AIRSI2020

CONFERENCE PROCEEDINGS

AIRSI2020

Zaragoza University

Spain

3-4 September 2020

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PREFACE

This volume presents the proceedings of the 2nd edition of the International Conference it was scheduled to be held at the Faculty of Business and Public Management in Huesca (University of Zaragoza) on 2 and 3 April and has finally been held virtually on 3 and 4 September 2020 as a result of the pandemic generated by Covid 19.

AIRSI2020 is an international conference focused on the application and effects of artificial intelligence and other new technologies that are part of the so called Industry 4.0. Specifically, the aim of this conference is to deepen and broaden the current understanding of the use of all these new technologies to offer all kind of products and a wide variety of services (e.g., tourism, hospitality, health, education, banking, etc.) by focusing on their effects on value creation, relationship outcomes (e.g., satisfaction, loyalty, engagement, profitability), customer perceptions (e.g. trust) and concerns (e.g. privacy, security, etc.), ethical issues and other related aspects.

Topics of interest for the Conference include, but are not limited to:

- **A**rtificial Intelligence, Service Automation, Machine Learning, Block Chain, Cybersecurity
- **I**mmersive Technologies, Smart Cities, Geomarketing, Omnichannel Strategies
- **R**obots, Chatbots, Intelligent Assistants, Data Driven Decision Making
- **S**ocial Networks, S-Commerce, UCG, Influencers, Sentiment Analysis, Big Data
- **I**nternet of Things, Digital Transformation, Collaborative Platforms, Cloud Computing, etc.

This conference is intended to be the germ that allows the developing of two special issues in two prestigious specialized research journals:

- "*Artificial Intelligence in Hospitality and Tourism*" to be published at International Journal of Contemporary Hospitality Management (Emerald).
- "*New Consumer Responses to New Technology Applications*" to be published at the Spanish Journal of Marketing-ESIC (Emerald).

We wish to thank all colleagues who contributed to the conference and to this volume. Thanks also to all members of the scientific committee and reviewers without whom the conference would not have taken place.

We hope that AIRSI2020 will serve as a forum for exchange of ideas, approaches, expertise and best practices between researchers and existing networks in the field, paving the ground for future standards of research in understanding the consumer's perceptions and reactions when facing all the technological innovations included in what has been called Industry 4.0.

Carlos Flavián
Chair of the Organizing Committee of AIRSI2020

AIRSI2020

September 3-4, 2020

CONFERENCE PROGRAM

Thursday September 3

10.00 – 10.30 Official Inauguration

10.30 – 11.30 Plenary Session I: Keynote Speakers

Prof. Ko de Ruyter (Vice Dean Research, King's College London, UK) and Prof. Debbie Keeling (University of Sussex, UK)
'Cause you can do it in the mix. Revamping the marketing sales strategy through reality-enhancing technologies

11.45 – 13.15 Competitive Papers I. Parallel Session

BREAK

15.20 – 16.30 Competitive Papers II. Parallel Session

16.45 – 18.15 Competitive Papers III. Parallel Session

Friday September 4

10.00 – 11.00 Plenary Session II: Keynote Speaker

Prof. Dan Wang (The Hong Kong Polytechnic University; Hong Kong)
Capturing the Structuration of Advanced IT in Tourist Behavior and Tourism Business

11.30 – 13.00 Competitive Papers IV. Parallel Session

BREAK

15.00 – 16.00 Plenary Session III: Keynote Speaker

Prof. Russell Belk (York University, Canada)
Chatbots, Hubots, Humbots, and Robots: Stumbling Toward Turing

16.15 – 17.45 Competitive Papers V. Parallel Session

17.45 Awards Ceremony and Conference Closing

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AIRSI2020

September 3-4, 2020

EXTENDED ACADEMIC PROGRAM

Thursday September 3

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Plenary Session I. Thursday, September 3. 10:30 – 11:30.

Session chair: Luis V. Casaló (University of Zaragoza; SPAIN)

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Prof. Debbie Keeling (University of Sussex, UK)	

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"Find a flight for me Oscar!" Exploring what makes a motivational customer experience with chatbots	*Sebastian Molinillo; Jano Jiménez-Barreto; Natalia Rubio (Autonomus University of Madrid & University of Malaga, Spain)*
Relationships between tourists and intelligent virtual assistants: promoting the love ties	*Sebastian Molinillo; Sandra Maria Correia Loureiro; Ricardo Godinho Bilro; Arnold Japutra (ISCTE- Business School, PORTUGAL, University of Western Australia, AUSTRALIA & University of Malaga, SPAIN)*

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AIRSI2020

September 3-4, 2020

Friday September 4

Plenary Session II. Friday, September 4. 10:00 – 11:00.

Session chair: Carlos Orús (University of Zaragoza; SPAIN)

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Plenary Session III. Friday, September 4. 15:00 – 16:00.

Session chair: Daniel Belanche (University of Zaragoza; SPAIN)

Prof. Russell Belk (York University, Canada)	*Chatbots, Hubots, Humbots, and Robots: Stumbling Toward Turing*

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Brengman Malaika: *Vrije Universiteit Brussel (Brussel, Belgium)*

Willems Kim:, *Vrije Universiteit Brussel (Brussel, Belgium)*

Cao Hoang-Long: *Vrije Universiteit Brussel and Flanders Make (Brussel, Belgium)*

Vanderborght Bram: *Vrije Universiteit Brussel and Flanders Make (Brussel, Belgium)*

Keywords: Humanoid service robot; observation study; POS conversion funnel; retail

1. Background

Service robots (SRs) are increasingly being introduced in various services industries, such as hotels (Choi et al., 2019) and restaurants (Manzocco, 2018), as well in retail services (De Gauquier et al, 2018). To date, relatively little is known about the actual value of SRs in retail stores. While studies have investigated the effectiveness of robots versus other types of media (e.g., digital screens in Kanda et al., 2010; kiosks in De Gauquier et al., 2018; or even other types of robots in Iwamura et al., 2010), no study has compared different placement strategies of an SR in retail yet. Current research also lacks in terms of applying an encompassing framework in order to fully understand the full hierarchy of effects (i.e., from stopping to shopping). We aim to offer both an important academic contribution as well as relevant insights for retail managers regarding the optimal placement of an HSR in the store environment to attract and convert shoppers.

2. Research objectives and methodology

Our objective is to determine the optimal placement of an HSR to attract and convert shoppers. Therefore, we apply *'the POS Conversion Funnel'* (introduced by Brengman et al., under review) to systematically compare the impact of HSR placement on sequential stages (cf. the AIDA hierarchy of effects model) in converting potential shoppers, thus specifically looking at their effectiveness in (1) stopping passers-by (drawing *attention*), (2) engaging them (gaining *interest*), (3) luring them into the store (inducing *desire*) and (4) converting them into actual buyers (prompting to *action*).

We expect the HSR placed at the entrance outside of the store to outperform the HSR placed inside the store in terms of *stopping power*, because it will be more noticeable and thus attract more passers-by and additional bystanders (i.e., 'honey pot effect'). Furthermore, we

hypothesize that the HSR inside the store will be more effective at converting potential shoppers at the following stages of the funnel (i.e. *engaging and persuading to buy*), and thus overall more effective for actually converting customers. Nevertheless, as the POS Conversion Funnel is expected to have a considerably smaller base in case the HSR is placed inside the store, as less people will notice the HSR, we are interested to compare the total effect of these placement strategies.

To this end, a systematic comparative field experiment was conducted by means of unobtrusive observations at a Belgian chocolate store at Brussels Airport. We altered the placement of an HSR by placing it (1) outside at the entrance in front of the store ($HSR_{outside}$) or (2) behind the entrance inside the store (HSR_{inside}). Passers-by could take part in a quiz regarding the store on the robot's tablet, and were observed walking by and interacting with the robot by four surveillance cameras (two days per condition, 28 hours in total, 67,580 total passers-by; $N_{HSR\ outside}$ = 36,063; $N_{HSR\ inside}$ = 31,517).

Figure 1. Camera overview per condition

3. Results

First, related to *stopping power*, the $HSR_{outside}$ was able to attract more passengers to interact (929/36,063 or 2.6%) than the HSR_{inside} (407/31,517 or 1.3%) (Pearson χ^2 (1, 67580) = 143.239, $p < 0.001$). Also, more people gathered around the participant while interacting with the $HSR_{outside}$ (average = 2.62, SD = 2.69), than with the HSR_{inside} (average = 1.78, SD = 1.46) ($t(1334) = -5.907$, $p < 0.001$). The $HSR_{outside}$ was able to attract more bystanders than the HSR_{inside} (max. 15 vs. 8 bystanders), demonstrating a honey pot effect (cf. Michelis and Müller, 2011).

Second, with regards to the HSR's *engaging power*, a significant difference was revealed in the proportion of people looking at the store, with the HSR_{inside} performing considerably better (HSR_{inside} = 43.3% or 168/407 versus $HSR_{outside}$ = 17.4% or 162/929; $\chi^2(1, 1336) = 86.477$, $p < 0.001$). Nonetheless, there was no difference in interaction times between both conditions.

Third, related to the *attraction power* of the robot, more customers advanced deeper into the store after interacting with the HSR_{inside} (34.6% or 141/407) than with the $HSR_{outside}$ (11.3% or 105/929) ($\chi^2(1, 1336) = 102.637$, $p < 0.001$). Overall, regardless of any interaction, there was a significantly larger proportion of passers-by that visited the store when the HSR was placed inside (7.1% or 2,234/31,517) vs. outside (6.5% or 2,356/36,063) ($\chi^2(1, 67580) = 8.190$, $p = 0.004$).

Fourth and last, regarding selling power, the proportion of passengers who bought something after interacting with the robot appeared significantly higher for the HSR_{inside} (6.1% or 25/407) than the $HSR_{outside}$ (1.9% or 18/929) ($\chi^2(1, 1336) = 16.065$, $p < 0.001$). However, looking at the proportion of passers-by buying something in the store, regardless of interacting with the HSR, a significant difference between the conditions in the opposite direction was noted, with the $HSR_{outside}$ outperforming the HSR_{inside} ($HSR_{outside}$ = 2.1% or 773/36,063 versus HSR_{inside} = 1.7% or 523/31,517) ($\chi^2(1, 67,580) = 20.950$, $p < 0.001$). The average amount spent per customer did not significantly differ over the HSR placement conditions.

4. Discussion and conclusion

By conducting a systematic comparative field experiment with unobtrusive observations, we evaluated the effectiveness of two placement strategies of an HSR (inside versus outside the store) according to the POS Conversion Funnel. Our expectations were largely confirmed. The $HSR_{outside}$ was much more effective in drawing attention and persuading passers-by to start an interaction (i.e., +100% more *stopping power!*). On the other hand, the HSR_{inside} was able to evoke more engagement and store interest (i.e., *engaging and attraction power*) and consequently more people bought something after interacting with the robot (i.e., *selling power*). Nevertheless, the overall effect on sales seems to be strongest in the outside placement condition, which may be due to the larger base to start off with (i.e. more passers-by noticing the HSR, which may lead to consecutive positive effects). These findings demonstrate the value of looking at each step of the POS Conversion Funnel and are not only relevant from an academic perspective, but also for retailers who aim to introduce HSRs and want to decide on their optimal placement, which may also depend on their specific conversion challenges.

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Perceived Social Norm, Robot use Self-Efficacy and Attitudes Towards Robots

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Nina Savela: *Tampere University (Tampere, Finland)*
Aki Koivula: *University of Turku (Turku, Finland)*
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Keywords*:* robots, attitudes, perceived social norm, robot use self-efficacy

1. Introduction

The emergence of new-generation robots is transforming postindustrial societies. Different human characteristics predicting successful implementation of novel technologies have been a topic of interest for decades, to which robots make no exception. Examining psychological human factors associated with robot attitudes is of high relevance as people are becoming more familiar with robot technologies. Yet less attention has given to the relationships between psychological factors related to robot attitudes.

Attitudes, relatively persistent positive, negative or neutral estimates of the target (e.g. Haddock & Maio 2015) are formed, as suggested by attitude multicomponent theory, through three main components; cognitive, affective and behavioral information (Rosenberg & Hovland, 1960; Breckler, 1984). Previous technology acceptance models, such as TAM, UTAUT and ALMERE, have identified human attitude as an important antecedent to behavioral intention or actual use of novel technologies, such as robots (e.g. Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003; Heerink, Kröse, Evers, & Wielinga, 2010).

Social influence, drawing upon social information processing theory, suggests that information conveyed by the individual's own social network influences the way he or she views the target technology (Schmitz & Fulk, 1991; Salancik & Pfeffer, 1978). In the context of technology, social norms have been adapted and further studied extending the original TAM to include social influence (Dickinger, Arami, & Meyer, 2008; Im, Hong, & Kang 2011). As people tend to incorporate the opinions of salient others, it's also likely that robot attitudes are partly adopted from one's social circles.

Self-efficacy beliefs – one's perceptions of one's own capabilities to overcome courses of action – introduced by Bandura (1977, 1986, 1997), can be created and strengthened through four main sources of influence: mastery experiences, social modeling, social persuasion, and one's own physiological and emotional states. Robot use self-efficacy beliefs have been recently studied within care work settings showing a significant positive association with different aspects of technology acceptance (e.g. Turja, Rantanen, Oksanen 2017; Latikka, Turja, & Oksanen

2019), but studies considering robot use self-efficacy beliefs and robots more generally are still scarce.

This social psychological study surveys how perceived social norm and robot use self-efficacy are associated with attitudes toward robots. Furthermore, the mediating effect of robot use self-efficacy on the link between perceived social norm and attitudes toward robots is under review. The research questions are as follows:

1) Does perceived social norm have a direct positive association with attitudes toward robots?
2) Does robot use self-efficacy beliefs have a direct positive association with attitudes toward robots?
3) Does robot use self-efficacy positively mediate the link between perceived social norm and attitudes toward robots?
4) Does perceived social norm, robot use self-efficacy, and attitudes toward robots differ among people with and without prior robot use experience?

2. Method

To answers these questions, an online survey sample was collected in April 2019 ($N = 969$) among U.S. respondents. Amazon Mechanical Turk's pool of respondents was used for recruiting research participants. The data was evenly distributed in terms of gender (48.09% male, 50.36% female), and mean age was 37.15 years (SD_{age} = 11.35 years). One-third of the respondents (33.23%) reported having prior experiences of robots, whilst still most (66.77%) were new or unsure if they had previous experiences of using robots. Respondents filled their socio-demographic details after which we asked them about their prior robot use experience, perceived robot use self-efficacy, perceived social norm and attitudes toward robots. For analysis, three composite variables were created showing good reliability; robot use self-efficacy ($\alpha = .87$), perceived social norm ($\alpha = .93$), and attitudes toward robots ($\alpha = .93$).

On top of analyzing descriptive statistics, we ran two linear regression equations; for respondents with ($n = 322$) and without ($n = 647$) prior robot use experience. Two separate regression models, reported with robust Huber-White standard errors, were also addressed to gain insight into the role of previous user experiences. Comparisons of means between the respondents with and without prior robot use experience were run for robot attitudes, social norm and robot use self-efficacy using Welch t-tests for unequal variances. Finally, we analyzed whether the association between perceived social norm and robot attitudes is indirect through robot use self-efficacy. Mediation analysis was conducted with sgmediation command with a 10000-replication bootstrap.

3. Results and discussion

Our results showed that all respondents with prior experiences of robot usage reported more positive robot attitudes, higher robot use self-efficacy beliefs and higher perceived social norm than ones without prior experiences of robot usage. Among respondents with previous robot use experience, the strongest significant positive predictor of positive robot attitudes was perceived social norm, while robot use self-efficacy was moderately associated. Among respondents without previous robot use experience, perceived social norm again indicated a strong positive

association, but now also robot use self-efficacy was strongly positively associated. Besides, general interest in technology and its development was positively associated with attitudes toward robots in both models. As illustrated in figure 1, mediation analysis showed that robot use self-efficacy had a significant effect on the link between perceived social norm and attitudes toward robots, and the bootstrapped indirect effect was .14 (95% CI = .101 – .175).

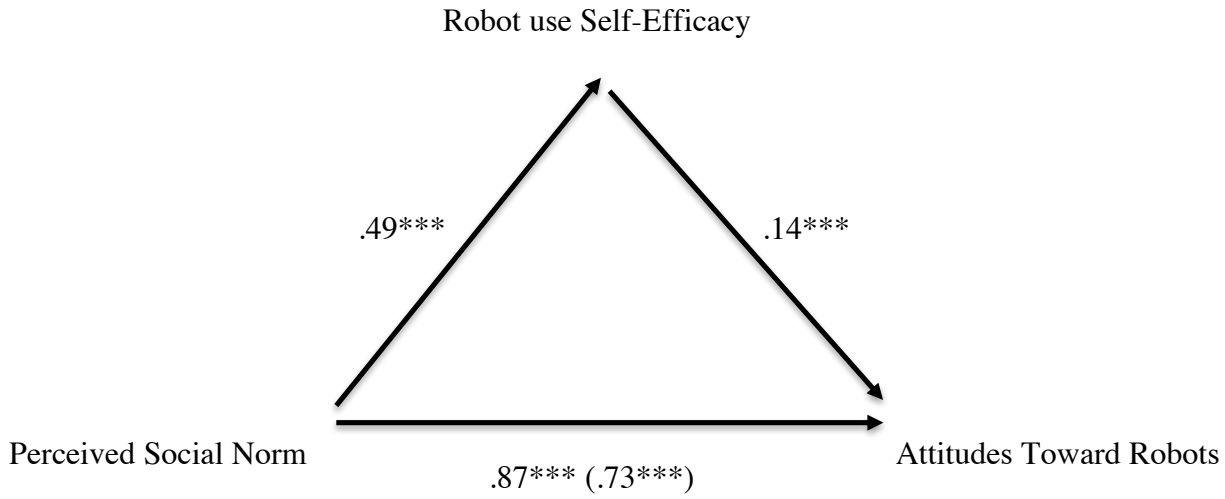

Figure 1. Unstandardized regression coefficients for the relationship between perceived social norm and attitudes toward robots as mediated by robot use self-efficacy among all study participants (N = 969). The unstandardized regression coefficients between perceived social norm and attitudes toward robots controlling for robot use self-efficacy is in parentheses. *** $p < .001$

In addition to prior user experience, our results underline the importance of social psychological factors related to the formation of attitudes toward robots. First, people seem to give high value to how their own social circles and salient others perceive novel technology such as robots. Second, robot attitudes also appear to be influenced by one's judgements of one's own capabilities to use such technology, in other words, robot use self-efficacy beliefs. Finally, mediation analysis provided some evidence for the possible interrelation between perceived social norm and robot use self-efficacy beliefs. Results indicate the importance of social psychological aspects of robot use and their usefulness for professionals implementing new robot technologies.

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Human-Centered Artificial Intelligence - Role of Robots and Artificial Intelligence in driving Automation and developing Trust in Travel & Hospitality

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Keywords: Artificial Intelligence; Bots; Service Automation; Travel; Naturalness; Human-Machine Interaction; Threat Perception

1. Research Problem

Travel and Hospitality industry is bearing the negative impact of Covid-19 situation with fear of contact, dynamic volatility, and lack of availability of accurate and timely information keeping travelers away. The travel industry has been at the forefront of technology adoption and its time to use that technical expertise to develop (re)trust in consumers. The authors propose the usage of AI technologies not only for driving increased customer service and enhanced productivity but also for the development of a dynamic Travel Risk Perception Index that can increase trust with travelers.

There are two parts of this research - the empirical study looks at the use of AI-driven bots that enable single statement bookings, a huge departure from search & selection driven online and mobile bookings. The second part proposes the creation of a of a dynamic hyperlocal Travel Risk Perception Index, with a high level of automation and human control. A combination of two provides a level of personalization that would drive value and effectiveness.

The solutions are critical for the corporate travel market, a segment that has not been studied in detail by academicians. Some features that make the corporate segment ideal for Artificial Intelligence-driven disruption include repeatability, need for personalization, lesser issues with privacy, and payment process distinct from booking. Living with Covid-19 means enhancing the existing travel risk services to a dynamic, hyperlocal level and almost like a Google Map, providing the Threat Perception Index for all aspects of the travel journey. The decision to travel or not (e.g. for AIRSI2020) is less emotional and more based on cost/benefit analysis (financial or otherwise). Corporate travel's traditional lack of end to end visibility and means of exercising controls make it right to drive an order of magnitude jump in customer experience and enhance trust.

We leverage guiding principles of Human-centred Artificial Intelligence, Media Naturalness, Personalization, Risk Perception Theory, research in Cybersecurity threat

vulnerability, and travel risk perception studies, to propose frameworks and solutions that are reliable, safe & Trustworthy.

2. Literature and Methodology

Tourism and Hospitality. Researchers have investigated the costs and benefits of the adoption of robots, artificial intelligence, and service automation by travel, tourism, and hospitality companies (Ivanov et al., 2017). Within the robotics literature, studies have typically focused on the technical aspects of robotic design, architecture, and performance rather than consumer/tourist experiences with robots (Tung and Law, 2017).

Media Theories. Kock's (2004) psychobiological model or *Media Naturalness Theory*, hypothesizes that a decrease in the degree of naturalness of a communication medium leads to increased cognitive effort for users. *Overcompensation Principle* states that individuals overcompensate for the cognitive obstacles they perceive to be associated with the lack of naturalness of the media (Kock, 1998). *Media Equation Theory* (Nass et al., 1996) posits that computers are social actors and that social rules from traditional human-to-human interaction also apply to people's interaction with computer devices.

