumption behaviour could represent an important contribution of gamification to the development of sustainable tourism.

With respect to this, a very good example is a platform concept for the city of Eindhoven (Netherlands) for reducing carbon emissions at a destination [68]. This requires involvement of the local community, companies and tourists. The system implies social interaction through game-play and incentive points. The idea is very simple: visitors who use public transportation will gain points and will use them to obtain discounts in restaurants, bars, museums or a reduced tourist's tax, *etc.* The platform provides visitors and citizens superior service solutions for sustainable tourism and, at the same time, acts as a tool to connect people and enable them to act virtuously as a social community. This concept can be implemented likewise for sensible issues like water consumption, waste reduction or energy saving.

Related to energy saving, an example is the Nest smart thermostat [69] which tries to control and manage home heating and cooling systems. This application combines three data resources: built-in motion and temperature sensors, local weather data and observations of the home occupant. In about a week Nest creates a personalized heating and cooling schedule for each household. According to Matsuoka [70], Nest is aesthetically pleasing, uses an awarded mechanism with a virtual Leaf for setting temperature to energy-efficient levels and started to impact on behaviour, 92% of the Nesters use check for the Nest Leaf at least once a week.

The energy-saving behaviour is important not only for single family homes, but mainly for shared residences like residence halls, student' dormitories or accommodation units [71] because the inhabitants themselves have little awareness about energy usage, while construction managers or owners have a high level of interest in controlling it. Because the occupants do not have incentives to conserve energy or reduce the resource waste, gamification represents a way to raise their awareness about environmental issues. The game mechanics were used successfully for engaging students from Oberlin College [72] and University of Southern California [73] in a competition for lowering resource consumption in residence halls. As result of their activities, an eco-feedback was provided on the web or on shared public displays. According to Froehlich [40], these types of applications are rather

artificial because they have to be intensively promoted and conduct to good results only for a short period of time. Knowing the importance of social interaction in gamification, a platform based on the previous idea, with some additional incentives, could transform saving energy or other types of resources in a behavioural pattern for tourists and the local community (see Table 4).

Hotel Prinz Luitpold (Bavaria, Germany) uses gamification to engage their guests in a charitable act. Starting from the name of the hotel, they developed a game mechanism through which they reward their loyal clients. If a guest stays for at least 21 nights, the king will ennoble him. In order to qualify for this honour, the guest has to make a good deed in the king's name. Guests had the feeling of being part of a higher mission, being important, which increased the connection with the hotel [74]. Moreover, the local community and not only, had many benefits because of the good deeds implemented by hotel guests. Some clients took care of sick people, others donated to mountain rescue or raised support for kindergarten projects in Africa.

TripAdvisor, the world's largest travel portal, is one of the best-known examples of gamification in the tourism industry. The company offers a gamification platform on its website, which allows tourists to express their reviews on different destinations, hotels, restaurants, *etc.*, gaining various rewards. This stimulates the interaction among tourists, creating a TripAdvisor community, promoting travellers' choice destinations, attracting tourists on website, increasing the time spent on the website, and developing tourists' loyalty (see Table 4). TripAdvisor was used to show how "funware is developed for motivating travellers to engage with its website and for improving the travellers' online experiential values and trip planning processes" [75]. As a result, TripAdvisor increased the experimental values (customer ROI, social, enjoyment-immersion) and generated some important behavioural outcomes, like: "user engagement with the TripAdvisor website, impacts on processes, outcomes and social interactions, destination cognition and behaviour, emotional-relational experiences, overall experiences" [75].

To have the complete picture of the gamification use in tourism and its benefits in terms of sustainability, it is necessary to consider two other special types of organisations, namely destination management organisations (DMOs) and cultural institutions, like museums, art galleries, exhibitions, castles, memorial houses, *etc.* The role of DMOs in sustainable tourism is "to develop the whole product and include the interests of all stakeholders" [76]. DMOs have to concentrate both on tourists and residents, providing tourism experiences in a sustainable manner and enhancing the social and economic well-being of the residents [77].

Tourism Ireland and Tourism Australia implemented gamification in 2011 in order to promote Ireland and Australia as holiday destinations [78]. Tourism Ireland adopted a gamification solution which allowed tourists to create their own city and pub and to make virtual visits of the island. The solution has generated a significant increase in Ireland's visibility on social networks and an increasing number of visitors interested in this tourism destination. Tourism Australia, through the campaign "Best Jobs in the World", launched a gamification solution to attract young people around the world to a dream job in a working holiday in Australia [79]. The participants in this campaign were selected based on images or videos sent and shared on social networks and the winners were rewarded with offers of trips to Australian destinations. The results were overwhelming—more than 330,000 persons from 196 countries applied for the six jobs they offered, while the number of persons actively seeking information about working in Australia reached 430,000 people in 2013 [79].

From the transmedia storytelling category in gamification, which integrates various playing techniques with social networks and other collaborative platforms, Travel Plot Porto, represents an interesting gamification solution in tourism approached by DMOs. The tourists, in their mission to save Port Wine, must identify various hidden treasures. Achieving the goals, they are rewarded with various prizes and discounts and have the opportunity to create and share their own story related to this touristic destination [74]. The app provides tourists an opportunity to discover and learn about Porto's history in a funny and engaging way, to experience the local gastronomy and atmosphere and to share their experience with their friends and families.

Due to their roles to attract and educate tourists, DMOs must consider integrating social networks with simple and intuitive social games or apps. A well-known gamified application is a Hungarian application, an urban treasure hunt game for different destinations and cities—Sighter. The app allows the users to capture and send images of urban locations to everyone using mobile devices.

I Spy Denton, a digital scavenger hunt application that promotes the city of Denton (TX, USA), rewards the users involved in the transmission of images and creates an important community on social networks with the final purpose of promoting the destination. The New Mexico Tourism Department has launched a wide application, Catch the Kid, where tourists seek different locations where Billy the Kid could be hidden. Besides attracting tourists to the destination, the application has an important economic impact, the rewards granted to users stimulating local entrepreneurship [80].

The analysis of gamification solutions adopted by cultural tourism institutions must start from their role of attracting and educating visitors. Gamification solutions from this category have to guide visitors, facilitate interaction between them and attract funds for conservation and development of the destinations (see Table 4). The Dallas Museum of Art uses gamification incentives for visitors for recognizing artworks by sharing images on social networks, without the need of sophisticated scanning devices [81].

A specific solution for gamification based on digital curation can be considered History Hero, which was the first interactive mobile guide for visitors from important museums, churches and historical sites in the world. It was adopted by almost 40 institutions in the US and Europe, including the Metropolitan Museum of Art, St. Peter's Basilica, Versailles Castle and National Mall [82].

Another example of using gamification applications is APA that incorporates solutions of serious game with VM (virtual museum) techniques, which allows users to explore a specific historical time—the 13th century in Roman Bologna. The educational aim of the solution is to attract visitors to the destination Bologna, known for its preserved medieval heritage preserved [83]. The San Francisco Museum of Modern Art has its own application called SFMOMA Families, which is aimed at attracting families to the museum and encouraging conversations and comments on the exhibits through gamification techniques. In addition, Tate Modern, UK adopted gamification applications (Race Against Time) using mobile devices as a tool for the presentation of art history by incursions of modern art [84]. Other well-known gamification apps adopted by museums are Meanderthal by Smithsonian, Eduweb's augmented reality app MoonWalking or LaunchBall by the Museum of Science in Boston [85].

The analysis of the previous gamification best practices resulted in the following issues.

Table 4. Benefits of gamifying the tourism organisation—community relationship.

Type of Gamification Applications by Activities	Economic Effects	Social Effects	Environmental Effects
1. Residents reactions toward tourism and tourists (TripAdvisor)	<ul style="list-style-type: none"> • Empower local businesses • Facilitating networking among local enterprises • Destination branding 	Smooth cultural interactions between tourists and local community.	Equitable use of resources.
2. Stimulating sustainable consumption (Nest, students dorms)	Increased efficiency in the use of resources	<ul style="list-style-type: none"> • Changes in the local community and tourists' behaviour. • Social interaction. 	Interest for environmentally sustainable products or services.
3. Charity (Hotel Prinz Luitpold)	Clients' loyalty	Increase life quality	Funds for protecting the environment and endangered species
4. Information, education, tourists guiding (Tourism Ireland, Tourism Australia, Travel Plot Porto, Sighter, Spy Denton, Catch the Kid, History Hero, APA, SFMOMA Families, Race Against Time)	<ul style="list-style-type: none"> • Identifying new segments of clients • Promoting local businesses 	<ul style="list-style-type: none"> • Learning effects • Connecting destinations with their visitors 	Management of tourist flows

First, there is an important difference in the amount of benefits identified in this case and the previous two situations. The benefits of gamifying the relation between community and tourism organisations are concentrated mainly on social and environmental pillars of sustainability. Social interaction, cultural understanding, resource saving behaviours and the increase in the quality of life of both tourists and residents represent the main objectives and desired behavioural changes.