Service Systems of the Future. The shift from traditional human-to-human interaction to human-machine interaction leads to the diminishing of human interactions on the firm side and the increased role of machines by becoming a service provider (Medina-Borja, 2015).

Personalization. Research into personalization is multidisciplinary, formed and influenced mainly by academic disciplines such as Artificial Intelligence (AI) and Machine Learning (ML), Human-Computer Interaction (HCI) and Information Systems (IS), and User Modelling based on (applied) social and cognitive psychology. Advances in ML/AI have made it necessary to reconsider traditional HCI approaches.

Human-Centred Artificial Intelligence. At the heart of human-centered AI is the desideratum - AI systems need to be able to understand humans. The fundamental shift is from traditional one-dimensional thinking that designers had to choose a point on the one-dimensional line from human control to computer automation, to the decoupling of these concepts leads to a two-dimensional HCAI framework, which suggests that achieving high levels of human control and high levels of computer automation is possible (Shneiderman, 2020). The methods of HCAI are more likely to produce designs that are Reliable, Safe & Trustworthy.

Risk perception is the subjective judgment that people make about the characteristics and severity of a risk. According to the Protection Motivation Theory (PMT), people are more likely to protect themselves when they anticipate negative consequences, have the desire to avoid them, and feel they can take preventive measures.

Methodologies. For study 1, we have partnered with an end-to-end corporate travel management platform that uses advanced AI, ML, NLP, and Behavioural Economics to drive ease of use, personalization, efficiency, and transparency for business travelers. Through an analysis of 10,000+ users across companies and functional roles, the study focuses on the value derived by the employees of firms that were using the platform. A combination of A/B testing, cohort analysis, and multivariate analysis allows us to investigate the impact on customer experience, engagement, accuracy, response time, and enhanced visibility.

For Study 2, using learnings from the Cybersecurity industry (Hamed et al., 2018), we propose a dynamic hyperlocal Travel Risk Perception Index, with a high level of automation and human control. The index will leverage multiple data sources (including government, media, and social media) and transpose them with user behavior analysis and risk engine to help develop an end to end travel risk visibility matrix and threat perception index to provide relevant, timely and trustworthy information to assist the decision-makers

3. Discussion and Implications

The Human-Centered Artificial Intelligence-driven Services Automation framework and Travel Threat Perception Index emphasizes the role of AI, personalization, automation, and natural human-machine interaction in driving a high magnitude of improvements in the service industry. From a practitioner perspective, the framework emphasizes the value of driving cognitive decision making for repeat tasks away from users, to drive higher engagement and user satisfaction. For researchers, the study provides a means to understand how the combination of how AI can enable s a dyadic relationship where humans learn from machines and vice versa.

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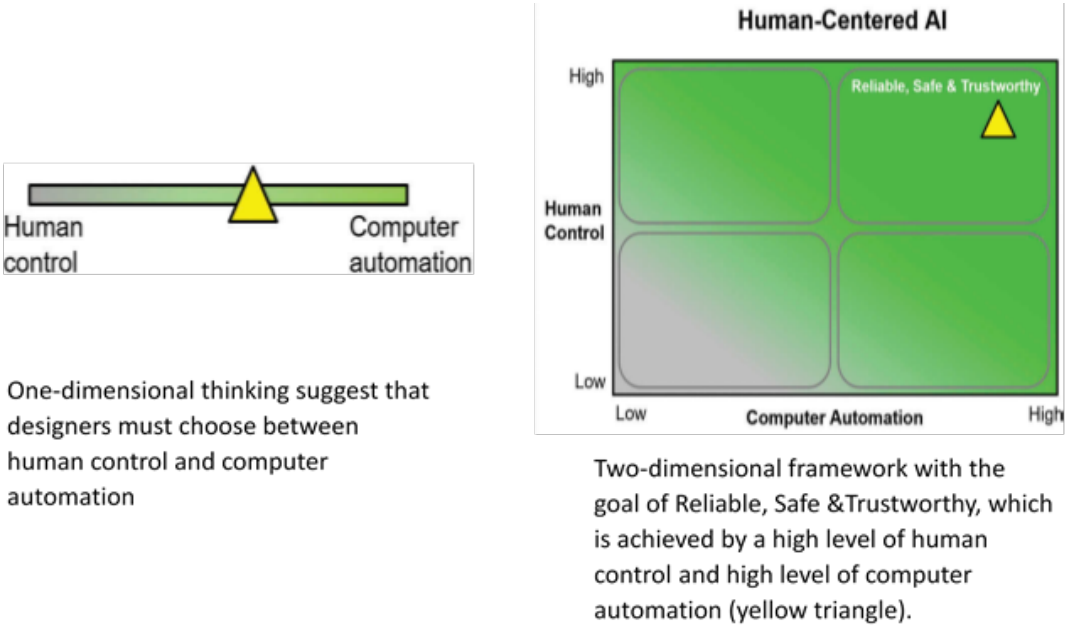

Figure 1: Human-Centered Artificial Intelligent Framework as compared to traditional Human-Computer Interaction Framework (Shneiderman, 2020)

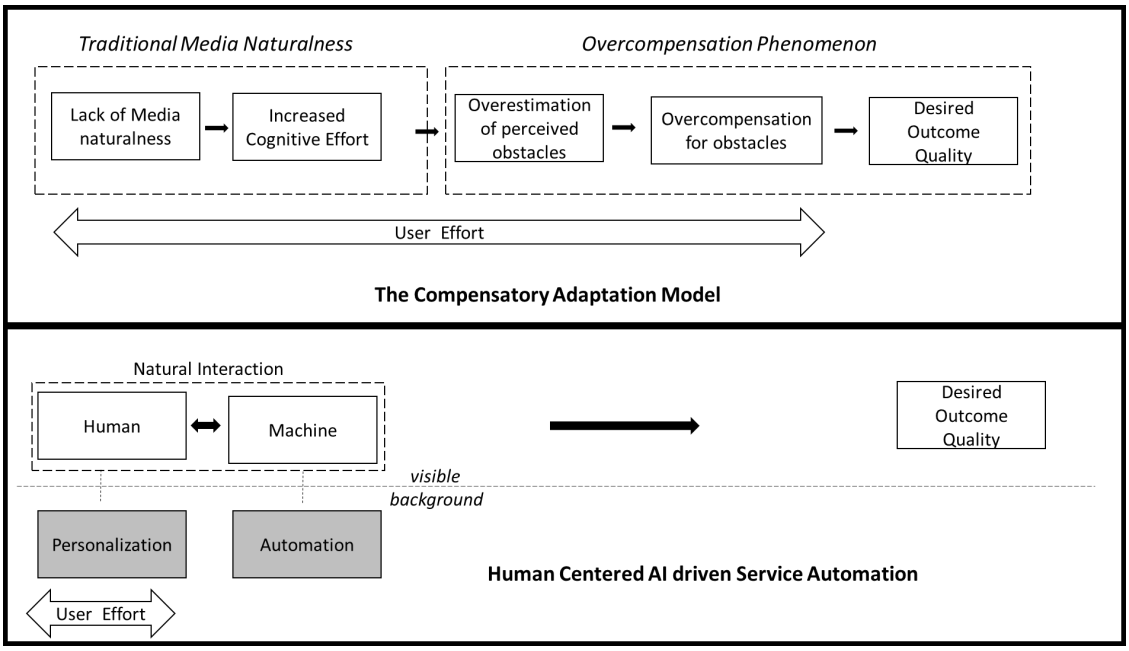

Figure 2: Human-Centered Artificial Intelligence-driven Services Automation framework

I won´t listen to you because you are like me: The "backfire effect" in human-robot interactions

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Keywords: Persuasion effect, human-robot interactions, sense of discomfort, uncanny valley effect

1. Introduction and Background

Research in social robotics shows that a social robot´s degree of anthropomorphism (degree of human likeness) may alter a person's perception toward that robot in terms of trust, likeability, safety (Castro-Gonzalez et al., 2016; Rosenthal-Von Der Pütten & Krämer, 2014). *The International Journal of Social Robotics* (2020) describes social robots as robots that can communicate and interact with humans, among themselves, and with the environment, within the cultural and social structure assigned to its role. Consumer researchers are now starting to draw on this literature to explore how consumers may respond to social robots in consumption settings. To date most work has been conceptual (e.g., Gonzalez-Jimenez, 2018; Van Doorn et al., 2017), mainly focusing on how robots will be perceived by consumers in retail and service settings.

Meanwhile, the marketing and psychology domains offer ample evidence on the persuasion effect of a message on a target audience (e.g., Shen et al., 2015; Smith et al., 2013; Wison & Sherrell, 1993). In a consumer context, such messages may attempt to entice consumers to perceive a product more positively, buy a product, recommend a product, or even motivate them to donate funds to a charitable cause. Interestingly, social robotics studies have also looked at the persuasiveness of robots. Specifically, investigations looked at the effectiveness of a robot´s sequential-request strategies on persuasion (Lee & Liang, 2019), the effect of perceived robot gender on persuasion (Siegel et al., 2009), the role of robot personality traits on persuasion (Paradeda et al., 2017), robots enticing consumers to use coupons in a shopping mall (Shiomi et al., 2013), and the effect of perceived robot goodwill and similarity in workstyle on persuasion (Winkle et al., 2019). Building on this research we aim to offer a novel perspective by exploring what type of robot (degree of human likeness) can be a more effective endorser by making a message more persuasive.

Studies suggest that persuasiveness is derived from credibility of communication sources and messages (Hovland et al., 1953; McGuire, 1969; Petty & Wegener, 1998). Social psychologists have shown that similarity between the source and the receiver of the message is

one of the key factors that enhances source credibility (e.g., Wilson & Sherrell, 1993). Therefore, it could be argued that higher perceived similarity between a robot (high human likeness) and a consumer should lead to more positive perceptions of such a robot. Subsequently, this positive perception could increase the persuasiveness of the robot's message. *However, we propose the opposite.* Work on the uncanny valley effect (Mori, 1970) suggests that an increase in similarity between the human and the robot may entice humans to perceive the robot more positively. However, if the robot is perceived as "too" humanlike, this effect is reversed due to the fact that the human may experience feelings of eeriness. An increasing body of work uses already the uncanny valley effect to explain consumer acceptance of virtual avatars and computer-generated faces (e.g., MacDorman et al., 2009, 2013; Shin et al., 2019) or robots (e.g., Destephe et al., 2015; Marthur, 2016). We expand prior work by showing that the uncanny valley effect may go beyond the relationship between the consumer and the robot and also influence the persuasion effect of a message promoted by the robot. Specifically, we hypothesize that high perceived levels of similarity between a consumer and robot may "backfire" and reduce the persuasiveness of a message projected by the robot compared to less human like robots ***(study 1).***

Furthermore, we aim to explore the underlying mechanisms that shed light on the relationship between a social robot´s degree of human likeness and its persuasion effect. Specifically, in ***study 2*** we propose that consumers experience ***sense of discomfort*** when interacting with a highly human like robot, which in turn explains why high human likeliness of a social robot may have a negative influence on the persuasiveness of a message. These assumptions are consistent with previous knowledge of out-group homogeneity in social psychology. In general, people are less sensitive to physical variation among other- versus own race faces (Hughes et al. 2019). For instance, White Americans are more likely to perceive differences in White faces than Black faces (Corneille et al., 2007). Given that human-like (vs. nonhuman-like) robots tend to be viewed as in-group (vs. out-group) objects (Häring et al., 2014; Kuchenbrandt et al., 2013), people will be more sensitive to the difference between actual humans and the robots when they encounter highly human-like robots rather than less human-like robots. In line with the uncanny value effect, the smaller perceived gap between human-like robots and real humans will generate a feeling of discomfort, which in turn will distract a consumers attention away from the messages as they are rather focusing on the high similarity with these human-like robots. Hence, they are less likely to elaborate on those messages, which in turn affects the persuasiveness of the message.

2. Tentative Methodology

Data will be collected using experiments. Stimuli will be pictures of three different social robot types (e.g., a mechanical robot, a toy-like robot and an Android). A pre-test will establish the level of human likeness of each of these robots. Established scales will be adopted to measure *persuasion effect* and *sense of discomfort*. We are still evaluating the specific persuasion context for the study (e.g. charitable donation, purchase a product recommended by the robot). We aim to measure participants technology readiness and demographics (e.g., age, gender, race) as controls.

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Connecting with Gen Z: acceptance and use of the Artificial Intelligence in tourism and hospitalitY

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Keywords: artificial intelligence; generation Z; smartphones; services; tourism and hospitality

1. Abstract

Service industries have not been immune to the huge development of AI in this millennium. Digital business strategies in leisure, hospitality, and tourism firms are operationalized through, for instance, robots, chatbots, voice assistants and the Internet of Things (IoT). These tools have the potential to transform a firm's key business processes (both frontline and backline) thus designing memorable customer experiences (Ivanov, Webster, & Berezina, 2017; Van Doorn et al., 2017). Some of these tools are a potential game-changer, and some of them can even cause "paradigm shifts" in the travel and tourism industry.

From the consumer's perspective, today's consumers are searching for, making decisions about, and using products and services in new ways (Moreau et al., 2019). Indeed, today's tourists differ from tourists of the last millennium but they are not homogenous when it comes to accepting AI. However, tourist travel is hard to imagine without the usage of a smartphone, maybe the most widespread AI device. In fact, the hospitality industry is viewed as a frontrunner of embracing innovations to transform customer experience (Lu, Cai, & Gursoy, 2019) and it is very important that the tourism and hospitality industry fully understands how leisure travelers feel about their AI experiences, how comfortable they are about giving information's, or how they interact with digital tools. Along with customers, employees' (present and future) trust could be a key factor to maximize the use of technology and quality of service within business processes.

There is a collection of important factors (e.g. expectancy on AI performance, expected effort to use AI, intrinsic motivation, social influence, technology readiness, experience, age, etc.) that affect consumers' decisions whether to embrace a new technology or not (Venkatesh, Thong, & Xu, 2012; Van Doorn et al., 2017; Lu, Cai, & Gursoy, 2019). For instance, it is expected that younger customers tend to accept AI in tourism easier and largely than older customers (Ivanov, Webster, & Garenko, 2018; Belanche et al., 2019). Therefore, understanding individual acceptance and use of information technology, and AI in general, is one of the most intriguing streams of information technology and tourism research, essential for going forward.

In this study, we seek to measure customers' behavioral intentions to use AI within the hospitality environment. More precisely, we focus on the so-called Generation Z, or Gen Z for short. Gen Z is the demographic cohort determined with mid- to late-1990s as starting birth years and its members have been exposed to an unprecedented amount of technology in their upbringing (Priporas, Stylos, & Fotiadis, 2017). The sample consisted of 754 university students studying tourism as well as other fields. For the purpose of empirical study, a self-administered questionnaire was developed containing four main parts: attitudinal and subjective norm variables; behavioral intention variables; usage behavior variable; and socio-economic and demographic data. Descriptive analysis was applied to explore the sample profile while Structural equation modeling (SEM) based on partial least squares (PLS) was then applied in order to test the main hypotheses of the research, i.e. evaluate the link between each attitudinal and norm dimension and consumers' willingness to integrate AI in their tourism experiences. The frequency of smartphone use is hypothesized to moderate the effects of these constructs on willingness to use AI.

The results of the research indicate that all attitudinal and norm-based factors affect users' behavioral intention towards AI. In addition, smartphone usage behavior moderates the effects of exploratory constructs on consumers' acceptance and willingness to use of AI devices.

This research will contribute to a better understanding of factors that affect the acceptance of AI within leisure, hospitality and tourism context. Business managers in hospitality firms can exploit the results to identify gaps hindering consumers' willingness to accept AI across various settings. Additionally, policy makers and educational institutions can try to modify their curricula emphasizing the importance of new technologies in daily living as well as in leisure time.

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Adoption of a tourist APP: motivating factors for its use, an exploratory study in Spain

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Keywords: Tourist APP; Tourism; Tourist Behavior; Technology.

1. Research Problem

The tourist or travel applications (APP) have been developed and consolidated as an excellent tool for the tourism industry. Services such as information searching or ticket purchasing and booking facilitate the contact between users and the different agents in the field. This is due to the fact that users permanently interact with the tourism ecosystem as well as to the increase in the services and promotions over the Internet (Morosan and DeFranco, 2016).

This dynamic has led to an increase in mobile applications for smartphones all around the world (Xu et al., 2019). However, the use of these applications is still in their early introduction and development stages (Leon, 2018), although some studies show that despite this fact, these apps can greatly improve customer engagement (Marino and Lo Presti, 2019).

The purpose of this research is to explore the variables that have an impact on the use of tourist apps based on an integrative perspective of different existing models in the literature on technology adoption.

2. Literature and Methodology

The attitude towards the use of mobile applications can be influenced and guided by emotions, moods and other ethical considerations as well as the frequency of use, familiarity with use and addictions, costs and other real physical aspects of the environment (Carter and Yeo, 2016).

The existing literature uses several models of technology adoption in previous specific studies in travel applications (Castañeda et al., 2019; Chen et al., 2019; Cheng and Jin, 2019; Choi et al., 2018; Escobar-Rodríguez and Carvajal-Trujillo, 2014; Hui et al., 2007; Lu et al., 2015; Mohsin et al., 2017; Morosan and DeFranco, 2016; Munar and Jacobsen, 2014; Okumus and Bilgihan, 2014; Palau-Saumell et al., 2019; Stocchi et al., 2019; Wu et al., 2009; Xu et al., 2019).

The Social Cognitive Theory (SCT) proposes behaviour as a system of self-regulation where external influences are involved, providing a basis for action (Lu et al., 2015). The Subjective norm has to do with the influence of the closest group as well as the social referents or leaders on the use of a particular application. In several studies this subjective norm showed a great significance for the use of certain travel applications (Tak and Panwar, 2017), however other studies disagree on this point Castañeda et al. (2019). On the other hand, Lin and Hsu (2015) found that expectations of personal results were a positive influence on the adoption of technology, more specifically in the case of tourism apps.

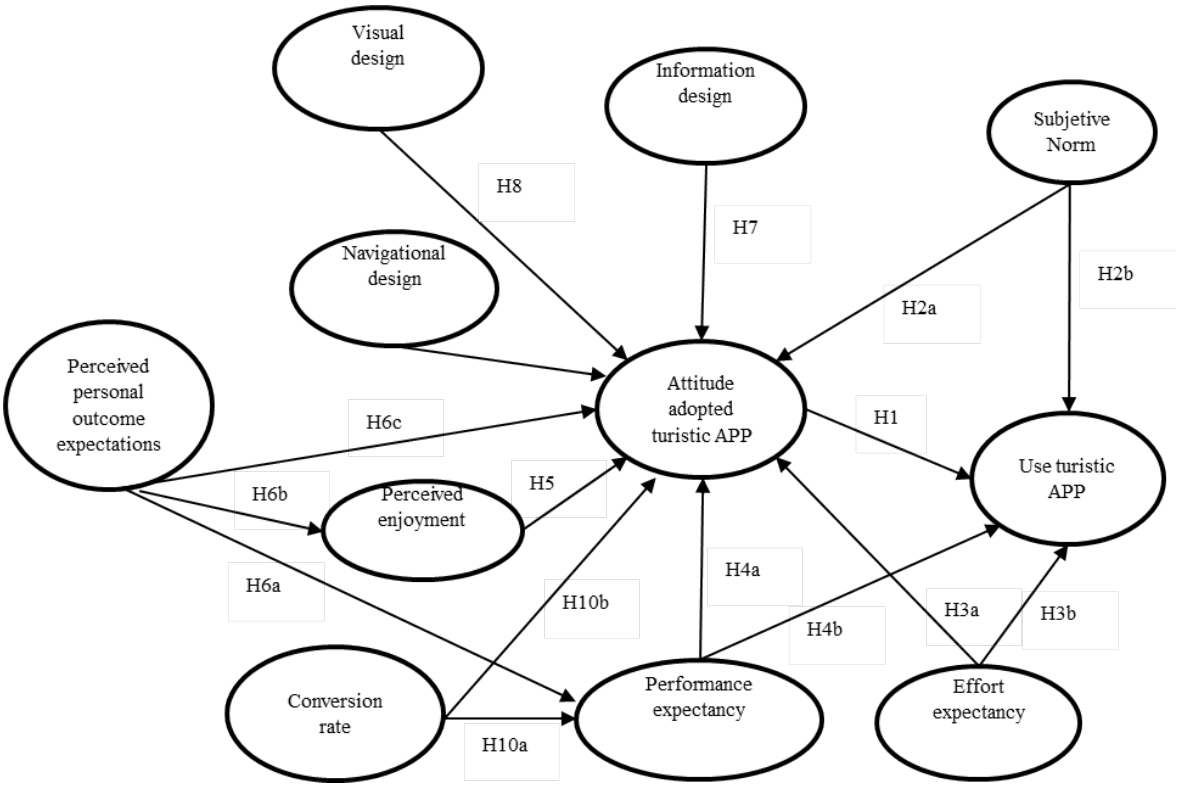
Unified Technology Adoption Theory (UTAUT) proposed by Venkatesh et al. (2012) highlights the relevance of effort expectations and performance expectations in the app adoption process. Performance expectations related to the app benefits such as saving up time and convenience have already been validated in several studies (Chen et al., 2019; Ding and Chai, 2015; Hew et al., 2015; Leon, 2018; Xu et al., 2019).

Hedonistic motivations translated as perceived enjoyment in the UTAUT2 model have also been validated in the adoption of applications (Hew et al., 2015; Verkasalo et al., 2010; Wang et al., 2016).

Likewise, other variables related to app functionality, navigation and ease-of-use were integrated in the model. These variables had been adapted from other studies related to tourism and other e-commerce services (Kapoor and Vij, 2018; Lu et al., 2015). Several studies have proven the relevance of information design (both structure and content of the information provided) for the adoption of travel apps (Ji et al., 2006; Kapoor and Vij, 2018; Peters et al., 2016). The visual design is one of the most significant variables in the use of apps (Kapoor and Vij, 2018), especially in the field of tourism, since the visual element has a big impact on consumers' behaviour and helps greatly to generate expectations regarding the app use (Chang et al., 2016; Kapoor and Vij, 2018; Nah et al., 2011; Wells et al., 2011). The navigation design refers to the way in which the interaction process between user and application is organized and assesses the ease-of-use, speed, efficiency and efficacy of the navigation process. Several studies have shown its great relevance in the use of this kind of applications (Chang et al., 2016; Kapoor and Vij, 2018).

Finally, the conversion rate, related to the purchasing, payment and use of services purchased and paid through the app comes up as a valuable factor in the use of tourist apps (Kapoor and Vij, 2018).

Figure 1. Proposed Model



A non-probability sampling of convenience was developed to design a self-administered survey among students at University of Barcelona. The questionnaire is based on 5-point Likert scale. A sample of 156 valid questionnaires were used to carry out the analysis using the Smart-PLS 3.0 statistics programme. Bearing in mind that it is an exploratory model and a convenience sample, the Partial Least Square method is used (Hair et al., 2017).

3. Discussion and Implications

The model's goodness-of-fit as well as the validity and reliability of the measuring scales lead to the conclusion that the model has a high level of prediction and that the differerent variable scales have been statistically validated.

The conclusions of this study have backed up all these hypotheses from the statistical point of view, since the variables with a greater impact on the consumers' intention to use these travel apps are performance expectancy, perceived personal outcome expectations and information design.

The theoretical implications of this study lie in the integration of various approaches in a single model to explain the key elements that influence the use of tourist apps. The results confirm that in the process of adopting a travel app, users consider different aspects related to its design, such as visual design and navigation design; individual aspects such as Perceived

personal outcome expectations, Perceived enjoyment and Subjective norm as well as operational aspects, such as effort expectations, performance expectations, and conversion rate.

The practical implications for the companies developing this type of apps is that those applications that acknowledge all these factors related to design, navigation and ease-of-use required by tourists will be better positioned in the market and more competitive in a dynamic environment.

The limitations of this study are that the sample has been made up of university students, which may bias the results in comparison to other population groups. Besides, this study did not analyze any single specific app but the concept of tourism apps in general. Therefore, it is necessary to carry out further studies and apply this model to specific travel apps so this phenomenon can be examined in greater depth.

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Exploring the factors conducing IoT households adopting

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Keywords: Internet of things; adoption; homes; Technology.

1. Research Problem

Internet of things (IoT) adopted in homes is the future of the development of different technologies that facilitate domestic activities (de Boer et al., 2019); the objective of this study has been to analyze what are the factors that people take into account for adopting IoT at home.

2. Literature and Methodology

Domestication theory

Domestication theory explains how people adopt and use information and internet technologies at home (de Boer et al., 2019; van Deursen et al., 2019; Haddon, 2006; Reisdorf and Groselj, 2015, 2017; Silverstone, 1993; Wei et al., 2011). This theory explains that the appropriation of a technology at home has a process that consists of four stages that precede each other depending on the level of adoption at home. The first step is commodification or appropriation, the second is objectification, the third phase is incorporation, and the most complete phase is conversion (Brause and Blank, 2020).

Commodification: Domestic Appropriation of Internet refers to the purchase of said technology, an installation and the initial expectations that adoption technology brings home, it is related to the acquisition and therefore with physical factors and initial technological resources.

Objectification of domestic Internet refers to the installation and primary use that it is given to such technology at home.

Incorporation of domestic Internet refers to the use and integration of such technology at home, there is already a frequency of use, routine and habit of use at home.

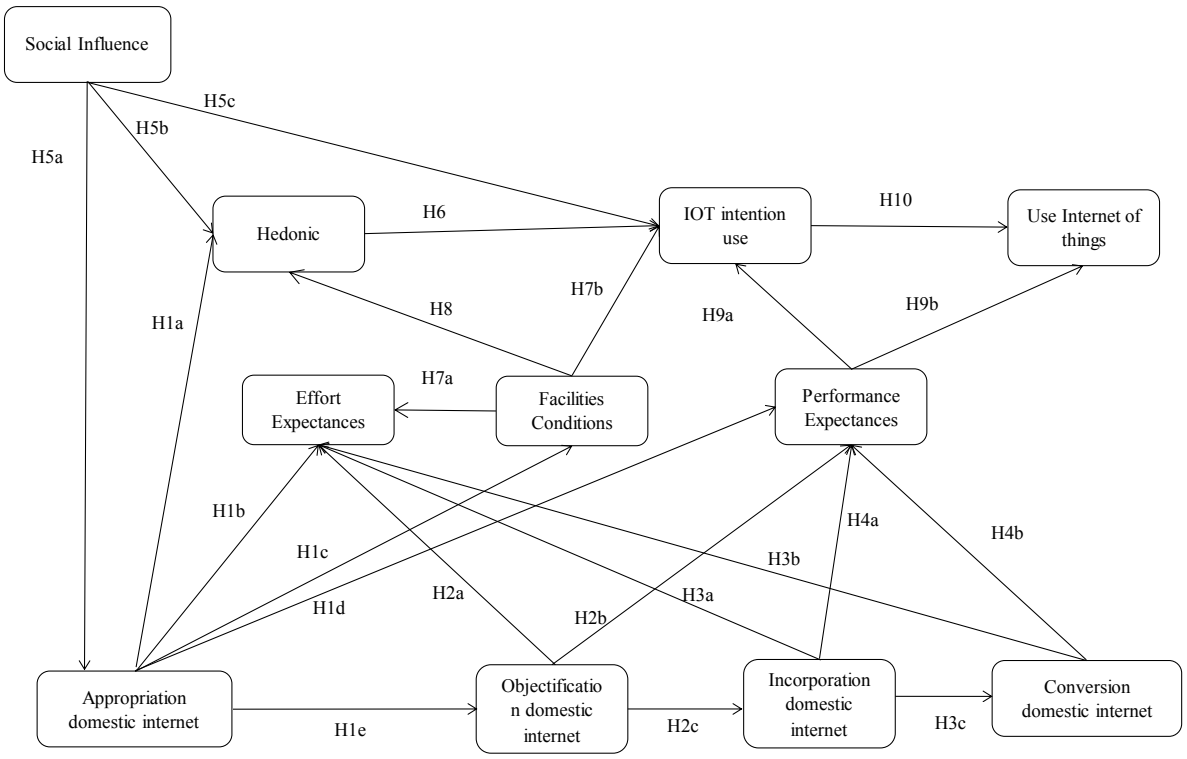
Conversion of domestic Internet is the process of domestication with the outside world, through visualization, exchange, discussion and acquisition of skills that relate life inside and

outside the home. Therefore, a higher degree of domestic conversion is related to a greater perception of ease of use and the performance of the use of IOT.

Technological adoption theories

Technological adoption models have allowed to understand which are the variables that best describe the adoption of information and internet technologies by individuals (TAM, TRA, UTAUT (Davis, 1993; Venkatesh et al., 2003b)), having great development of this specific line of research in all types of electronic commerce (Flavián and Guinalíu, 2006; Sánchez-Torres et al., 2017; Venkatesh et al., 2003a).

Figure 1. Model proposed



3. Discussion and Implications

An empirical study was conducted in two countries, Spain and Colombia, without finding differences between the two samples, the validity and significance tests of the measurement tool and the model were satisfactory.

The main conclusions were that households where the internet has been fully adopted will tend to positively affect the adoption of internet of things technologies.

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Makerspaces as a route to democratising Innovation: The case of 3D Printing

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Keywords: Makerspace; Crowdsourcing; 3D printing; Value creation; Democratisation; Innovation

1. Research Problem

The advent of the latest information technologies and digital applications have largely altered the means of communications and resources available to people, e.g. enhancing their ability to innovate and co-create through user-generated content (Bolton et al., 2018). Makerspaces, where communities of individuals share access to such technologies, represent potentially important context for innovation. The availability of various novel digital technologies like 3D printing (3DP henceforth) in makerspaces may help democratise product innovation and partly shift 'ownership' of the innovation process from producers to consumers. Individuals have now access to new opportunities to transform their ideas into innovative products through 3DP technologies.

Studies have focused on physical communities such as Fablabs or makerspaces (Halbinger, 2018) as well as online communities that practice open design in a similar manner to Open Source software communities. Yet little is known about how and why makerspace participants use 3DP, - a tool which arguably has revolutionised the design process in many sectors - to innovate and realise their creative and commercial ambitions. Gaps in knowledge remain in terms of how individuals interact with digital fabrication tools, their motivations for joining makerspaces and the role of communities. To this end, we investigate how innovation may be supported in makerspaces through bricolage. The main aim of this study is to address these gaps in knowledge by answering the following research question:

RQ: How and why do individuals engage with new Industry 4.0 enabling technologies within makerspaces?

2. Literature and Methodology

3DP is a central part of industry 4.0, yet its use and benefits are not well understood. Baker et al. (2003) focused on improvisation, in which the design and implementation of novel solutions converge. It has been suggested that building improvisational capabilities helps in overcoming resource constraints (Liu et al., 2018). This contributes to an ability to innovate

based on design capability rather than the alternative of strategized R&D investment. In this context, past research has used bricolage as a lens to investigate how resource-constrained, often new firms, innovate. Indeed, in service innovation, which rarely relies on R&D, bricolage has been implemented by adopting Witell's et al. (2017) theoretical framework. Moreover, makerspaces offer an alternative to building social and business networks where individuals or teams produce items in makerspaces within a Do-It Yourself (DIY) culture (Van Holm, 2015).

The field research study was conducted in four makerspaces located in the UK, by an experienced field researcher with prior expertise in 3DP and significant experience of setting up a makerspace. Data were collected from individuals who have attempted to innovate by utilising available makerspace equipment and facilities. Through an ethnographic study and a bricolage approach, a collection of narratives has been produced from makerspace participants who implement 3DP techniques with whatever resources are at hand in a makerspace (Wittel et al., 2017). Fieldwork was carried out over a six-month period, which involved weekly visits of the field researcher at various makerspace premises. Data collection followed a standard process of taking field notes to capture observations and reflections. In addition, face-to-face interviews, each lasting 2 hours on average, were conducted with individuals. The interviews were recorded, transcribed and systematically analysed.

3. Discussion and Implications

Outputs indicate that makerspaces attract individuals who aspire to make their own creations and at the same time are willing to invest time and often considerable effort to help fellow makers. These individuals are open to new ideas, they demonstrate altruistic sharing behaviours and aim at creating or solving specific problems by following a bricolage approach to innovation. Results also suggest that 3DP as a technology and philosophy plays a key role in materialising the bricolage approach within a makerspace context. Equally, makerspaces provide a testbed for ideas through interactions with its members, where in some occasions leads to co-creation. This reveals two important aspects of the innovation as envisioned and performed by makerspace participants: a) it supports the willingness and ability to combine information and skills, in this case recognising a synergy between different projects that could be combined or just find touching points that would mutually help their actualisation (i.e. co-creation); b) the fact that commercial objectives are often not the starting point, as several field study participants pointed out that 3DP had allowed them to create things they otherwise could only have considered in theory, thus leading to a natural democratisation of the innovation process.

Overall, 3DP seem to be significantly contributing to advancing the process of innovation. It demonstrates how makerspaces/ DIY labs can support innovation. The research identifies bricolage as a promising lens through which the study of makerspaces contributes to a better understanding of peoples' motivations to engage with new Industry 4.0 enabling technologies, to make innovation personalised, and share the fruit of know-how and creation with fellow makers.

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Service robots in online reviews: preliminary evidence

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Keywords: Service robots; eWOM; online reviews; empirical study; online robotic discourse.

Body of abstract

Service robots promise to transform the essence of services and in turn customers' experience. However, extant literature lacks empirical evidence on the relevance and characteristics of service robots after consumption. As suggested by previous research, online customers' discourse can be seen as a critical means to evaluate new product or service introductions. Thus, building on research and theorizations belonging to the application of electronic Word-Of-Mouth (eWOM) to the diffusion of innovation, this study leverages on online reviews (ORs) to monitor popularity and consumers' awareness of service robots. As such, it develops the concept of online robotic discourse - *defined as eWOM in online reviews mentioning explicitly service robots deployed in hospitality services* - to track the adoption and diffusion of service robots over time. Following a data science approach, the trends and distributions of ORs reporting service robots are analysed for 19 international hotels pioneering the deployment of service robotics in their frontline operations. The results unveil how service robots are gradually perceived as a distinctive factor in the judgement of service experiences, further than a plain novelty consequence. In terms of distribution differences, robot-related ORs are associated with longer textual content and higher ratings than not robot-related ORs. Besides, reviewers mentioning service robots are usually more experienced and keener to embed a higher number of visual contents in their ORs than their counterparts. Taken together, these findings suggest that a better understanding of reviewing behaviours and eWOM related to robot-empowered hospitality services can help to enhance scholarly knowledge pertaining to human-robot interactions, and the adoption and diffusion of innovation in the tourism context.

Does sentiment drive numerical star ratings? A deep learning study of extreme and neutral online reviews.

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Keywords: Compensatory models, Dual-Processing theory, TripAdvisor, User-generated content, Sentiment analysis, Deep Learning.

1. Research Problem and Literature Review

User-generated content (UGC) is a growing driver of destination choice (Bigné, Ruiz & Currás, 2019). Sentiments expressed about tourist attractions in the text of reviews provide tacit context-specific explanations of the reviewer's feelings, experiences and emotions, which go beyond numeric ratings. Drawing on compensatory models on how individuals process information, and dual-process theories, this study provides a better understanding of how sentiments interact with the numerical star ratings of user-generated content. We followed a two-step process: (i) a sentiment analysis using machine-learning techniques (deep learning) was carried out and (ii) linear regression models examined what semantic characteristics determine numerical star ratings for extreme and neutral reviews.

Online reviews have two components, star ratings and text. Although past research has used star ratings and UGC content to explain aspects of the consumer's processing of online reviews, the relationship between stars and sentiment merits further analysis (Li Wu & Mai, 2019). It is generally assumed that online star ratings are a numeric representation of text sentiment and that their valences are consistent. This, however, may not always be true. Misalignment between star rating and text can lead to increased consumer cognitive processing costs, suboptimal purchase decisions, and lower overall utility of the review site. A 5-star rating clearly signals positive affect about a tourism attraction. However, consumers may post negative comments, even alongside a 5-star product evaluation, out of a desire to help other consumers. Highly positive reviews are more likely to have negative textual content than highly negative reviews are to have positive textual content, because negative content is perceived as more credible than positive content. Another important challenge in understanding online reviews is that neutral UGC (3 stars) may contain equal amounts of positive and negative words about a specific sentiment-topic aspect of a tourist attraction (neutral polarity), or only include neither positive nor negative words associated to a sentiment-topic aspect (positive/negative polarity). Therefore, the following research questions arise: *RQ1. Does the overall polarity of a review correlate with its numerical*

star rating? RQ2. Does the interaction of review valence and extremity/neutrality affect the degree of numerical star and sentiment misalignment?

According to compensatory models (Johnson and Meyer, 1984), consumers make trade-offs, by a type of linear compensation, between attributes when choosing products. In a non-compensatory decision-making process, some attributes are not considered. This view assumes that only relevant attributes will be considered because consumers use only limited cognitive effort (see for details Hoyer, 1984). In a compensatory model the overall rating should reflect a summary effect of the content of a post related to specific attributes. However, if consumers follow a non-compensatory process, some attributes will determine the overall rating. Extending this view into a social media context (Bigne, William & Soria, 2019), users search for information and they will consider the appealing data when making decisions (numerical ratings). Furthermore, the valence of online comments might affect differently numerical star ratings due to compensatory information processing. Therefore, we posit *RQ3. Does the polarity in a review about a specific feature of a tourism attraction correlate with its numerical star rating?*

Dual-process theories (Chaiken, 1980) posit that consumers process information through two routes: systematic processing (i.e., analysis of all relevant pieces of information) and heuristic processing (i.e., decision-making by assessing whatever information is available). Drawing on dual-process theories, this research also posits *RQ4. How do systematic (sentiment and objectivity/subjectivity of online reviews) and heuristic cues (pictorial content, review helpfulness and expertise of the reviewer) impact on the star rating of extreme and neutral online reviews?*

In tourism related experience services, consumer selection of different tourist attractions is not the same. Some attractions do not involve an economic transaction, whereas others require an entry ticket (e.g., open squares or monuments vs palaces or museums). A research question immediately arises: *RQ5. Does the numerical star rating of online reviews vary based on whether the attraction is free or paid-for?*

2. Methodology

We crawled all the reviews (20.769) made in Tripadvisor in English during 2015-2019 about three key Venetian attractions: The Grand Canal, St. Mark's Square (open, free attractions) and the Doge's Palace (a museum which charges an entry fee). These attractions were selected as emblematic attractions of the city. They have been rated by the tourists as the top 3 Venetian attractions, with average ratings above 4 stars in the three of them. Data were crawled during February 2020. In each comment we analysed the full text of the review and its sentiment as well as the expertise of the reviewer (years on TripAdvisor, total reviews made, badges, cities visited).

In this study we carried out an automatic sentiment analysis process using deep learning, a class of ML technique, applied to NLP (Deng, & You, 2014; Timoshenko and Hauser, 2019). We used software specifically developed for the hospitality industry. This is based on free open source tools available in OpeNER (https://www.opener-project.eu/project/), an NLP platform (García-Pablos et al., 2016), and deep learning open source tools. Following the application of the deep learning technique, we first identified which factors influenced numerical star ratings for extreme (1 and 5 stars) and neutral reviews (3 stars). In a second step, we carried out linear regressions to examine the inter-relationships between ratings and sentiments. We examined how

sentiment influenced consumers to interpret positive and negative UGC neutral online reviews (3 stars). Results show that the global polarity of sentiments exerts the highest impact on the score given to the review and some specific categories (i.e. polarity of sentiments about cultural aspects, polarity of sentiments about the place) have a bigger influence. The more positive words in the comment, the higher the score given to the comment. The more negative words in the comment, the less score is given to the comment and this negative correlation is higher than the positive one. Regarding each attraction, the regression analysis shows that apart from the global polarity of sentiments which is the most influential variable on the score given to the comment for the three of them, polarity of sentiments about the place is also influential for St. Mark's Square and the Doges's Palace while polarity of sentiments about environmental conditions is also influential in the case of Grand Canal. Additional variables under study are significant but with a minor impact. The expertise of the reviewer also impacts on the stars given to the comment, especially the number of reviews made, the number of photos posted, the number of badges have a positive relationship while the number of years in TripAdvisor is also significant but negative (i.e. the more years the less stars given).

3. Conclusions

This study proposes that extreme UGC only provides opportunities for consumers to process attraction-related information, whereas neutral UGC affects consumers' motivation to process positive and negative UGC. The present study makes two methodological contributions to the online consumer behaviour literature: (i) it explains the numerical star ratings of online reviews, combining sentiment analysis techniques and regression analysis of extreme and neutral reviews. (ii) it identifies, using deep learning, which components (environment, activities, price, and recommendations) of UGC reviews impact on extreme and neutral reviews. Our study can provide managers with a better understanding of user reviewing patterns and the sentiment of the online reviews, which are shown to be based on the nature of the attraction under consideration.

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Service Failures in Co-created, AI-powered Service Encounters: Exploring Customer Attribution of Responsibility

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Keywords: Artificial Intelligence, Chatbots, Customer Participation, Service Failure, Attribution of Responsibility, Tolerance, Co-production, Research Framework

1. Introduction

Technologies powered by Artificial Intelligence (AI) are rapidly changing service interactions. Customers are increasingly being required to interact with AI-powered applications, such as chatbots, to self-serve; representing instances of co-creation. Although the advantages of AI-powered chatbots are clear, their introduction within service production and delivery does not preclude service failure. Rather, services that rely on high levels of customer co-creation are more prone to failure because of the increase in the quantity and complexity of interactions between the customer and service provider (Hedrick, Beverland, & Minahan, 2007). The more actively customers co-create, the more dissatisfied they will be, should the service fail (Heidenreich, Wittkowski, Handrich, & Falk, 2015).

This paper draws on co-creation literature and attribution theory to explore customer responsibility attributions post service failure, a research area which has been largely overlooked in service literature to date. Specifically, we investigate responsibility attributions of service failures that are co-created in interactions between customers and chatbots.

2. Conceptual Development

Extant literature has predominantly viewed the value co-creation process as an active, conscious process of value creation between the customer and the service provider; for example, by exploring the co-creation of tourism services between customers and a travel agency (Grissemann & Stokburger-Sauer, 2012); or the active co-creation of heritage consumption experiences (Minkiewicz, Evans, & Bridson, 2014). However, the value co-creation process may not always be a conscious, explicitly considered process – value co-creation may be experienced in an unconscious manner (Grönroos, 2011).

When customers enter into a conversation with a chatbot, they might not always be aware and recognize that they are interacting with a robot. Robinson et al. (2020, p. 367) indeed coin the

term counterfeit service encounter to represent those instances where customers are unaware, or do not recognize that they are interacting with a non-human partner. As AI continues to become more humanlike, opportunities for such counterfeit service encounters will only increase, as service providers may choose not to disclose chatbot identity (Luo, Tong, Fang, & Qu, 2019). Furthermore, customers may not always have a choice as to whether to interact with a chatbot or a human frontline employee (FLE), representing instances of mandatory customer participation (Dong & Sivakumar, 2017; Tsai, Wu, & Huang, 2017).