The messages promoted through gamification engage two types of positive behaviours [86]:

- Motivate tourists to involve in a new activity or to visit a new destination they never did previously or;
- Motivate visitors to make permanent changes in their holiday behaviour.

Examples for the first type of behaviour could be the approaches of Tourism Australia, Hotel Prinz Luitpold or Travel Plot Porto, while for the second type of behaviour, representative are Nest or the platform for the city of Eindhoven.

Second, even if the economic benefits of gamification in this case are smaller, they are concentrated on the marketing area. Specific for DMOs is that they have to “engage visitors before, during and after the travel” [74], gamification having to provide an adequate method to achieve that. The benefits of gamification in the case of marketing objectives of DMOs are similar to those of private companies, but it is more difficult for a non-profit organisation or a public institution to engage the tourists because they are sending a less tangible message [86].

Gamification complements the marketing strategies DMOs may use in order to build the destination's brand. Furthermore, the adoption and implementation of gamification solutions by DMOs

determine an increase in the number of inbound and outbound tourists to the destination, higher visibility and more virtual interaction on social networks, quicker feedback and increase in tourists' loyalty [78].

Third, both intrinsic and extrinsic motivation can be identified in the previous best practices. The focus is more accentuated on intrinsic incentives engaging the tourists in activities which bring them self-esteem and social recognition, like charities, honest reviews for the services consumed, reduction in the waste of resources or knowledge development. The extrinsic incentives act as a complement in the game mechanism, providing strong enough reasons for tourists to reduce waste or to learn things about the history and the life of destinations' community which otherwise may be boring or not so appealing, especially for the younger tourists.

The impact of visitors' feedback on local communities, through the reviews' mechanism, is significant. By writing reviews, travellers are paying back to the local community an "honest thanks" for the experience they had. The information about their experience represents the best promoting tool of the services provided, for the entire destination and its endogenous resources. From the community's point of view, the reviews received increase their awareness about tourism effects and represent an incentive for improving and promoting tourism activities.

Finally, the use of gamification by museums and other cultural sites represent an opportunity to attract new visitors and in particular younger visitors. Gamification enhances the learning experience, providing visitors with the opportunity to discover and learn gradually the aspects about the tourist destination. On the other side, in the case of cultural attractions sensitive to visitors, gamification represents a way to facilitate access to these sites [29]. Through gamification, the learning effects and the learning experience do not end when the visitor leaves the site. Tourists may use these apps before they are starting the journey to see what points of interest are worth visiting and learn about, during the journey to plan the visits and to find information about the destination and after the journey to remember the experience they had and to share with their friends and relatives the knowledge they gained.

Looking to the previous best practices, from the point of the methodological approach, the main objectives of gamification was to promote, develop and educate a sustainable tourism framework for the entire community. Due to the fact that sustainable development cannot be achieved without the implication of a larger number of the society's members, the tourists, the residents and the employees became the target group that local entities, DMOs or cultural institutions tried to engage in different actions through gamification. The virtual interaction and the game mechanism represent a perfect environment to engage all the tourism stakeholders in responsible behaviours. The main behavioural changes targeted through gamification were:

- Raise awareness about the necessity for sustainable consumption among tourists and local residents;
- Responsible consumption during the holidays;
- Save energy and reduce waste;
- Involve in charitable acts.

The tourism experience is directly influenced by these types of gamification applications because there are new funny tools that enriched the level of education and awareness of tourists. Moreover, in this case, the tourism experience is enriched by an inner satisfaction the tourists may have as a result of

their involvement in the communities' problems. Making donations, helping poor people to improve their lives, knowing and understanding the beliefs and behaviours of residents, and contributing to the protection of some endangered species of plants and animals create a sense of self-esteem which makes the holiday unforgettable. In conclusion, gamification represents an adequate support for the interaction between local communities' members and tourists, making them more aware of the environmental impacts of both parties.

5. Conclusions

The paper contributes to the literature by reviewing the benefits of gamification in tourism and hospitality based on the pillars of sustainability: economic, social and environmental. The result is a complete grid with the main implications of gamification techniques for distinct types of stakeholders. This study is positioning the role of gamification for tourism and hospitality into a larger context of sustainable development.