We propose that the type of participation (mandatory vs voluntary) combined with the disclosure of the chatbot identity (clear vs disguised) creates three distinct types of co-creation settings: (1) conscious co-creation, when customers are aware that they are interacting with a chatbot, (2) coercive co-creation, when customers have no other option but to interact with the chatbot, and (3) unconscious co-creation, when customers believe that they are interacting with a human, but would be interacting with a chatbot instead.

We argue that these 3 types of co-creation settings (conscious, unconscious and coercive) impact customer responsibility attributions in cases of service failure, and investigate the customer's expectation levels as an important mediator in this relationship.

Before participating in interactions with a customer service representative, customers generally have a number of expectations in terms of the capabilities of such representatives. Such expectations can be formed through past experiences (Oliver, 2015), and in the case of AI, through media and the resulting hype (Kaplan & Haenlein, 2018) or through extensive anthropomorphic cues that lead customers to infer a mental model of humanlike intelligence (Knijnenburg & Willemsen, 2016). The three types of co-creation settings outlined above can influence expectations; for example expectations may be higher in cases of unconscious co-creation when customers believes that they are interacting with a human FLE, or in cases of coercive co-creation, when the customer has been offered the chatbot as the only solution to queries or problems.

When customers are faced with service failures, they will use information about the service failure to develop attributions of responsibility (Folkes, 1984). This process helps to arrive at causal explanations and make inferences for events, that will ultimately help customers to create an understanding of the future and obtain perceived control over that future (Weiner, 1985). Attribution theory proposes a classification system for customer attributions, that comprises: controllability, stability and locus (Weiner, 2000). We focus on the locus of causality and propose that co-creation settings, together with the resulting expectations, may shape those attributions, which in turn, influence future co-creation intentions.

A research framework based on the above discussions is proposed in Figure 1 below.

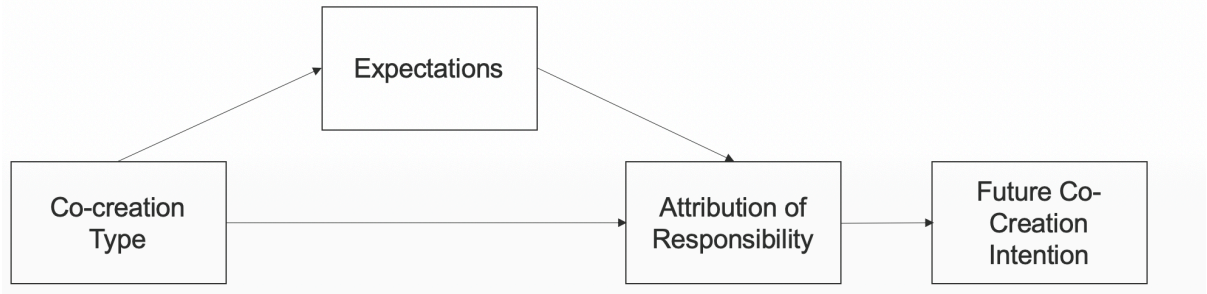

Figure 1. Research Framework

3. Proposed Experimental Research

We propose to employ experimental research to test the research framework (Figure 1) in a customer service setting. We plan to recruit participants through an online crowdsourcing marketplace, whereby each participant will be randomly assigned to four conditions: conscious co-creation, coercive co-creation, unconscious co-creation and human FLE co-creation (control group). Participants will be required to hold a scripted conversation with a chatbot (or human FLE in the case of the control group), with the intention of terminating a monthly subscription. All conversations will result in service failure (failure to terminate subscription). Expectations will be measured at the start of the interaction, so that participants can rate their expectations after perceiving the co-creation setting, but before learning what happens in the latter part of the interaction. Established measures from Sugathan, Ranjan, & Mulky (2017) will be used to measure the locus of causality (external attribution: service provider or chatbot; and internal attribution: customer).

4. Theoretical Implications

We envisage that the findings will offer a novel approach to understanding blame attributions and customer reactions to service failure, in settings in which failure is inevitable. Insights into coping behaviors are also important to achieve a more substantive understanding of the implications of AI technologies, and to find ways how to reduce harmful reactions to such technologies.

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Identifying Key Indicators for a Successful Implementation of Intelligent Personal Assistants in Marketing

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Keywords: Intelligent Personal Assistants; Marketing; Branding; AI; Smart Assistants; Voice Search

1. Purpose

Intelligent Personal Assistants (IPAs) have become a pervasive new element for brands to communicate with customers. IDC (2018), estimates that the smart speaker category will increase a 32% in market revenue by 2022.

IPAs, such as Alexa, Siri and Cortana, are software applications that communicate through voice with humans, embedded in home speakers, smartphones or other digital devices (Hoy, 2018). These software programs are made to assist consumers in their daily lives with answering their questions in natural language, executing commands and making recommendations (Lee & Choi, 2017). Thanks to the Natural Language Understander (NLU) in their software, IPAs are also conversational agents, as they are capable of understanding natural language, starting as well as keeping a dialog with answering and asking questions (Salam et al., 2018). To improve their skills and 'smartness', IPAs constantly collect user data and use reinforcement learning (Marsland, 2015).

IPAs are expected to become a key element in the new field of voice communication for brands. Not only are the consumers embracing the new technology, but it can also help marketers to reach the customer at the right moment in the right place. Voice apps, created by brands, allow consumers to interact with brands more easily, which will again increase the value of IPAs. The brand will be able to communicate with their customers in their homes exactly when the customer is looking for them. Through this, businesses are capable of placing their brand into the consumers' homes (Smith, 2018). If brands embrace this new channel, it can help to find out insights about their customers' purchase intentions and preferences. Overall, IPAs can make it easier for consumers and brands to connect, and ease the way to communication.

Despite the potential advantages that IPAs may offer to brand communication and experience, there is still a lack of understanding regarding which aspects are critical in order to compete in the voice communication space. As stated by Dawar (2018), in the future only a few of those AI-platforms will be dominating the market for IPA's, being connected to other smart devices of the consumer.

Consequently, it is key to understand better the potential of these kinds of devices as well as what are the key success indicators that may determine voice communication strategies for brands. The objective of this research is to offer an overview on how IPAs are disrupting the market and to identify which aspects regarding the IPAs a brand should take into consideration for a successful implementation of a voice strategy.

Design/methodology/approach

We undertook a systematic literature review as it is an adequate method to find and structure the variables that determine whether or not companies will adapt IPAs successfully. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist was used in order to ensure a qualitatively high and scientific systematic literature review (Moher et al., 2009; Reyes-Menendez et al. 2019). Thus, we were able to identify and process systematically the most relevant and high-quality papers to include in the in-depth analysis.

Search terms used were based on two principal areas: (1) IPAs and AI in Marketing and (2) Brand Communication. The databases used were OECD iLibrary, ScienceDirect and EBSCO Host. To find only relevant papers, solely the filters for academic journals, dissertations and studies were applied. A time filter for search terms that included the word "personal assistant" was also used, as in the 1990s and early 2000s personal assistants existed in the business world but had little to do with the intelligent personal assistants. To avoid confusion, a time frame from 2013 onwards was used.

In the 1st phase, the total number of n=1142 papers were sampled. In step two, after having carefully read the abstracts and assessed the fit to this research topic, 1068 articles were excluded. Leaving a number of n=74 potentially adequate research paper for an in-depth analysis of the full text. After that further articles were eliminated due to one (or more of the following reasons): Not fitting search terms, no relation with the research topic, no quality evaluation or missing description and specification of terms used. Leaving the number of included research papers to n=53.

2. Findings

The conducted systematic literature review is a useful method to identify variables that can later be used and applied for further analysis of IPAs and its connection to brands and their marketing strategy. We identified two distinctive categories of indicators (quantitative and qualitative) that have been analyzed in previous literature and are relevant to advance knowledge in the area of IPAs and marketing.

It is also worth to mention that, regarding what the focus would be for brands to communicate through IPAs, there is no consensus in the gathered findings. While some authors suggest that hedonic aspects such as fun and entertainment are more important in communicating through IPAs (Yang and Lee, 2018), other contributions posit that users use of IPAs indicate that a more utilitarian focus on convenience is more fitted (Kaczorowska-Spychalska, 2018).

3. Implications

Regarding the implications for practitioners, the conducted research and literature review show that IPAs are already disrupting the marketing and commerce industry as they are adopted

quickly by consumers. They can be an excellent tool to build and keep a strong brand: as established before, successful brands have a close relationship with their customers and a distinct personality (West et al., 2018). Both of these factors can be enhanced with the use of an IPA.

Implications for researchers involve the need to test exploratory results in order to quantify them and develop consensus about IPAs as part of a marketing strategy.

To conclude, the IPA market has been continuously growing and shaping the development of marketing, branding and online commerce. Thus, entering the market with a thoroughly thought IPA strategy within the scope of the brand's possibilities and the above-mentioned success factors, can help the company preserve, build up or improve their branding and customer relationship to still be relevant in the future.

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A Study on the Social Presence of Anthropomorphized Chatbots

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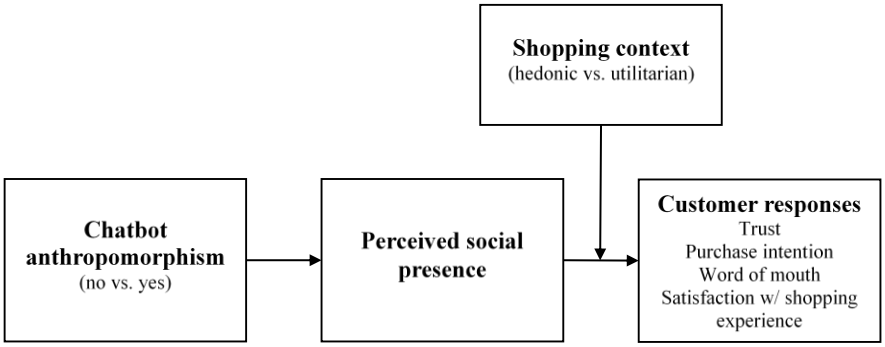
Keywords: Chatbots; anthropomorphism; social presence; digital marketing

More and more companies use chatbots instead of human employees as a more time and cost efficient way to interact with customers on company websites or via messenger apps (Kannan and Bernoff, 2019). Chatbots are digital assistants that interact with customers based on artificial intelligence in a conversation via text input (Araujo, 2018). The design of a chatbot can impact the customer experience during an interaction (Huang and Rust, 2018). For example, chatbots can be equipped with human-like characteristics.

Imbuing non-human entities "with human-like characteristics, motivations, intentions and emotions" is defined as anthropomorphism (Epley *et al*., 2007, p. 864). While prior research has generated some understanding of the effectiveness of product and brand anthropomorphism, there is a lack of research on chatbot anthropomorphism. In contrast to brands and products, chatbots are characterized by high levels of interactivity, perceived bi-directionality, and responsiveness of communication (Yadav and Varadarajan, 2005). Even if no other real person is present, human-like attributes might spark feelings of social presence (Van Doorn *et al*., 2017). Social presence refers to an individual's subjective perception that another person or entity is present (Biocca, 1997).

The present research proposes that chatbot anthropomorphism positively influences customers' perceived social presence in customer-chatbot interactions. Social presence, in turn, is assumed to positively influence customer-related outcomes, hence, mediating the effect of chatbot anthropomorphism on customer-related outcomes. Furthermore, this research explores whether the effect of social presence on customer-related outcomes is contingent on whether customers have a hedonic or utilitarian shopping motivation. The research model is depicted in Figure 1.

Figure 1: Research Model



The present research comprises two individual studies. Study 1 is a 2 (chatbot anthropomorphism: no vs. yes) x 1 between-subjects experiment in the context of online wine shopping with 275 individuals from a commercial consumer panel. First, all participants read an introduction of the chatbot. In line with prior research (e.g., Aggarwal and McGill, 2007), anthropomorphism was manipulated by using first ("I", "me") vs. third person ("the winebot") descriptions in the chatbot introduction. Subsequently, participants saw an interaction with the chatbot in the form of screenshots and answered questions regarding trust, purchase intention, perceived social presence, prior knowledge about chatbots, and their individual tendency to anthropomorphize. Accounting for the control variables individual tendency to anthropomorphize and previous chatbot interaction, two mediation analyses (Preacher and Hayes, 2004) with the outcome variables trust and purchase intention provide evidence for a full mediation (Zhao *et al*., 2010). The results indicate that chatbot anthropomorphism positively influences trust and purchase intention. Social presence fully mediates the relationship between chatbot anthropomorphism and trust, respectively purchase intention.

Study 2 is a 2 (chatbot anthropomorphism: no vs. yes) x 2 (shopping context: utilitarian vs. hedonic) between-subjects experiment with 247 individuals from a commercial consumer panel. Participants in the utilitarian shopping context were instructed to shop for a human resource controlling book for work purposes while participants in the hedonic shopping context were instructed to shop for a thriller for personal pleasure. The following procedure was akin to the one in Study 1. We included two additional customer-related outcomes: word of mouth and satisfaction with the shopping experience. Again accounting for the two control variables, we conducted mediation analyses and moderated mediation analyses (Preacher and Hayes, 2004) for the four outcome variables trust, purchase intention, word of mouth, and satisfaction with the shopping experience. All analyses yielded the same pattern of results. First, the total effects of chatbot anthropomorphism on the outcome variables are significant and turn non-significant when social presence is added to the equation as a mediator. Second, the indirect effects of chatbot anthropomorphism on the respective customer-related outcomes via social presence are positive and significant. Third, the analyses indicate no significant differences between the effectiveness of chatbot anthropomorphism in utilitarian versus hedonic shopping contexts. The results of Study 2 validate the findings of Study 1 by replicating the same pattern of results for additional customer-related outcomes, i.e., word of mouth and satisfaction with the shopping experience. Interestingly, the results do not provide any evidence for a moderation by shopping

context. Hence, the positive effect of chatbot anthropomorphism on customer-related outcomes is robust and does not seem to be contingent on a hedonic versus a utilitarian shopping context.

Our research contributes to the literature on anthropomorphism, social presence, and chatbots. Previous research on anthropomorphism mainly focused on brands and products. We extend this research to the context of chatbots and provide evidence for a variety of important customer-related outcomes in customer-chatbot interactions significantly influenced by chatbot anthropomorphism. Furthermore, we add to the literature on antecedents and consequences of social presence by demonstrating that social presence plays a key role in the context of chatbot anthropomorphism. We propose, test, and validate chatbot anthropomorphism as an antecedent of social presence and find that a first versus third person introduction of a chatbot directly influences consumers' perceived social presence of chatbots. Additionally, we extend prior research by showing that social presence of chatbots positively influences customers' trust, purchase intention, word of mouth, and satisfaction with the shopping experience. In doing so, we highlight the relevance of social presence in customer-chatbot interactions. Most importantly, our work identifies social presence as the underlying mechanism that drives the effectiveness of chatbot anthropomorphism. Finally, we add to the emerging literature on chatbots by providing important recommendations for their effective design. We provide evidence that subtle human-like linguistic cues, such as using first vs. third person description, are sufficient to increase the perceived degree of humanness of chatbots.

Our findings allow companies to better understand the drivers of chatbot effectiveness and help marketers to adequately design their chatbots. By anthropomorphizing chatbots, marketers can positively impact customer-related outcomes. In order to profit from the positive effects of chatbots, practitioners should include expert knowledge for their design and the inclusion of human-like cues. Prototypes of anthropomorphized chatbots should be tested by surveying potential customers to ensure that the chatbots are perceived as socially present. In doing so, marketers can use chatbot anthropomorphism to drive sales volume and profit.

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A dimensional approach in the use of voiced virtual assistants

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Abstract

Some sci-fi movies and modern literature have fantasize about the idea of establishing personal relationships between humans and robots, using several techniques to humanize the last ones. Nowadays, the use of virtual personal assistants (VPA) has increased and brought to life that idea. The extended use of VPA has been possible thanks to smartphones, intelligent speakers and some websites that include them. In business environments, these VPAs help the user in their buying process, solving doubts and answering question regarding transactions.

As most classical and anthropological theories support, these VPAs are based and constructed around a human look and aesthetic, using human facial characteristics or clothes, among others props. However, classical theories do not include cognitive or affective architectures in their configuration and they do not take into account the transmission of emotions during the shopping process, besides the projection of a certain look.

Following the trend of using anthropomorphic clues, this WIP study proposes the adoption of a controlled voice system (simulating a VPA) to measure what type of emotions users may feel and how this sensation can influence virtual shopping intention when certain acoustic variables are modified. The measurement of these emotions will follow a dimensional approach, allowing the representation of a larger range of emotions, and not limiting the understanding of a certain situation to a dichotomic answer but to an infinite spectrum where emotions can adopt numerical values over different dimensions.

The methodology proposed in this study includes the modification of several acoustic variables and characteristics in VPAs that may affect the transmission of different emotions. These modified VPAs will be used in different simulated virtual shopping scenarios, where emotions and purchase intention will be measured in order to understand the relationship between acoustic characteristics, emotions and VPAs.

Opportunities of natural computing for tourism studies: the case of an artificial immune system to rethink the resident-tourist relation in local destinations

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Keywords: Natural computing, computational social science, tourism, artificial immune system

1. Introduction

Computational social science (CSS) is a consolidated field of study that seeks to nurture our understanding of real-life social systems and processes, by building artificial computational worlds that we can feed with data, engineer, scrutinize, and test against empirical data (Conte et al., 2012; Gilbert, 2007). As Figure 1 shows, CSS involves a new kind of scientific inquiry process that starts from a representation (model) of a social system as an information-processing organization, from which a new type of data made available through information and communications technology (ICT) applications is used to simulate social phenomena (Cioffi-Revilla, 2010).

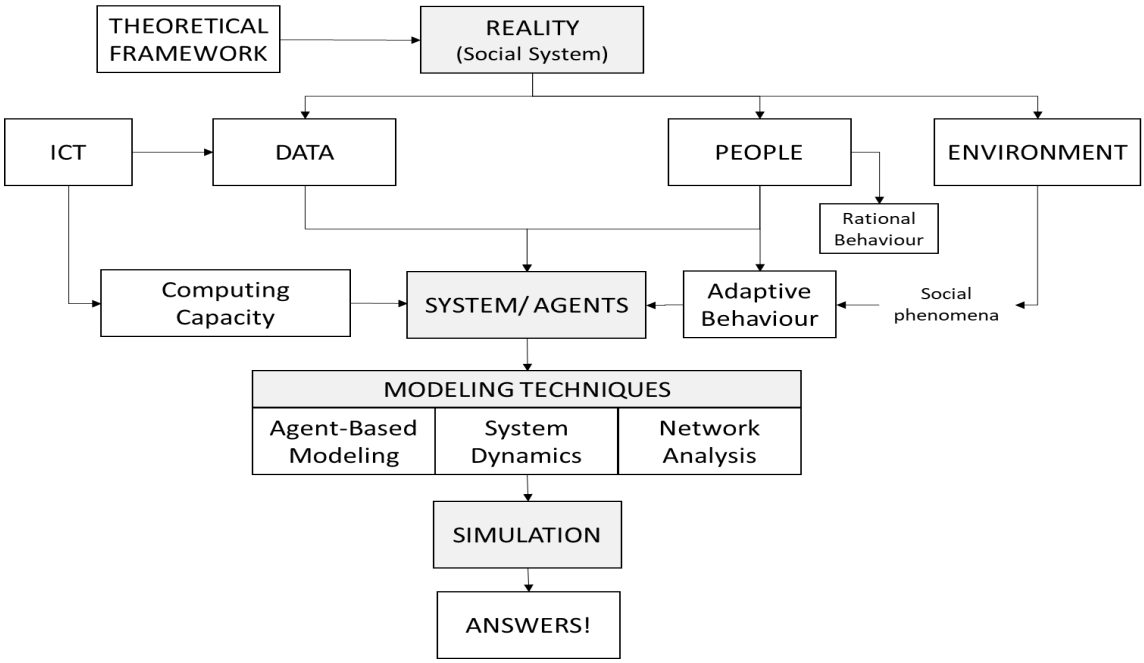

Figure 1. The computational social science workflow (own elaboration)

CSS and its methods has grown to the point of being recognized as a third way of doing science and expressing theories, in contrast with the two "standard" scientific inquiry methods: deduction and induction (Axelrod, 2005; Conte et al., 2012; Gilbert, 1999; Hummon & Fararo, 1995). Among the most recent and noteworthy tools used by CSS are those based on system dynamics (SD) and Agent-Based Modeling (ABM).

SD provides new understanding by drawing inferences from complex social system dynamics that is specified by a set of state variables (stocks) and their associated rates of change (flows). ABM specifically focuses on the entities that form a real socio-economic system (e.g. individuals, people, institutions, and societies), as well as their relations within the system. These entities, called agents, are then modelled as computational objects that encompass autonomous dynamics and traits that allow them to interact with a preset degree of freedom to adapt to a changing environment (Borrill & Tesfatsion, 2010).

The authors suggest that a third set of computational techniques, inspired by the fusion of ideas from nature and computation, known as natural computing (NC) (de Castro, 2007), can provide substantial benefits to problem-solving performance on real world social problems and, more specifically, in the field of tourism studies. Although NC came onto the scene in the mid-1940s, its application to the social sciences is still in its infancy. In our case, we are particularly interested in determining what NC tools can really help develop new problem-solving approaches in social systems, and what requirements would be needed. A preliminary summary draft of a use case aimed at understanding, modeling, and simulating the resident-tourist relation in tourism local destinations is presented, using an artificial immune system as a framework of reference.

2. Research Problem

Understanding the resident-tourist relationship (RTR) is key for assessing the positive and negative impacts of tourism in destinations worldwide, a problem with significant socioeconomic implications for local communities around the world. In fact, trying to comprehend the intricacies of RTR has long been a hot topic in the tourism scholars' community, who have produced an extensive body of theories, case studies, and qualitative approaches to this respect.

Among the most widely accepted RTR approaches are those based on the social exchange theory (Emerson, 1976), the limits of acceptable change (LAC) theory (Stankey et al., 1985), and the carrying capacity theory (Marsiglio, 2017). All of them have provided significant insights into the physical, psycho-social, and economic dimensions of tourism impacts (Nunkoo & Ramkissoon, 2012). However, the quest for a conclusive set of variables and indicators that determine RTR remains elusive, and difficulties often arise even when an objective description of RTR is intended.

While still recognizing the relevance of the above theories, it becomes evident that there is a lack of a sound methodological approach with the ability to fit the variety of practical evidence gathered in the last years. Furthermore, a comprehensive approach to RTR should be able to articulate a model that could be fed with data, manipulated and tested, in order to reliably inform policy decisions through simulations.

3. Methodology and Discussion

Our ongoing work is based on the idea of RTR as a complex adaptive system (RTR- CAS). As such, RTR is not defined following the deterministic behavior of the residents and tourists alone, or by adding them up in a cause-and-effect (linear) manner. Instead, RTR-CAS is the result of the self-organizing phenomena and emergent properties arising from a large network of interactions among the many components that make up the tourist destination system (e.g. residents, tourists, stakeholders, the environment). Consequently, under our perspective, RTR is fundamentally characterized by the variability of behaviors within and between many interacting and heterogeneous individuals, and the external and internal factors influencing them.

Unfortunately, there is no standard way to theorize over emergent phenomena and model non-linear interactions among individuals. At this point, we resort to the natural computing paradigm and, more specifically, to Artificial Immune Systems (AIS). AIS are based on the assumption that the natural immunological principles resemble a highly decentralized multi-agent information processing system (Dasgupta, 1998; Rocha et al., 2019), which could (metaphorically) help us develop a "recognition and response" resident-tourist adaptive decision support model.

Our proposed AIS approach to RTR is grounded in the Danger Zone theory (DZT) (Aickelin & Cayzer, 2016; Fuchs & Matzinger, 2018; Matzinger, 2002), a new perspective within the natural immunological theory according to which a natural immune system will respond to the danger posed by foreign threats when distress signals are sent out by infected cells. Stress/danger signals would then set up a danger zone around the infected cells that would stimulate antibodies that match antigens, thus triggering a self-defense process that we can recreate and measure artificially through modeling and simulation. Table 1 shows some metaphorical constructs that emanate from natural immune systems and constitutes the basis of our RTR-AIS model.

Natural DZT	RTR AIS
Natural immune system	Local tourism destination
Foreign threats	Incoming tourists
Distress signals	Overtourism/Carrying capacity signals
Infected cells	Residents, Stakeholders
Danger zone	Limits of acceptable change (LAC)
Antibodies	Corrective actions
Antigens	Tourists' negative effects

Table 1. Relations between natural DZT system and RTR-AIS approach

At this moment, our RTR-AIS prototype model is being designed using UML, and MATLAB for coding under the object-oriented programming paradigm. Currently available data extracted from case studies from the literature built around LAC, carrying capacity, and social exchange theories, are being used to trigger danger signals and activate detectors that lead to different resident-tourists reaction scenarios that we will be able to simulate and measure.

Preliminary conclusions show that our RTR-AIS approach can be a plausible theoretical-practical approach to further advance in assessing tourism impacts, predicting its negative impacts before they become serious, and for enhancing real-life policy decision-making processes.

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How the Mind Perception of Artificial Intelligence in Smart Devices Affects Customer-Brand Relationships

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Keywords: Artificial Intelligence; Mind Perception; Smart Devices; AA Theory

Extended Abstract

Artificial Intelligence (AI) has grown from an established science with active research focused on improving its techniques and algorithms to being embedded in our daily lives. In 2022, the investment on AI systems is expected to reach a total of $77.6 billion (IDC, 2019) and today, there are many examples of AI systems being embedded in self-driving cars, surveillance cameras and in voice-assistant smart devices. Despite the concerns regarding data privacy, consumers value the benefits of an integrated smart society that reduces the effort of repetitive tasks and increases convenience and performance (TechCrunch, 2019).

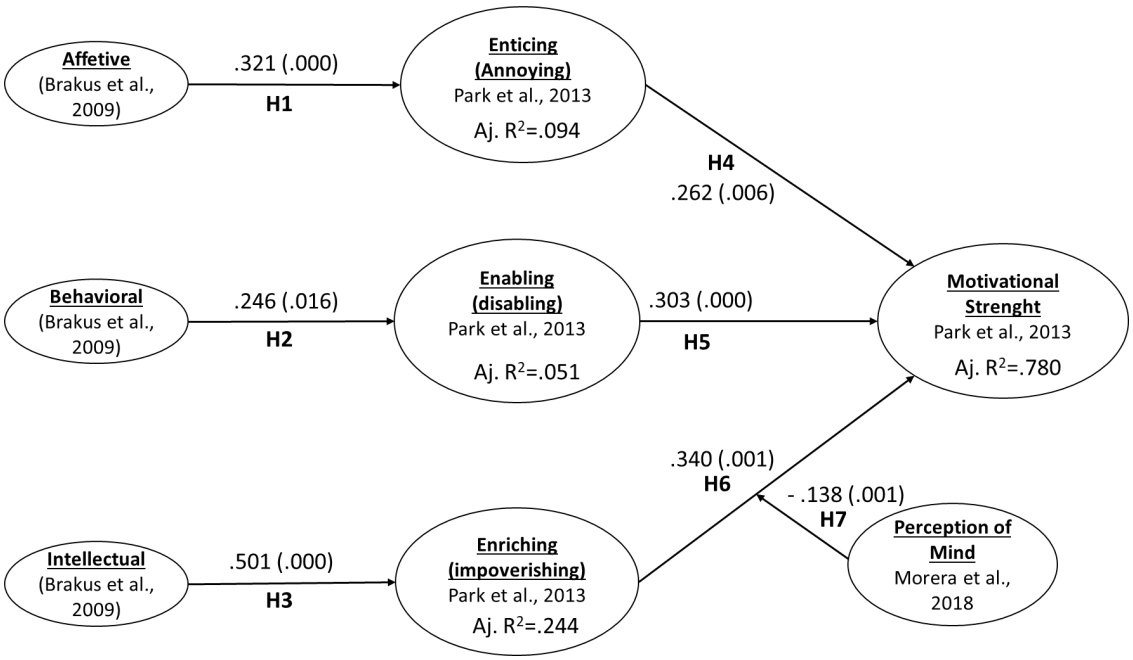
The current paper explores the role of mind perception in establishing customer-brand relationships using artificial intelligence enabled-devices. As smart devices powered by AI become more information aware, they also gain the ability to recommend and sometimes even make decisions (e.g. deciding the next best music to play on Spotify). Such intelligence, driven from customer-data, may sometimes suggest that the AI agent has a mind of its own. Mind perception refers to the ability of decision making and organizing behaviors (agency dimension) and the ability to feel emotions and display personality (experience dimension) (Morera et al., 2018). In order to understand the role of mind perception in customer-brand relations, the current paper is grounded on the attachment-aversion (AA) theory (Park, 2013; Schmitt, 2013). The AA theory suggests that moods and emotions (affective dimension), actions and interactive experiences (behavioral dimension) and convergent/analytical thinking and divergent/imaginative thinking about a brand (intellectual dimension) – the marketing determinants - may influence if a brand entices/annoys the self, enables/disables the self, or enriches/impoverishes the self – the psychological determinants (Schmitt, 2013). Such determinants are then suggested to have a role in explaining attachment-aversion relationships and motivational strength (approach, avoidance and enhancement). Following the AA theory, we suggest that experiences between consumers and the AI agents in the smart devices positively entices the self – an experiential (hedonic) benefit which refers to how appealing and attractive the AI agent embedded in the smart device is to the consumer (**H1**), positively enables the self – a functional benefit which refers to the extent

to which the AI agent embedded in the smart device satisfies the needs of the consumer and helps the consumer to manage daily activities (**H2**) and positively enriches the self – a symbolic benefit which measures the extent to which the smart device expresses, represents or reinforces the consumer values (**H3**). We also suggest that as consumers are more enabled (**H4**), enticed (**H5**) or enriched (**H6**) due to the experiences with the AI-enabled smart devices, they feel a higher level of attachment towards the brand and therefore, a higher level of motivational strength (higher approach, maintenance and enhancement). Yet, given that smart devices mind perception may reduce the consumers' sense of control over their own actions, we suggest that smart devices perceived as having a higher degree of mind perception will reduce the link between enriching and motivational strength (**H7**).

An online survey was conducted focusing on both US and Indian consumers via the Amazon Mechanical Turk (MTurk). The scales to measure the constructs were adapted from past research (see Figure 1). A total of 99 consumers that own and use a smart device for at least a month, participated in the study. 49 participants are from India and 51 participants from the US and have an average age of 39.9 years old.

A reflective PLS-SEM model was estimated with all outer loadings equal or above 0.7 and reliability measures confirming to the standards with all composite reliability scores above 0.7 and AVE above 0.5 (Hair et al., 2010). There were also no multicollinearity effects.

Figure 1 shows the conceptual model and results of the PLS-SEM.



Results show that all the hypothesis are supported. The affective dimension of the smart device experience is positively related to enticing (β=.321, $p < .01$), the behavior dimension of the experience positively enables consumers (β=.246, $p < .05$) and the intellectual experience has a positive relationship with enriching consumers (β=.501, $p < .01$). Also, results show that enticing, enabling and enriching explain 78.0% of motivational strength and are all significant and positively related to such construct. The study also shows that perception of mind of artificial

intelligence in smart devices has a negative moderation on the relationship between enriching and motivational strength. Therefore, as perception of mind increases, the effect of enriching the self in motivational strength to continue the relation is lower.

The current paper makes some key contributions. First, we empirically test the validity of the AA theory of customer-brand relationships using artificial intelligence enabled-devices. Second, we show how the impact of psychological determinants on motivational strength is moderated by mind perception of the AI agents. Such findings may present valuable insights for managers that want to design AI systems to interact with their consumers in the future.

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"Find a flight for me Oscar!" Exploring what makes a motivational customer experience with chatbots

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Keywords: chatbot customer experience, artificial intelligence interaction, self-determination theory, assemblage theory, multimethod.

Extended Abstract

The continuous developments of Artificial Intelligence (AI) are forcing service companies to carefully understand how to create technological touchpoints that offer high experiential value for customers. One emerging AI implementation that service organizations are applying in their relationship with customers is the so-called chatbot assistance. Prior literature in marketing indicates that chatbot based on AI technology has to be oriented to offering convenient, personal, and unique support. However, empirical evidence remains relatively scarce on how customers interpret and develop their experiential interactions with chatbots implemented by tourism service companies. Drawing on theoretical discussions about the customer experience, self-determination theory, and consumer-AI assemblage, in our study we aim to develop a framework to understand the customer interaction process with chatbots—in particular, when individuals are searching for information about airlines' services.

In this vein, we theoretically pose that chatbot experience, attachment strength, and customer attitude toward the chatbot constitute the main drivers of customers' satisfaction with the chatbot service assistance. Chatbot experience directly influences attachment strength, and both chatbot experience and attachment strength have a direct effect on customers' attitudes and satisfaction with the chatbot. Methodologically, we employ a multimethod approach that includes three studies in a preliminary stage with North American consumers. Two of those studies are qualitative and use the online photo-elicitation technique in combination with the grounded theory approach. The qualitative studies aim to understand customers' beliefs, opinions, and ideas about interacting with an airline's chatbot when planning a flight. The third study includes a real interactive experience with an airline's chatbot and a post-experience survey.

Across the three studies conducted, we first analyzed individuals' expressive roles while interacting with a chatbot. Then, we evaluated the influence of the chatbot experience on attachment strength, as well as the effect of the chatbot experience and attachment strength on customers' attitude and satisfaction with the chatbot. In this regard, five dimensions of the

chatbot customer experience (sensory, affective, interactive, social presence, and intellectual) and three dimensions of the customer attachment strength with the chatbot (autonomy, relatedness, and competence) were observed qualitatively and validated quantitatively in a preliminary stage. Through a causal–predictive model, findings confirm the direct effect of the chatbot experience on attachment strength, the direct effects of chatbot experience and attachment strength on customers' attitude and satisfaction with the chatbot, and the mediator role of attachment strength and attitude toward the chatbot in the relationship between chatbot experience and satisfaction.

In addition, a multigroup analysis confirms significant differences in the causal–predictive model depending on consumers' level of adoption of chatbots (high/low) when interacting with service organizations. The direct effects of chatbot experience on attachment strength as well as on attitude toward the chatbot are significantly greater for high chatbot assistance adopters compared to low chatbot assistance adopters. Hence, the chatbot experience constitutes the main driver of the attitude toward the chatbot for high adopters. In contrast, attachment strength emerges as the main driver of the attitude toward the chatbot for low adopters.

The results thus provide airline managers with clear strategic guidance on which components, at the experiential and motivational level, are critical for consumers while interacting with chatbots, and consequently, how to build motivational chatbot experiences. Theoretically, we contributed to the tourism literature through an approach that reflects on current marketing theoretical debates about the customer experience, self-determination theory, and consumer-AI assemblage. Methodologically, we base our empirical contribution in a triangulation that combines metaphorical and real experience scenarios to understand the formation of chatbot customer experiences and its causal-predictive consequences on attachment strength, attitude, and satisfaction with the chatbot.

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Relationships between tourists and intelligent virtual assistants: promoting the love ties

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Keywords: intelligent virtual assistant; tourism; attachment; perceived value; love; loyalty.

Extended Abstract

The present working paper intends to explore how tourists and intelligent virtual assistants may relate to each other in order to create love ties. The following research objectives will be pursued: (i) exploring attachment and perceived value as antecedents of love toward the intelligent virtual assistants, (ii) understanding loyalty intentions as outcomes of love toward the intelligent virtual assistants.

In this study, attachment represents that a tourist will feel close to an intelligent virtual assistant when the virtual assistant is perceived as a means for self-expansion (Loureiro, 2015). This attachment involves a bond, cognitive and emotional connection between the intelligent virtual assistant and the self (Chaplin & John 2005; Japutra, 2020).

The connection between virtual assistant and the self is a core aspect of attachment. Tourists may develop a sense of oneness with the virtual assistant (Thomson et al., 2005), in a way, they might develop comfort from brand–self proximity but also anxiety from brand–self separation. Positive feelings and memories about the virtual assistant combined with the virtual assistant-related thoughts result in the aggregate of the prominence of the intelligent virtual assistant within the tourists' life (Park et al., 2010). In order to get a better understanding of the interactions between tourists and intelligent virtual assistants and achieve the research aims, this study examines the following relationships.

First, Ahuvia (2005) suggests that consumers can have real feelings of love toward an object (such as the intelligent virtual assistant). These positive feelings and attitudes are representing the love that a tourist may develop with the virtual assistant. If tourists develop a strong attachment toward the virtual assistant, they might end up developing a love relationship. Relational love includes multiple cognitions, emotions, and behaviors, which individuals organize into a mental prototype (Batra et al., 2012; Kaufmann et al., 2016). We propose that the

attachment ties between the intelligent virtual assistant and the tourists are associated to the relational love that the tourist have toward the virtual assistant.

Second, several definitions of perceived value have been considered within the literature (e.g., Zeithaml, 1988; Sweeney & Soutar, 2001; Sánchez-Fernández & Iniesta-Bonillo, 2007). One of the most cited definition of perceived value is proposed by Zeithaml (1988, p. 14), which refers to the "consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given". Values may also be considered as believes. As Solomon et al. (2006, p. 113) claim that "a value can be defined as a belief about some desirable end-state that transcends specific situations and guides selection of behavior". Beliefs are regarded as determinants of attitudes and behaviors (Loureiro & de Araújo, 2014). Therefore, we may infer that values may influence the relational love between tourists and the intelligent virtual assistant.

Third, brand love has been proved to be a strong driver of loyalty (Batra et al., 2012). This relational love is about passion-driven behaviors (e.g., the desire to use, willingness to invest resources, the involvement), self-brand integration (e.g., the self-identification with the intelligent virtual assistant and the frequent thoughts), positive emotional connection, the relationship established and the anticipated separation distress. All of these continuous love relationships with the intelligent virtual assistant lead tourists to recommend the virtual assistant to others, while keep choosing and using the virtual assistant (loyalty intentions) (Johnson et al., 2006).

The data was collected through an online survey to test the proposed relationships. In total, we collected 124 responses from participants who frequently use intelligent virtual assistant for the purpose of tourism issues. The scales were adapted from previous studies. Among those participants, 44% of them were female, where the average age was in the range of 20 to 40 years old, and most of them have obtained graduate education

Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach was employed to analyze the data. First, the measurement model was built to analyze the reliability and validity of the measures. Next, the discriminant validity was also verified by analyzing the HTMT ratio scores. The second order level weights were also significant and there were no multicollinearity effects. Lastly, the hypotheses test shows that all of the proposed relationships are supported.

The findings seem to point out that the attachment process is very effective in developing the love toward the intelligent virtual assistant. Yet, tourists' values and believes also help with the development of the relational love toward the intelligent virtual assistant. The findings also show that loyalty toward a certain intelligent virtual assistant will be possible when tourists develop a love relationship with it.

The current study will put forward several valuable insights about the relationship between tourists and intelligent virtual assistants. These findings will also provide insights for those who are designing AI systems. These results are preliminary findings since we are in the process of collecting more data and further developing the model.

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Willingness to disclose personal data online: not just a situational issue

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Numerous online activities require disclosure of at least some personal data. Depending on situation, this might include just minimal information (like name, address, e-mail address) or rather extensive set of information, often amended with request for tracking online activities or geographical location (Joinson & Paine, 2007; Wang, et al, 2016; Skatova, et al, 2019). In some cases, providing requested information is 'a must', since otherwise the objective (online transaction or a digital service) can't be performed (Zimmer et al, 2010; Prince, 2018). In many other cases, the request for information/permissions is 'softer' and providing of the data largely depends on the willingness of a person to provide it (Mosteller & Poddar, 2017). Therefore there are very strong arguments to state that willingness to provide personal data is a situational (contextual) factor (Masur, 2019). This may go into deeper theoretical elaborations towards the commodity view of privacy (Kehr, et al, 2015), Privacy Calculus (Dinev, & Hart, 2006; Wang, et al, 2016) and even to Regulatory Focus Theory or Equity Theory. (Wirtz & Lwin, 2009; Barto, & Guzman, 2018).

However, personal characteristics also play a role in regards to the willingness to disclose personal data (Walrave & Heirman, 2012; Robinson, 2017). The objective of this study is to analyze how personal characteristics that are not situational, but dispositional variables, impact the willingness to disclose personal data. Awareness about the dispositional variables and their interactions would set the background for further analysis of the willingness to disclose personal data in numerous situational contexts.

First of all, willingness to disclose personal data itself may be seen not just as an intention that occurs in regards to a specific situation/context. It may also be considered as an attitudinal characteristic that reflects a level of an individual disposition to disclose personal data (Mothersbaugh et al, 2012; Bansal et al., 2016; Anic et al., 2018). Second, willingness to disclose personal data occurs in the interaction of other dispositional factors, many of which are linked with privacy (Liu et al., 2013). Additionally, a regulatory aspect of each person's privacy and awareness of practical steps are subjected to the Internet users' literacy and personal skills to ensure their data protection (Hoofnagle & Urban, 2014, Bandara, & Akter, 2017). GDPR implementation aims to give individuals even more control over how their personal data is processed, improve trust in the digital economy and harmonize privacy protection practices of the organizations (Van Ooijen & Vrabec, 2019).

Both the arguments from above are supported with the analysis of interaction among dispositional willingness to disclose personal data and its antecedents: disposition to value privacy, privacy awareness, perceived regulatory effectiveness and online privacy concern, on the basis of research model in which disposition to value privacy plays a major mediating role (figure 1).