Gamification contributes to the overall tourist experience in different ways. Gamification can be used to act as an interface between tourists, organisations and local communities, to leverage responsible and ethical behaviour. Regardless of some approaches that consider gamification only another way of attracting tourists or clients, there is a visible sustainable feature. Even if this technique is without question very efficient to ensure economic benefits in the best practices analysed, it showed also significant benefits in terms of social and environmental sustainability. Of course, the most important advantage of gamification is to increase brand loyalty. However, the results should not be evaluated only in terms of quantity of products or services consumed but also in terms of tourists' willingness to adopt the sustainable behaviours recommended by the gamification providers. As a result, some values created for reducing the negative environmental and social impact, especially in the case of younger generations, will be implemented.

On the other hand, gamifying tourism services has a positive impact on communication and social interaction, leading to a collective consciousness extremely important for the development of local communities. The resulting changes—better informed and more skilled personnel, increased satisfaction, a more accurate entrepreneurial strategic thinking, locals' more positive attitudes toward tourism and sustainability—lead to a satisfied client, ensuring the sustainability of the tourism organisation. The direct connection with tourists helps local communities to learn more about, promote and integrate their culture and cultural values.

Together with better qualified employees, gamification contributes to improving the overall image of the city or location, a development of the cooperation between companies that can have a positive impact on the well-being of the entire community. The best results in terms of sustainability improvement were noticed in the case of gamification tools meant to develop or create new products, train employees and educate tourists and residents. Through gamification, the new tourism products integrate the economic objectives with social and environmental positive externalities, the training environment becomes more engaging and the tourists discover the history, the life and the destinations' identity, all these things with a minimum negative impact on the local community and the environment.

To aspire to a sustainable approach, gamification needs not only to tighten the relation between tourists and employees but also to include the local community in the equation. Gamification can help

to shift from a business-centric perspective of gamification to a truly sustainable perspective. The best proof in this regard is the fact that almost all the best practices analysed incorporated the players' intrinsic motivations in the game mechanism. Self-esteem, social recognition and the opportunity to create new friends have the power to raise the tourism stakeholders' awareness about their holiday impact and to engage them in sustainable behaviours. Even if Seaborn and Fels [30] cite some authors who don't recognize the role of intrinsic motivations in gamification, the present conclusion supports the idea of the necessity of intrinsic incentive inclusion in the game mechanism, like other studies did [39].

The next step of undeniable difficulty would be applying a unifying approach to gamification that ensures the engagement of all the stakeholders (tourists, employees and community) in the same gamified space, where everybody is aware of everybody's interests, power, and status. Above all, sustainability means transparency between the developers and players, as gamification can go in two opposite directions:

- (a) Tunnelling, manipulating, distracting attention, squeezing more than appropriate, or
- (b) Synergy, responsible consumption, work or life balance, genuine fun, authenticity.

Considering the global trends in the use of gamification solutions, some aspects of the overall profile of key players in the gamification market can be highlighted:

- Mostly, both providers and buyers of these solutions are often part of large companies that already have a recognized brand on the market, financial resources and development strategies that make possible these innovations;
- The majority of organisations that have adopted these solutions are part of a specific offline community, geographically bounded, or of an online one, purpose bounded and have a special supportive relationship with the stakeholders.

Thus, for small companies or new entrants to the market, the adoption of these solutions can become an important challenge for top management, and a possible positive decision in this regard must start from a well-founded cost-benefits analysis. There is a bottom-up approach stressing the important role the leadership vision has when it comes to the successful implementation of gamification.

The limitations of this study may arise from the inability to fully cover the gamification applications dedicated and used in the tourism and hospitality industry. However, the study results can provide a very important basis for the development of other comparative studies both in the same and other industries that have adopted gamification solutions.

Another limitation of the paper is that it is focused on the online component of gamification (ICT based), without analysing the offline component, the use of gamification mechanics and philosophy in the organisational activities or the infusion of gamification values in the organisational culture. For example, gamification of the organisational learning process can be present offline in training sessions designed specifically to create competition, a certain degree of fun, provide feedback, monitor performance and offer instant rewards without the help of ICT, in a socio-professional gamification process. The practical implication of this alignment of online and offline gamification are important in terms of authenticity and sustainability and provides a new research direction.

Author Contributions

All authors contributed equally to this work. All authors read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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