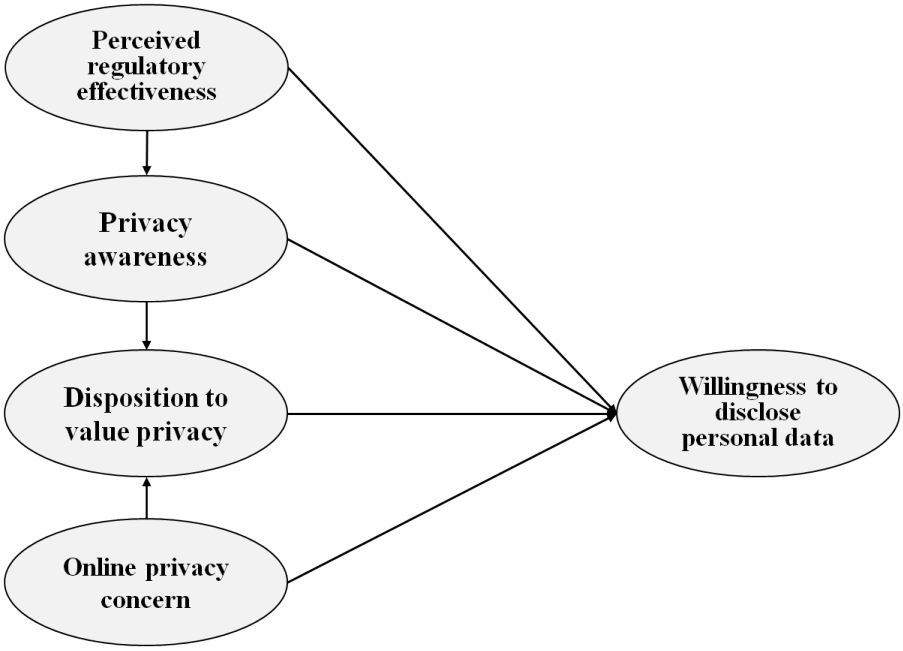

Figure 1. Research model

Empirical data from Lithuania was received by means of the internet survey that allowed obtaining 439 questionnaires. The survey used well tested scales that showed satisfactory reliability and validity in former studies. Disposition to value privacy was developed by Xu et al. (2008) and adapted by Xu et al. (2011), Li (2014). The perceived regulatory effectiveness scale was adapted from Lwin et al. (2007) with a minor alteration that includes GDPR as an example. The privacy awareness scale was taken from Xu et al. (2011). Online privacy concern has been assessed with the Internet Users Information Privacy Concerns scale by Malhotra et al. (2004). Willingness to disclose personal data was measured by a scale adopted from a 14-item "index" list from Robinson (2017). The original items' list was reduced from 17 to 11 items by removing entirely technical items that would not be known by general population. The scale was amended with 5 items on data is collected online automatically in line with the consent of a person.

Exploratory factor analysis (maximum likelihood; Promax rotation with Kaiser normalization) showed KMO=0.877, Bartlett's test (p=0.000), approx. Chi-square 7401.378 and df=496. Extracted factors explained 57.8% of the variance. The reliability of scales was satisfactory, ranging from 0. 746 to 0.901. Confirmatory factor analysis showed a good model fit: CMIN/DF=2.297; TLI rho^2=0.909; CFI=921; RMSEA=0.054. This allowed to test the hypotheses.

A causal model outlined two alternative ways how the analysed factors may impact willingness to disclose data: directly and via the mediation of disposition to value privacy. Additionally, privacy awareness mediated the relation between the perceived regulatory effectiveness and disposition to value privacy. The fit of the model was satisfactory: CMIN/DF=2.319; TLI rho^2=0.908; CFI=919; RMSEA=0.0554, which allowed to assess both direct and indirect effects. Analysis of the direct effects showed several significant relations (Table 1).

Table 1 Regression Weights

Impact			Estimate	S.E.	C.R.	P
Privacy awareness	←	Perceived regulatory effectiveness	0.342	0.070	4.868	***
Disposition to value privacy	←	Online privacy concern	0.515	0.074	6.977	***
Disposition to value privacy	←	Privacy awareness	0.425	0.053	8.021	***
Willingness to disclose personal data	←	Perceived regulatory effectiveness	0.116	0.072	1.625	0.104
Willingness to disclose personal data	←	Privacy awareness	0.100	0.065	1.542	0.123
Willingness to disclose personal data	←	Online privacy concern	-0.118	0.084	-1.403	0.161
Willingness to disclose personal data	←	Disposition to value privacy	-0.468	0.074	-6.357	***

These findings disclose that only the disposition to value privacy has a significant direct impact on willingness to disclose personal data. This impact is negative and strong (r=-0.468, sig=0.000). None of other tested factors have direct impact on willingness to disclose personal data, which shows the importance of the disposition to value privacy, which was not frequently seen in the analysis of this type.

The findings allow to see the mechanism how the tested factors influence willingness to disclose personal data: the influence of all of them is indirect, mediated by disposition to value privacy, but is noticeable (WTD ← Onl_Priv_Concern -0.163; WTD ← Perc_Reg_Effect -0.028; WTD ← Privacy_Awar -0.191). The analysis also shows a positive indirect (mediated by privacy awareness) influence of the perceived regulatory effectiveness on disposition to value privacy. This presents a scientific novelty in research on private data disclosure. In general, these findings add to the knowledge about the interaction of dispositional variables and their impact on willingness to disclose personal data.

Additionally, the study suggests further conceptualization of willingness to disclose personal data as a dispositional variable. The used scale for measuring willingness to disclose personal data (Robinson, 2017) included two types of data (provided by a person and collected online automatically). Though this study did not aim segregating these groups into sub-constructs, additional analysis showed the relevance of this idea. It seems that individually provided data additionally falls into two categories: the data that is provided as facts about the

personal parameters; and the data (addresses) of used social/communication engines (like Facebook, LinkedIn, Skype). This was additionally supported by CFA where errors of the similar data types were highly correlated. All this suggests that further conceptualization of dispositional willingness to provide personal data is needed. It should be assessed whether the construct of willingness to disclose personal data includes three sub-dimensions or even whether three separate constructs of different types of willingness to provide personal data online may be considered.

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Influencers' credibility in the age of fake news

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Keywords: influencers, credibility, social media, fake reviews.

Work in progress

Nowadays, social media and consumer review sites are widely used by consumers along their purchase journeys (Luca & Zervas, 2016). However, recently these platforms may seem quite "error-prone" or, in other words, unreliable and fake (Porlezza & Russ-Mohl, 2012). Fake news are a matter of concern for users; it is described as "the intentional control of information in a technologically mediated message to create a false belief in the receiver of the message" (Hancock, 2007, pp. 290). In the context of consumer behavior, this phenomenon takes place in fake reviews, which refer to any information written to promote a business by unethical means and to deliberately mislead readers in their purchase decisions (Gretzel, 2009). The credibility of these reviews is undermined when companies commit fraud, creating fake reviews for themselves or their competitors (Lappas et al., 2016). Despite the companies' commitment to combat fraud, the reality is different. As an example, around 15−30% all the reviews in e-commerce industry were identified as potentially fake (Luca & Zervas 2013, Belton 2015). Specifically, for electronics, as much as 61% of all reviews posted in Amazon could be fake (Sterling, 2018). Keeping their precise track is still problematic due to the absence of a common standard for qualifying them as fake, so a greater effort must be made in the future to address this problem.

Influencers are the opinion leaders of the present time. Their recommendations are highly valued by their followers, who tend to purchase or recommend their sponsored branded products (Rakuten, 2019). This has opened up a new channel for brands to connect with consumers more directly by collaborating with influencers to publicize their products (Jiménez-Castillo & Sánchez-Fernández, 2019). However, similar to consumer online reviews, users can doubt whether the review made by an influencer is real or fake (Boerman, 2020; Evans et al., 2017). In fact, it has been reported that influencers are performing certain unreliable actions (e.g. faking promotional campaigns, number of followers or engagement levels) that may cause negative consequences in their promotional campaigns (Fashionista, 2019)

Influencers' credibility, defined as the degree to which users perceive their recommendation as impartial, credible, true or factual (Hass, 1981), is essential to create true reviews when collaborating with brands. Previous research has analyzed the impact of

influencers' credibility on users' responses toward brands on influencer marketing campaigns (e.g. Lou & Yuan, 2019; Reinikainen et al., 2020). However, its effect on users' attitude and behavioral intentions toward the own influencer has been overlooked. Thus, this study analyzes how the credibility of the influencers is built from their marketing campaigns, and explores the consequences of their credibility in terms of users' attitudes and behavioral intentions toward them.

The credibility of the influencer is strengthened when there is a match between a given product/brand and this influencer (Breves et al., 2019). The reason for this higher credibility is that followers perceive that influencers are promoting a product they use in their routine, fitting their lifestyle and matching the content usually published by them (Casaló et al., 2018). Additionally, the existence of an influencer-product match can reduce followers' perceptions of being in front of a paid message when they receive influencer marketing campaigns (Sokolova & Kefi, 2020; Stubb & Colliander, 2019). This ad recognition may generate negative perceptions of the influencers' credibility (De Veirman & Hudders, 2020). As for attitude, it refers to the affective-evaluative inclination of users to act favorably or unfavorably toward a target or an object (Shaver, 1977). Users' attitude toward the influencer will be conditioned by their evaluations of the influencer's fit with the promoted product, and their perceptions of the influencer's credibility based on their previous experiences with him/her (Bergkvist et al., 2016; Stubb & Colliander, 2019). Additionally, being in front of a paid communication might negatively affect users' attitude toward the influencer. As for behavioral intentions, they are the most reliable signal of how users are going to behave (Ajzen, 1991). In this research, we focus on three key behaviors toward the influencer: the intention to follow the account, to imitate the influencer and to recommend the account. These behaviors are essential to foster the engagement and the successful development of an online community as their accounts (Blazevic et al., 2014). Previous research has noted that the credibility of an influencer is crucial to foster followers' behavioral intentions as purchasing the promoted products (Sokolova & Kefi, 2019). Therefore, influencers' credibility may positively affect behavioral intentions toward them. Finally, the influence of attitude on behavioral intentions has been widely settled in the literature (Theory of Reasoned Action; Fishbein & Ajzen, 1975), so the attitude toward the influencer can positively affect users' behavioral intentions toward him/her.

For testing the hypotheses, an online survey will be designed. We will count on the services of a market research company to distribute the questionnaire. A well-known influencer worldwide will be selected. Here, it should be noted that we will focus on an influencer (not a celebrity), so he/she should have been born on social media, making a name for themselves on these platforms (Schouten et al., 2019). During the online survey, the influencer will be presented wearing a congruent (the usual style in his/her photos uploaded to social media) or incongruent (different to his/her regular style) outfit. A pre-test will be performed to guarantee this manipulation. In addition, some control questions will be asked in the beginning of the survey to ensure that the participants previously know who this influencer is. Only when this criterion is met, they will be able to continue with the survey. After seeing the pictures of the influencer wearing the outfit, participants will answer the main variables of our study (scales previously used in the literature adapted to our context of study). The statistical software EQS 6.1. will be used to analyze the data and test the hypotheses. Our results will contribute to the literature about influencers' credibility, offering interesting implications for brand managers and influencers to obtain beneficial results in their collaborations.

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Webrooming: Way to Lower Risk and Increase Enjoyment

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Keywords: Webrooming, Need for Touch, Perceived Risk, Uncertainty Avoidance, Shopping Enjoyment, Attitude towards Behaviour.

1. Research Problem

Internet purchasing is getting sufficient amount of interest in scientific literature. There are even opinions, that traditional brick-and-mortar purchasing might be living not the best days of it's existence. Nevertheless, phenomenon, known as webrooming, is getting more and more attention in scientific and business research. Webrooming characterise a behaviour when initial information search is implemented online, but the actual purchase is being handled offline. So, is traditional purchasing behaviour going to extinct? Or it is just getting new forms?

This suggests that there exist particular reasons why, consumers are switching the channel during their purchase process. Online channel is known for it's ability to be extremely convenient but online and offline channels differ in their ability to provide information (Bell et al., 2017). It is agreed that product information accessible online may describe it quite comprehensively but there are some aspects of the product that cannot be recognised online. As such can be mentioned haptic feeling of the product. Moreover, product category involvement cannot be ignored. When consumer is more involved in particular product category (Daunt and Harris, 2017), they tend to invest more effort in order to get the best result possible. In addition, channel's ability to reduce various purchase related risks and uncertainties is of a great importance.

There is some evidence regarding factors that might have an impact on attitude formation towards webrooming behaviour, but the knowledge is rather scarce, lacking consistence and mutual understanding of the origin of the behaviour. In order to, contribute to existing scientific findings, in this article the main attention is paid to webrooming behaviour and how attitude towards it might be formed.

Finally, it is commonly agreed that positive attitude towards behaviour evolves to purchase intention which is the dependent variable in this research.

2. Literature and Methodology

The theoretical background on which this article is based, is theory explaining intention to behave. One, of the best known, ground theories in the field of consumer's behaviour is Theory

of Reasoned Action (TRA) proposed by Ajzen and Fishbein (1967; 1970). The foundation of this theory is supported by behavioural intentions which are mediating actual behaviour.

When speaking about webrooming behaviour, importance of technology cannot be ignored. Technology Acceptance Model (TAM) helps to understand the role of technology in forming attitude towards purchasing behaviour. The peculiarity of TAM is that it helps to understand both technological and behavioural aspects (Arora and Sahney, 2017) of webrooming behaviour.

Customer journey in multichannel environment gains a lot of attention and the level of interest in science is increasing. The growing complexity of multichannel environment forces retailers to face new challenges which they did not recognise earlier. Verhoef et al. (2007) revealed that 64 % of consumers choose internet as a search channel but only 13 % of them purchase online. This proves importance of webrooming.

Developed model covers relationships linking the attitude towards webrooming behaviour and the significance of factors influencing intention to webroom. Model assumes that the consumer intention to webroom in the multichannel environment is estimated by the attitude towards webrooming behaviour. The behaviour is built upon the search attitude regarding online channels and purchase attitude towards offline channels (Arora and Sahney, 2017). Both search attitude towards online channels and purchase attitude towards offline channels are impacted by the shopping enjoyment. Moreover, the relationship connecting purchase attitude offline and attitude towards webrooming behaviour will be influenced by the need for touch, perceived risk and uncertainty avoidance (Figure 1).

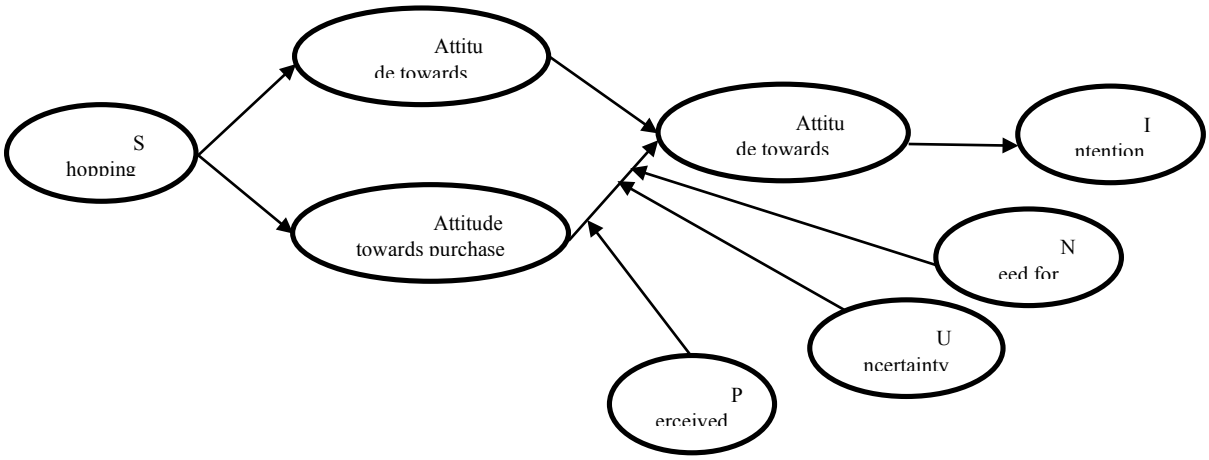

Figure 1. Research model

3. Discussion and Implications

The study conducted in Lithuania revealed similar results to Arora and Sahney (2017). It confirmed that when there is a positive attitude towards search online and positive attitude towards purchase offline, consumers tend to have a greater attitude towards webrooming behaviour which leads to actual intention to behave. Moreover, existing studies did not take into account risk related factors, influencing attitude towards webrooming behaviour, or it was done episodically. Therefore, this study contributes to the better understanding how the chosen factors

help to form the attitude towards webrooming. It is worth mentioning, that the main difference with previous studies is that uncertainty avoidance does not have an influence on relationship between attitude towards purchase offline and attitude towards webrooming. This disagrees with the results of study by Wu et al. (2015). What is more, previous studies often did not include shopping enjoyment as one of the factors in analysing webrooming behaviour. Research revealed that this factor plays an important role, especially when forming attitude towards purchase offline.

Additionally, to contribution to scientific research, this study also has some managerial implications. 3 conclusions can be drawn in order to facilitate business needs. First of all, consumers perceive purchasing as an enjoyable process, therefore, brick-and-mortar should be used in order to fulfil this need. Secondly, despite the fact, that online shopping is extremely convenient, but consumers still perceive it as quite risky process, therefore, business need to come up with solutions to reduce that fear. Finally, webrooming behaviour contributes to stakeholders in keeping consumer's in their channels rather than switching to competitors.

The main limitation of the study is that it is based on the responses from relatively small sample. Moreover, the greatest influence on intention to webroom is by attitude towards webrooming, while other factors has not so strong impact. This suggests, that webrooming behaviour is far more complex and more factors should be included in future research. Moreover, in this research model the impact of social norms and perceived behavioural control was ignored. Including these factors may reveal different results from the current ones. Also, it would allow to increase the scope of research (Fishbein and Ajzen, 1970). Despite of all the limitations, results are satisfactory and allow to draw certain conclusions about webrooming behaviour.

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Social media and value co-creation: the mediating role of motivations to co-create

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Keywords: social media; tourism; value co-creation; motivations; consumer participation

1. Research problem

Currently, social media are key platforms for companies by allowing them to obtain information on consumer preferences, explore daily trends or understand user behavior (Jiménez-Márquez et al., 2019). Especially in tourism, social media have become one of the most used sources of information by tourists and travelers when planning their trips (Hur et al., 2017; Martínez-Ruiz et al., 2018). These tools facilitate dynamic interactions between consumers and companies and between consumers themselves (Dolan et al., 2019) generating large amounts of data. For example, when consumers exchange opinions or ideas in a virtual community, these interactions generate data. Also, when consumers participate in co-creation processes, their actions are remembered as data and subsequently collected by companies for analysis (Xie et al., 2016).

Indeed, the development of technologies and social media have caused consumers to acquire the role of active collaborators (Hennig-Thurau et al., 2010) or value co-creators (Prahalad and Ramaswamy, 2004; Dolan et al., 2019). Through these platforms users can share, but also co-create their experiences online (Shaw et al., 2011; Grissemann and Stokburger-Sauer, 2012), constituting an important source of information for companies due to the high volume of data that is generated (Xie et al., 2016).

2. Literature Review

The co-creation of value is considered a top priority research topic in marketing (MIS, 2018) and is receiving wide interest due to its strategic use in both theoretical and practical studies (Ehrenthal, 2012). However, in the context of the tourism sector, most of the research has focused on analyzing the ways in which technology can foster co-creation (Cabiddu et al., 2013) and how it should be managed (Park and Allen, 2013, Shaw et al., 2011). Because of this, and despite the relevance that co-creation has acquired in the field of tourism, there is a gap in research on consumer participation as a mediating and moderating variable in the process of co-

creation of value (Prebensen, Chen and Uysal, 2018). Indeed, little is known about why consumers participate in valuable activities with companies and what factors encourage them to participate in these activities (Roberts, Hughes and Kertbo, 2014).

In this context, and with the objective of fill in this research gap in the literature, the present work proposes to analyze the influence of social media on the intention of consumers to co-create their travel experiences. In addition, the mediating effect of the motivations in the relationship between social media and intention to co-create is proposed.

In this study the motivations are examined as mediators on other factors because it is considered that the quality of consumer contributions in the innovation process will depend on their perception of the tangible and intangible benefits that can be achieved with their participation (Nambisan, 2002). If companies do not develop co-creation activities that really motivate users to participate, they run the risk of causing lack of interest with the innovation process and, consequently, having no valuable contributions does not improve the innovation process (Füller et al., 2011). In fact, the literature considers motivations an important mediating effect on consumer participation in social media (Feng et al., 2018; Yu, Jiang and Chan, 2007). Indeed, the increase in competition has led the owners and managers of tourism companies to be constantly innovating (Kofler et al., 2018) with the aim of creating competitive advantages (Dogan et al., 2013). Consequently, knowing what motivates consumers to co-create content could allow the company to strategically manage their interactions and generate value for both parties (Roberts et al., 2014).

Recent studies have examined the influence of motivations to share tourism experiences (Munar and Jacobsen, 2014; Kim and Jang, 2019). However, these previous studies have focused on the analysis of the user's intention to share experiences, but not in his intention to co-create these experiences. In addition, limitations from previous studies suggest that future research focus on examining ways in which companies can encourage consumer engagement in social media (Dolan et al., 2016). On the other hand, most authors in the academic literature analyze social media as a single construct or individually examine each of the platforms (Kladou and Mavragani, 2015; Tseng et al., 2015; Mariani et al., 2016). This study proposes a new classification of social media based on the work of Llodrà et al. (2015). Thus, three types of social media platforms are considered: organic, induced and autonomous.

Based on this context, this research contributes to the tourism marketing literature in different perspectives. First, it contributes to existing knowledge about the impact of social media as sources of tourist information and its influence on consumer behavior. Particularly, it highlights the importance of social media in the intention of users to co-create. Second, it provides empirical evidence on the mediating role of motivations in the relationship between social media and intention to co-create. Third, examine the moderating effect of gender between motivations and the intention to co-create.

3. Discussion and Implications

The results of the analysis of this study using the partial least squares approach (PLS-SEM) and a sample of 394 tourists confirmed the research hypotheses. The results show a direct and significant relationship between the importance of social media and the user's intention to co-create. In addition, it was confirmed that the motivations positively mediate the relationship between the importance of social media and the intention to co-create, and that the male gender

positively moderates the relationship between motivations and intention to co-create. The findings found contribute with significant advances to the knowledge about the adoption and use of social media as sources of information in the context of the tourism sector. In addition, this study empirically develops and tests a theoretical model to explain the motivations that lead consumers to co-create their tourism experience in social media and how it influences their future intention to co-create. The conclusions obtained allow us to open new avenues for research in this area.

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Willingness to pay for robot-delivered tourism and hospitality services – an exploratory study

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Keywords: service robots; tourism; hospitality; willingness to pay.

1. Rationale

Robotic technologies have found their way into the tourism and hospitality industry (Ivanov, Gretzel, Berezina, Sigala, & Webster, 2019; Ivanov, Webster, & Berezina, 2017; Murphy, Hofacker, & Gretzel, 2017; Wirtz et al., 2018). Much of the empirical research on the topic has focused on the possibility of robotisation of hospitality services (Kuo, Chen & Tseng, 2017), customer attitudes towards robots (Ivanov, Webster, & Garenko, 2018; Ivanov, Webster, & Seyyedi, 2018), customer evaluation of service robots (Tussyadiah & Park 2018), customers' willingness to use service robots in tourism context (Lu, Cai & Gursoy, 2019), robotics awareness and turnover intentions of hotel employees (Li, Bonn & Ye, 2019), nudge effect of robots on tourists' behaviour (Tussyadiah & Miller, 2019), and other topics. However, no research has evaluated customers' willingness to pay for robot-delivered services in a tourism and hospitality context. Research on willingness to pay for robot-delivered services so far has focused on customers' willingness to pay for home robots (Körtner et al., 2014), driverless vehicles (Nordhoff, van Arem & Happee, 2016) or robotic surgeries (Rudmik et al., 2015), but tourism and hospitality services have been neglected by the literature. The topic is important because of the following reasons:

- ✓ Prices of robot-delivered tourism and hospitality services depend on customers' willingness to pay for them.
- ✓ If customers are willing to pay much less for robot-delivered tourism and hospitality services, the lost revenue may not be off-set by the cost savings created by robotic technologies, which would hinder robots' adoption by tourism and hospitality companies. Thus, the wiliness to pay for robot-delivered services play a role in the profitability of such technologies.

This paper follows the recommendations of Ivanov & Webster (2020) for research on customers' willingness to pay for robot-delivered services and aims at:

- ✓ identifying how much people are willing to pay for fully robot-delivered tourism and hospitality services compared to human-delivered services.

- ✓ identifying the role of gender, age, household size, education, perceived economic well-being, job position, travel experience, and attitudes towards service robots in tourism and hospitality in shaping respondents' willingness to pay for robot-delivered services.

2. Methodology

This paper presents part of the results of a global online survey on people's attitudes towards robots. The sample includes 1573 respondents from 99 countries who have answered the section of the questionnaire about the willingness to pay for robot-delivered tourism and hospitality services. In total, the prices of 14 tourism and hospitality services were considered: hotel accommodation, room service, restaurant, bar drinks, travel agency services, tourist information centre services, rent-a-car, flight ticket, bus ticket, train ticket, ship ticket, cruise package, event ticket (e.g. concert, congress, exhibition), entrance fee for a museum / gallery.

Data about the willingness to pay was collected through the following question: If you were to be served entirely by robots in the following industries, instead of human employees, how much would you be willing to pay for a fully robotised service compared to a service fully delivered by human employees? Respondents were given 7 possible answers:

- At least 20% less
- Between 10 and 20% less
- Up to 10% less
- Same price
- Up to 10% more
- Between 10 and 20% more
- At least 20% more

The skewness and kurtosis values were all within the range [-1; +1]. Hence, considering the large sample size (>500 respondents), the empirical distribution of responses was considered as being close to normal (George & Mallery, 2019; Kim, 2013). That is why parametric tests were used for data analysis. In particular, independent t-test was used to identify the differences in willingness to pay for robot-delivered services on the basis of gender, while ANOVA and Tukey's HSD test were used for identifying differences on the basis of age, household size, education, perceived economic well-being, job position, travel experience, and attitudes towards service robots in tourism and hospitality. Paired samples t-tests were adopted to identify the differences in respondents' willingness to pay for the various robot-delivered tourism and hospitality services. Cluster analysis was used to identify the existence of different groups of respondents on the basis of their willingness to pay for robot-delivered tourism and hospitality services.

3. Key results

- ✓ Respondents are willing to pay less for fully robot-delivered services compared services fully delivered by human employees. The results are consistent across all 14 services. The mean discount respondents would expect for robot-delivered services is between -7.93% (museums and galleries) and -9.64% (restaurants). Only between 10.5% (bar drinks) and

14.3% (room services) of respondents are ready to pay more for a particular service to be delivered by a robot than a human.

- ✓ Two clusters are identified. Cluster 1 consists of 660 respondents who do not find much value in robot-delivered services and are ready to pay between -18.70% and -20.92% less than for human-delivered services. Cluster 2 includes 892 respondents who are ready to pay approximately the same price for robot-delivered services as for human-delivered services. The differences in the willingness to pay for robot-delivered services between the two clusters are all significant at $p<0.001$.
- ✓ Females are more sceptical towards robot technologies and are willing to pay much less than males for robot-delivered services. Most of the t-statistics are significant at $p<0.05$.
- ✓ Younger respondents (18-30, and 31-40) are more open to new technologies and have higher willingness to pay compared to older respondents (41-50, 51-60, 61+). Tukey's HSD test values are mostly significant at $p<0.05$.
- ✓ Willingness to pay increases with household size, i.e. people with larger families are ready to pay more for robot-delivered services compared to singles and people with small families.
- ✓ For most services respondents with secondary education or lower are ready to pay more for robot-delivered services compared to people with a post-graduate degree (Master, doctorate).
- ✓ Perceived economic wellbeing has a negligible effect – only a few statistically significant differences between respondents' answers are identified.
- ✓ Respondents working in the robotics industry and education have highest willingness to pay for robot-delivered services. Tourism and hospitality educators are usually most sceptical and willing to pay least.
- ✓ Travel experience decreases the willingness to pay for all 14 services – people with greater travel experience are willing to pay much less for robot-delivered services than people who travelled less or have not travelled at all during the last 12 months.
- ✓ The attitudes toward service robots in tourism and hospitality increases the willingness to pay for all 14 services – more positive attitude is associated to higher willingness to pay.

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Gender and Personality Stereotypes in Hospitality Robot Acceptance

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Keywords: Technology acceptance of service robots; gender of social robots; personality of social robots; hospitality; customer acceptance.

1. Research Problem

The development of service robots began a long time ago, but the advance of artificial intelligence, robotics and service automation has only really progressed significantly over the last decade (Ivanov *et al*., 2017). As consumer experiences go hand in hand with the advancement of new technologies, the use of robots and artificial intelligence is attracting more and more attention from tourism and hotel companies. Thus, robots have been used in hotels, restaurants, events, theme and amusement parks, airports, car rental companies, travel agencies, tourist information centres, museums and art galleries (Ivanov *et al*., 2017).

The acceptance and use of service robots by companies changes the nature of the service experience, since service encounters become redefined by human–robot interaction (HRI). Unlike industrial robots, whose performance is measured by efficiency, the success of service robots depends on user satisfaction. Therefore, it is important to understand what characteristics of robots stimulate consumers' positive reactions and which variables lead to their acceptance (de Graaf *et al*. 2019).

2. Literature and Methodology

The adoption of new technologies has been analysed through different models. Among them, the Technology Acceptance Model (TAM), developed by Davis (1989), or the Unified Theory of Acceptance and Use of Technology (UTAUT), proposed by Venkatesh *et al*. (2012), stand out from the rest. The latter, due to its theoretical update and greater predictive capacity, has been considered more integrative than TAM and other theories of technology adoption (Heerink *et al*, 2010).

However, the application of acceptance models to robots is difficult without modifications. This is because robot technology is far more sophisticated than technologies in which these models have been applied (computers, internet, mobile phone) and, in addition, social robots have social attributes that have not been accomplished to date by any other technological devices (de Graaf *et al*., 2019).

To provide social attributes to robots that can influence their acceptance, interest in developing robots that mimic human characteristics has increased in recent years. For example, to provide robots with gender and personality plays an important role in interpersonal relationships and contribute to the formation of social stereotypes (Eyssel and Hegel, 2012). There is some consensus in the literature that stereotypes assign characteristics such as competition, orientation to success, dominant propensity, ease of making decisions and taking risks to male gender, while features such as tenderness, affection, submission, kindness and gentleness to female gender (Eyssel and Hegel, 2012). Without entering into the controversy over whether or not to replicate gender stereotypes in robots, it has been shown that robot's gender influences its persuasion power and the perception of the suitability of its task (Eyssel and Hegel, 2012).

Alongside gender, researchers have argued that robot's personality is another key aspect that affects user behaviour during the HRI (Lee *et al*., 2006). Personality influences the level of satisfaction expressed by interactions with robots, and it has been identified that different personalities modify the preferences stated by users (Lee *et al*., 2006).

Given the few studies that have addressed this issue, this work has two objectives: First, to validate an adaptation of Almere's model (Heerink *et al.*, 2010) to the entertainment context. Second, based on the theory of fluency, study how the activation of gender (female vs. male) and personality (collaborative vs. competitive) stereotypes in the robot can lead to a better functioning of the proposed model and, therefore, to the intention of use. To this end, two methodologies have been combined: an experimental methodology to collect the data and, secondly, a statistical tool based on SEM to analyse the results.

In an experiment, 113 participants played a game with the assistance of a TIAGo robot while it took on each of the four roles (gender and personality). The robot's gender was manipulated by changing the voice and facial expression. Text-to-speech software was used to generate male and female voices. On the other hand, to express the robot's personality, the conversation it has with participants was manipulated using praise and supportive expressions in the cooperative role and more challenging expressions in the competitive one.

3. Discussion and Implications

Findings show that the intention to use was predicted by usefulness, enjoyment and social influence. While ease of use and adaptability are revealed as usefulness precedents, at the same time, adaptability and sociability act as precedents of enjoyment. With respect to the effects of gender and personality stereotypes, consumers only perceived conceptual fluency in the female robot, but not in the male. These discoveries indicate that stereotypes do not influence symmetrically, but that the female role predominates in the degree of acceptance of social robots.

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The use of robots in the tourism industry: What is the better use from a tourist perspective?

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Keywords: Robots, tourism sector, service automation, technology adoption, attitude towards robots, hospitality.

1. Research Problem

Tourism sector needs to adapt relatively quickly to new trends and changes of tourists' needs. Most of these trends and changes are based on the use of information technologies, specifically in searching information on Internet or social media and in their purchasing behavior. Moreover, the use of robots is continually rising. Bowen and Whalen (2017) and Alonso-Almeida (2019) comment that the introduction and interaction with robots, the use of big data, and the use of artificial intelligence and virtual reality can generate more pleasant experiences. Therefore, it is necessary to look for those uses in which tourists consider their presence more interesting and avoid the existence of rejection behavior towards them and the companies in which they perform their functions (Nomura, 2014, Salvini et al, 2010). This changes presents important opportunities in economic terms providing an improvement in the efficiency in the provision of services and in competitiveness, however there are some threats that it should not be ignored. What will be the social and labor impact of the presence of these robots in companies? What is their acceptability? Are they able to offer useful information? Who will be responsible for updating and maintenance? What is its lifetime? What can happen if any of these robots is hacked? These are some of the questions that we could ask ourselves in this new scenario. Therefore, it is necessary to analyze the economic, operational and social implications of the incorporation of robots in the tourism sector in general.

The purpose of this paper is to analyse what is the best use of robots in the tourist sector from not only the tourist point of view but also taking into account the opinions of the companies.

2. Literature and Methodology

The use of robots in the services sector, its use is testimonial, being in most cases in an introductory phase or in a trial phase (Bowen and Whalen, 2017, Hertzfield, 2016; Ivanov et al., 2017)). In the tourism sector, robots and artificial intelligence have been used within the category of Service robots. However, the scientific literature on the adoption of this type of technology (Alonso.Almeida, 2019; Belanche et al., 2019; Bowen & Whalen, 2017; Flavian et al., 2019a, 2019b, International Federation of Robotics, 2018, 2019) indicates that the incorporation and use of robots can mean a revolution in the travel and tourism industry, which will affect both the creation or disappearance of jobs. The same as the development of operations and the perception of the quality of service, which will cause more or less significant changes both in the management of the destinations and in the industry in general.

The research is designed to use mix methods; qualitative, and quantitative methods for collecting data. Regarding the qualitative method, interviews with directors of hotels are used to collect information related to how important robots on operational functions, how to incorporate the robots into their operations, and some possible problems. In relation to quantitative method, questionnaire with four parts is designed. In the first part, all sociodemographic data of the respondents will be collected. In the second part, knowledge of the respondents about the use of robots in tourism industry will be collected. The third part is related to the emotion of the people about the use of the robots in the tourism sector. In the last part, information about the best way of using robots in the tourism sector and the best areas or tasks where the human factor is very important will be collected. The sample will be represented by people who have travel to a tourist destination in the last three years. For statistical treatment, EQS program is selected.

3. Discussion and Implications

It is expected to obtain from the research an important contribution to the marketing literature in the tourism field. First contribution is to identify key determinants of customers' intention to use robots in tourism sector. There are not a lot of researches about the use of robots in tourism marketing. Second contribution of this study is to evaluate possible differences in the adoption process depending on the customer's familiarity with robots in the tourism sector (a crucial aspect taking into account that use robots in tourism sector as receptionist, waiters, providers of information represent a disrupting service innovation). Thirdly, it is related to the sociodemographic characteristics (i.e. age linked to generation X, Y or Z, gender, culture). They are a special influence in the use of this new technology. Moreover, it can also provide some knowledge about the affective reactions of consumers and workers on the appearance and capabilities of robots. From managerial perspective, we expect to provide the meanings of behavioural intentions in different tourist segments, and to understand the best situations where robots are accepted. It will allow workers understand how robots can be benefit and be their working assistants. This new knowledge should allow managers to make better decisions in the way of implementing this new technology and in the way of relating to their clients. Furthermore, it allows managers to concern about the financial and non-financial benefits from this implementation in their workplace, as same as its social and moral effects.

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Does the acceptance of service robots in hotels depend on the type of customer and type of robot?

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Keywords: Human robot interactions; social robot acceptance; hotels; customer type; customer experience.

1. Research Problem

In the accommodation industry, we can find an increasing number of real-world applications of robotics (Tung and Law, 2017) especially in Japan, following the development of service robots in South Korea, America and European countries (Yu, 2018). In hotel environments, we can find different types of robots (Tussyadiah, 2020), from intelligent service robots (as robot concierges), intelligent mobile robots self-navigate in indoor environments, in-room robot companions or pervasive agents on headless devices and stationary industrial robots (‘mechanical AI’) (automated locker and storage systems, restaurants, cafés and bars). Previous literature establishes a research agenda for service robots related to robot design; customer features and service encounter characteristics (Belanche et al., 2019). These topics could help to explain the robot acceptance and their use in hotels. The study of the acceptance of service robots by the consumer requires a deeper understanding of how robots can satisfy functional needs, but also social-emotional and relational needs. To fill this gap, this study explores the HRI in hotels to know if guests’ acceptance of service robots depends on the type of consumer from the data provided by client´s reviewees in TripAdvisor and considering the sRAM model (Writz et al. 2018). The research questions that arise from this objective are:

RQ1. Can the sRAM model help explain human-robots interactions according to the robot typology?

RQ2. Does the robot typology affect feelings about the human-robot relationship in reviews?

RQ3. Is there a relationship between the global rating of the hotels (Tripadvisor) and the feelings derived from the human-robot interaction according to the functional typology of the robot?

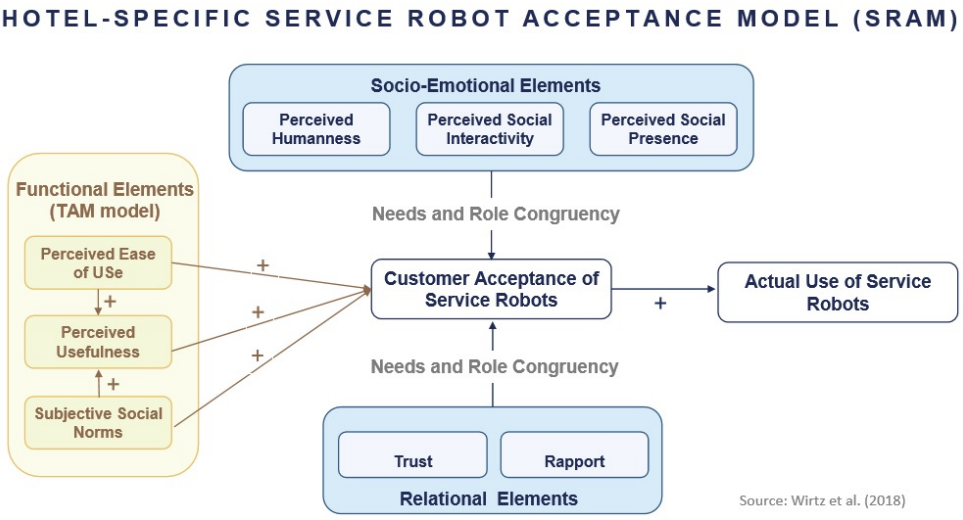
RQ4. Is there a relationship between the overall rating of hotels (Tripadvisor) and the feelings expressed by type of traveler?

2. Literature and Methodology

This research is based on the sRAM framework (service Robot Acceptance Model) (Wirtz et al., 2018) (Figure 1). Consumer acceptance of the service robot in this model principally depends on three types of elements: functional elements (as the TAM model), social-emotional elements and relational elements.

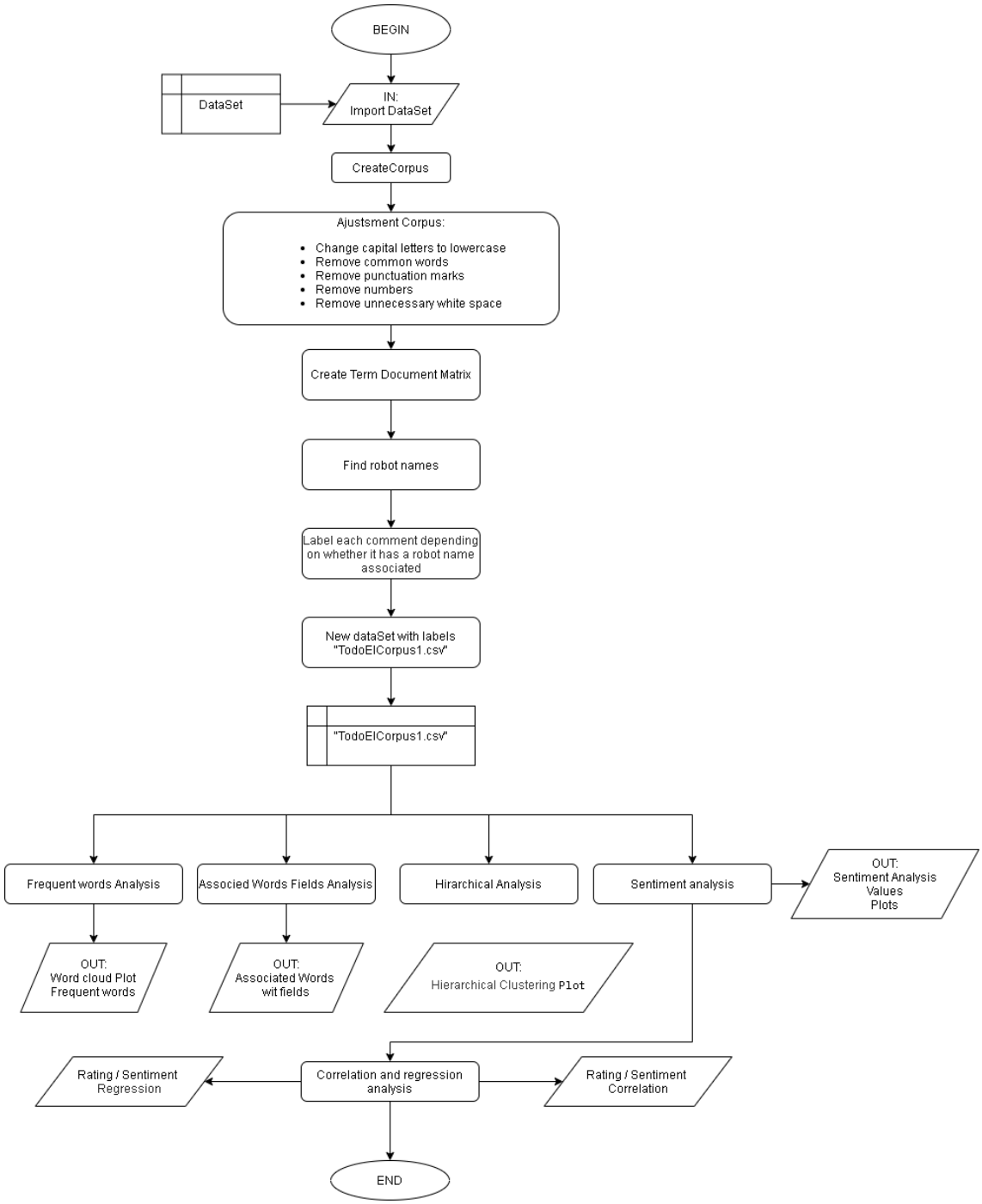
The functional dimension refers to the ease of use of technology and its usefulness, and the adoption of social norms. This dimension is based on the TAM model, where perceived usefulness and ease-of-use are central components and refer to the functional goals of using new technologies (Wu and Cheng, 2018). The social-emotional dimension contains three elements: perceived humanness, perceived social interactivity and perceived social presence, or the feeling that 'someone is taking care', affect the acceptance and has an influence on customer behaviours consequently (Wirtz et al., 2018). Finally the sRAM model considers two crucial elements in the relational dimension due to the relationship they have with the user's acceptance of the robot (Heerink et al. 2010; Nomura and Kanda, 2016): trust and rapport.

Figure 1. Hotel specific service robot acceptance model



The method used consists of the application of Text Mining. The analysis is carried out through the use of the R programming language, specifically the package for text analysis called "Text Mining Package" has been used. This data analysis is carried out in different steps (Figure 2):

Figure 2. Methodology



The first step consisted of importing the data and creating the corpus. For this work we used the hotel guess´ reviewees from 74 hotels with robots in different countries, since there are robot comments in each hotel until June 2020. WebHarvy was used for TripAdvisor data extraction. All the selected reviews (4.412), included the word 'robot' and of these, 2.258 also included the names of the different robots. From the selected reviews, R creates a corpus (data set), which must be previously organized and filtered. In this process, common words (pronouns,

articles and others), punctuation marks, special characters, numbers, unnecessary character spaces (double, triple spaces, etc., between words) were eliminated.

Subsequently, once the corpus was created, each comment was searched where each robot name was mentioned in order to create tags that allow identifying in which comment each robot or the word robot is mentioned in particular. At this point, a new dataset is created with the corresponding labels. Once the robot names are identified, different filters can be created depending on the objectives: comments containing the word robot, the robot names, the robot's functionality, the type of traveler used by Tripadvisor (business traveler, solo, family , as a couple and with friends).

Once the filtering was done, the different analyses were carried out. First, the Frequent Words Analysis is performed. In this case, all the words from the reviews and their frequency of use are obtained. Second, the Associated Words Fields Analysis is developed, managing to find the words that are closest to the functional, socio-emotional and relational fields (the dimensions of the sRAM model). The function used in this case is `findAssocs´. This function starts from a matrix of a matrix of correlations of terms associated with the corpus. The words found from this function are those whose correlation limit is equal to or greater than 0.5. Finally, the Sentiment Analysis is developed. Sentiment analysis is performed by implementing Saif Mohammad's NRC's lexicon of emotions, which is a list of words and their associations with eight emotions (anger, anticipation, disgust, fear, joy, sadness, surprise, trust,) and two feelings (negative and positive). The sentValue type contains a comment analysis with positives, negatives, and neutrals.

Finally, Pearson correlations are made between the rating by type of traveller and the results obtained in the sentiment analysis, as well as the rating in the functional typology of robots and feelings. Afterwards, linear regressions are carried out, where the program delivers the value of each correlation between the rating given by TripAdvisor and each of the feelings depending on the type of traveller and the functional type of robot.

3. Discussion and Implications

The implementation of robotics in hotels is an unstoppable phenomenon and has advantages associated with human-robots interaction (Ivanov et al., 2019). The first advantage is related to robot functionality. Hotel guests interact with robots predominantly through the functions they perform; room service, in restaurants and bars and cloakroom robots. This robot functionality determines social and emotional responses of clients. Other advantages are related with the sentiments that the robots generate in hotels' clients through the interactions. The results from this research show that there is a link between the feelings detected in the reviews and the functional types of robots, since those robots with which they have a longer contact, evoke feelings that customers show in the reviews and others such as check-in. Results permit to answer the research questions initially proposed and are summarized in Table 1.

Table 1. Research questions and responses

RQ1. Can the sRAM model help explain human-robots interactions according to the robot typology?	- The dimensions of the sRAM model allow the analysis of human-robots interactions according to the robot typology. - Relationships have been detected between words associated with each functional typology of the robot and with the dimensions of the sRAM model (higher than 0.5).
RQ2. Does the robot typology affect feelings about the human-robot relationship in reviews?	- The analysis of the Tripadisor reviews reflects positive feelings in the 3 typologies of robots. - Specifically the robots classified within the `Room Service´ group have a higher representation in terms of number of comments. - However, the typologies: `Robot concierges´ (1,17%), `Front-desk robot receptionists´ (0,23%), `In-room robot companions´ (0,04%) do not inspire enough reviews to identify the feelings. - There is a relationship between the feelings detected in the reviews and the functional typologies of robots, since those robots with which they have a longer contact evoke feelings that the customers show in the reviews
RQ3. Is there a relationship between the global rating of the hotels (Tripadvisor) and the feelings derived from the human-robot interaction according to the functional typology of the robot?	- The feelings resulting from the human-robot interaction according to the functional typology of the robot are associated with the rating given to the hotel. - The typology Restaurant's robot chef and robotic bartender show a higher relation taking into account the results of the regression (29%).
RQ4. Is there a relationship between the overall rating of hotels (Tripadvisor) and the feelings expressed by type of traveler?	- There is a relationship between the rating and the feelings detected by type of traveller as it can be observed in the regressions. - The two types of travellers with the highest results are `solo´ (27%) and `business´ (26%).

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Sources of Price Elasticity of Demand Variability Among Resort Hotels

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Keywords: Price elasticity of demand, demand function, hotel, pricing, segmentation.

1. Introduction and research objectives

One of the best methods for segmenting the hotel demand is to determine and compare the different consumer behaviors through the estimation of demand functions.

The objective of RM is to identify segments where customers share similar responses to price and marketing variations, i.e., the way they purchase, their product valuation, and their willingness to pay (Vives et al., 2018), which will help to enhance customer satisfaction (Zhang and Bell, 2012). In the hotel sector, segmentation not only represents the tactic of varying prices across customers, situations, and over time, it is also influenced by the destination's characteristics, past marketing measures, and external factors. However, segmentation in the hotel industry, as well as its influence on pricing, is very diverse and depends on several factors.

Vives et al. (2018) observe that most of the studies dealing with hotel demand models estimate aggregate market demands instead of individual hotel demand behaviors. Meanwhile, Vives et al., (2019) highlight that most of the studies present in the literature are static across time –as the demand is just segmented according to the hotel differentiation, i.e., hotel type or hotel category (Lee, 2011)– and the estimations obtain usually inelastic demands (Bayoumi et al., 2011; Lee, 2011).

The aim of the paper is to find which are the sources of price variability in resort hotels of different Spanish destinations through demand behavior estimation. In order to achieve this goal, the study presents an implementation of demand functions and modelling used to estimate own-price elasticity of demand (Vives et al., 2019) for different resort hotels located in several Spanish destinations.

The present study contributes to the research stream on the factors affecting the hotel demand function in the resort hotel context by answering the following questions:

1. How do factors such as destination, seasonality and booking horizon affect hotel own-price elasticity values?
2. Which other hotel attributes and customer segments have some significant effect on hotel own-price elasticities? We estimate the sign and magnitude of these effects.
3. How can exogenous hotel factors, such as the prices of competitors and online customer ratings, be incorporated in the hotel demand functions? We present a theoretical approach.

The value added of the study is that the pricing differences among different reservation dates, seasons and hotels are explained on the basis of customer behavior, while their managerial implications are also investigated.

2. Methodology

In the paper we estimate online demand functions during high season for seven 4-star resort hotels located in different Spanish destinations and we compare the different price elasticity values.

We use the Online transient demand (Q^d), which is represented by online room bookings, for a specific date of stay (d) can be defined as a function of the price set by the hotel revenue manager (p^d),the reservation time over the booking horizon (r^d), the price differential between the hotel price (p^d) and the average price of competitors is defined as cp^d –it is used as usually exists a high correlation among hotel prices competing in the same market (Canina and Carvell, 2005), while the price differential represent better the distance from the market average price (Cezar and Öğüt, 2012)–, and the online consumer rating of the hotel and its direct competitors (or^d). Thus, the demand function can be expressed as follows:

$$Q_t^d = f\left(p_t^d, r_t^d, cp_t^d, or_{tj}^d\right) \qquad (1)$$

Where time: t = 1, 2, …., d; and direct hotel competitors: j = 1, 2, …,J

Time t represents the reservation dates over the booking horizon and d represents the date of stay, i.e., the last observation over the booking horizon.

Price elasticity of demand (ε) can be estimated, which enables the demand to be quantified when the price changes (Shy, 2008):

$$\varepsilon = \frac{\mathrm{p}}{Q}\frac{\Delta Q}{\Delta \mathrm{p}} \quad (2)$$

3. Results and conclusions

In general terms, most of the period estimations exhibited elastic demands. The results indicate that most of the high season periods present elastic demands, but factors such as the location in the heartland of the resort, a recent hotel renovation, the supply of additional facilities/services, the belonging to the couple and/or half board customer segments, and a higher proportion of German tourists turns the demand more inelastic. On another hand, the amount of data and its real-time availability, i.e., big data, allow the improvement of demand function estimations, thus, at a theoretical level we also introduce exogenous hotel variables to the demand function, such as price of competitors and online customer rating.

The present paper confirms the adaptability and applicability to other hotels of the demand model set by Vives et al. (2019), no other previous study has carried out such wide comparison of elasticity values in the resort hotel sector. The extension of the study to additional hotels with different attributes, in combination with the demand behavior estimation, allows to identify which are the most valuable characteristics that lead to greater revenues. In practical terms, we find two ways to identify the main sources of price variability: (1) to estimate and compare the

different elasticity values across the different resort hotels, seasons, and booking horizons; and (2) to explore hotel location, specific hotel attributes, and customers' characteristics that might explain the differences in terms of elasticities.

The results of the study, which have managerial implications, also confirm that the booking horizon represents an important factor in the elasticity values heterogeneity. The availability of the different elasticities allows a better segmentation of demand across the booking horizon – enabling to set prices that may increase the hotel revenue at the short and medium run.

Current research focuses on incorporating data on customer ratings and competitors' prices in the demand model, which may allow the improvement of estimations and enable the analysis of these two factors affecting price variability.

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Persuasive voice: The influence of modality in virtual assistant interactions

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Keywords: Digital Assistant, Modality, Persuasion Knowledge, Cognitive Processing

1. Research Objectives and Questions

Intelligent digital assistants such as Amazon Alexa or Google Assistant are on the rise, fulfilling different tasks including information provision about weather, traffic or news (Tillman & O'Boyle, 2019). Moreover, they can be used by organizations for commercial purposes, e.g. making product or service recommendations (e.g. Cox, 2018). This implies that these assistants do not only provide neutral information, but communicate messages including persuasive attempts embedded in the conversation, possibly less obvious than in traditional advertising. This might influence what customers think, feel, and do (e.g. purchasing an advertised service or product) about the interaction.

While digital assistants can be text-based only, they can also take a voice-based form. Even though it is not yet fully known how voice-based digital assistants will integrate in our lives, a lot of organizations invest in voice strategies (Besik, 2019). Most importantly, these assistants are suggested to communicate more naturally through using voice (Mueller, 2017) and can use paralinguistic (persuasive) cues (Van Zant & Berger, 2019), which might challenge consumers' persuasive understanding of what is being communicated irrespectively of the message content itself. Therefore, this study investigates the impact of digital assistant modality on consumers' responses.

To the best of our knowledge, no research so far has compared different digital assistant modalities when it comes to perceptions of persuasiveness. In fact, digital assistants research has mostly focused on the influence of cues specific for one modality on different social or relational outcomes, e.g. visual cues in text-based chatbots (e.g. de Visser et al., 2016; Forlizzi, Zimmerman, Mancuso, & Kwak, 2007; Nowak & Biocca, 2003), or auditory cues in voice-based assistants (e.g. Ding, Prepin, Huang, Pelachaud, & Artieres, 2014; Louwerse, Graesser, Lu, & Mitchell, 2005, for an overview of social cues see Feine, Gnewuch, Morana, & Maedche, 2019). Therefore, we draw on classical studies on mass media influence across modalities (e.g. Pfau,

1990) to examine interactions with digital assistants that differ in their modality (voice- versus text-based) and their impact on consumers' responses.

Hereby, we focus particularly on consumers perception of the persuasive attempt, the so-called activation of situational persuasion knowledge (PK). PK is the ability to "recognize, analyze, interpret, evaluate and remember persuasion attempts" (Friestad, Wright, & Wright, 1994, p. 3). This includes different forms of understanding the persuasive nature of communication, e.g. awareness of content being commercial (Boerman, van Reijmersdal, & Neijens, 2012; Tutaj & van Reijmersdal, 2012). Ample studies demonstrated that PK helps consumers to cope with persuasive attempts and empowers consumers in giving them the ability to choose coping techniques in a specific persuasion context (e.g. Boerman, Reijmersdal, & Neijens, 2014; Ham, Nelson, & Das, 2015; Tutaj & van Reijmersdal, 2012; Van Reijmersdal, Neijens, & Smit, 2010). Therefore, it is important to examine whether voice challenges the activation of situational PK in interactions with digital assistants including a hidden persuasive attempt.

Cognitive processing is a possible explanation why voice might influence situational PK. For PK to be activated and utilized, consumers need to retrieve information from memory (Campbell & Kirmani, 2000; Hossain & Saini, 2014), making cognitive processing one of the primary antecedents (Kirmani & Campbell, 2008), for both, recognizing the persuasive attempt, and responding to it (Campbell, 1995; Hossain & Saini, 2014). Therefore, this study will use cognitive processing theories (e.g. Lang, 2000) to explain the impact of modality on situational PK.

Research and theory are inconclusive about whether voice restricts, or facilitates cognitive processing. This makes it vital to understand modality differences and their impact on cognitive processing, and subsequently situational PK. On the one hand, the cognitive load in the voice condition can be lower, freeing more cognitive capacity for the activation of PK. Voice can be interpreted as an indicator of social presence (Cho, Molina, & Wang, 2019; Reeves & Nass, 1996), thus promoting a richer processing. This leads to the first hypothesis:

Facilitation hypothesis. The communication with a voice-based (versus text-based) digital assistant facilitates cognitive processing and leads subsequently to higher situational persuasion knowledge.

Furthermore, there are competing arguments supporting the idea that cognitive load is lower in the text condition. This is because text is self-paced and individuals can go back and forth in the conversation. As suggested by Pfau (1990), in text-based communication consumers are more focused on content-characteristics and less distracted by source-characteristics, leading to more cognitive processing. This leads to a second, competing hypothesis:

Restriction hypothesis. The communication with a voice-based (versus text-based) digital assistant restricts cognitive processing and leads subsequently to lower situational persuasion knowledge.

2. Research method

This study implements a between-subjects experimental design with two conditions (modality: voice- versus text-based) to examine digital assistants' influence on cognitive processing and situational PK. Participants will either communicate with a text-based, or with a

voice-based digital assistant to receive a recommendation including a hidden persuasive attempt. Both digital assistants will be specifically designed for this study. After communicating with the assistant, participants will answer a questionnaire including measures for the dependent variable situational persuasion knowledge, including items about the recognition of the persuasive attempt (Tutaj & van Reijmersdal, 2012; van Noort, Antheunis, & van Reijmersdal, 2012) and items about attitudinal responses inferring a manipulative intent (Campbell, 1995). Cognitive processing will be measured by using open-ended recall questions.

3. Preliminary findings

The study will be pre-registered and data will be collected in the first quarter of 2020, so that first findings can be presented at AIRSI 2020.

4. Originality of paper

The current study adds to the emergent research stream considering digital assistants in exploring modality differences between voice and text. Arguing for cognitive processing as the explanatory mechanism, this study draws on cognitive processing theories (e.g. Lang, 2000) to explain the effect of modality on situational PK. Because previous research is inconclusive about the impact of voice, it is vital to examine modality differences in digital assistants. The study not only contributes theoretically in applying modality studies to the context of digital assistants, but methodologically, in specifically designing the assistants for experimental research purposes. Situational PK as the focus of interest is societally relevant in relation to consumer empowerment, as the activation of PK enables consumers to make elaborate decisions following interactions in this new communication environment.

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Employees' STARA awareness and challenge-hindrance appraisals towards innovative work behavior: A case in the U.S. quick-service restaurant industry

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Keywords: STARA awareness; innovative work behavior; challenge appraisal; hindrance appraisal; work stress; technology; restaurant; human resources.

1. Research Problem

Smart Technology, Artificial Intelligence, Robotics, and Algorithms (hereinafter referred to as STARA) have raised the fourth industrial revolution that has thoroughly changed human daily life (Brougham and Haar, 2018), and have been adopted in broad domains (e.g., manufacturing, healthcare, and services). In an industry with low-profit margins and pursuing consistent and outstanding food and service quality, quick-service restaurants (QSR) are highly motivated to adopt smart technologies to optimize the operations (Bandoim, 2019). Given the benefits of rising efficiency, saving costs, creating differentiation, upgrading customer experience, and eventually improving overall performance, many businesses have adopted STARA technologies in their operations and more companies are on their way of aligning this emerging revolution to survive in the competitive market.

While increasing studies have been exploring customer acceptance and/or experience and the corresponding business strategies towards the emergence of advanced technologies in service (Belanche *et al*., 2020; Kim and Qu, 2014; Van Doorn *et al.*, 2017), the technology adoption impact on employees who are the essential business stakeholders is not well documented and lacks empirical investigations in the restaurant industry. Obviously and importantly, the concerns regarding the potential job replacement triggered by STARA adoption have raised the predictions in the labor market from both academia and industry. When we surveyed 389 full-time non-management employees in the quick-service restaurant segment and asked if they thought their jobs would be replaced by the STARA technologies, nearly 76% of them agreed on this foreseeable situation. Therefore, "how employees' job uncertainty awareness towards industry STARA adoption influences job-related outcomes?" is our interest in the current study. A limited number of studies (e.g., Brougham and Haar, 2018; Li *et al.*, 2019) examined how employees' STARA awareness influenced job satisfaction, organizational commitment, turnover intention, and well-being, and found pessimistic evidence from different contexts. However, while adopting STARA technologies is the path, aligning with STARA technologies to work efficiently, smartly, and innovatively is the essential core competency and the ultimate goal of the business in service. Our question is "can quick-restaurant employees still work innovatively under the job insecure stress from STARA awareness?" We found no existing study could provide empirical evidence to

answer this critical question. To answer this question, we applied cognitive appraisal theory (Lazarus and Folkman, 1984), transactional model of stress (Lazarus and Folkman, 1984), and a two-dimensional stressor framework (Cavanaugh *et al.*, 2000) to further zoom in employees' STARA awareness and stress two simultaneous routes to appraise this work stressor. We are interested in how the job insecure stress from STARA awareness can be appraised as a challenge and a hindrance simultaneously, and how the distinct appraisals influence employees' innovative work behavior differently.

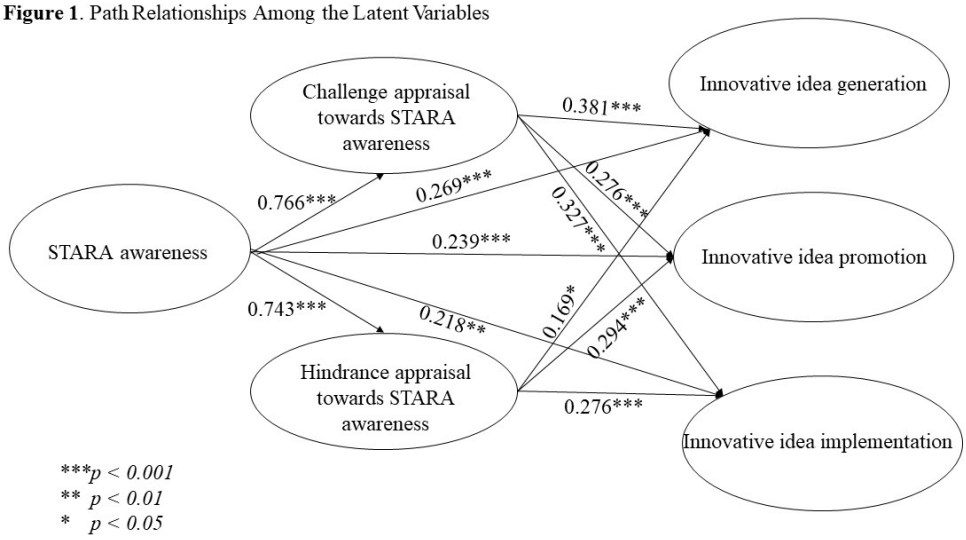
Therefore, the main objectives of this study are to (1) examine the effect of full-time non-management employees' STARA awareness on predicting the innovative work behavior; and (2) to investigate the mediating roles of employees' challenge-hindrance appraisals towards STARA awareness on the relationship between their STARA awareness and innovative work behavior in the quick-service restaurant segment.

2. Literature and Methodology

This study proposed the conceptual model based on the cognitive appraisal theory (Lazarus and Folkman, 1984), transactional model and stress (Lazarus and Folkman, 1984), and two-dimensional stressor framework (Cavanaugh *et al.*, 2000). Rather than directly classifying job insecurity stressor from STARA awareness into the hindrance category, the current study appraised employees' STARA awareness into challenge and hindrance categories and explored the characteristics of STARA awareness being a work stressor from the primary appraisal perspective that focused on employees' potential gain or loss under STARA awareness stress. Aligning with the proposed importance of appraisals in challenge and hindrance stressor framework (Searle and Auton, 2015), the current study is the first study simultaneously appraising employees' STARA awareness as an emerging work stressor and stressing its distinct characteristics compared with a general job insecurity stressor. Moreover, this study proposed the specific paths between the two STARA awareness appraisals and three innovative work behavior dimensions. The relationships between the antecedents of innovative work behavior and innovative work behavior have been commonly examined as treating the dimension of innovative work behavior as one piece (Scott and Bruce, 1994). However, as an essential work behavior that can create a competitive advantage for the organization in Industry 4.0, it is necessary to zoom and re-examine employees' behavior in each innovation stage. Aligning with Janssen (2000), the current study breaks innovative work behavior into three dimensions that capture the full process from innovative idea generation to successful implementation. Supported by the proposed conceptual model and the empirical evidence, the current study finds employees who hold distinct appraisals towards STARA awareness will have their preference of involving in the different stages of innovative work behavior. Based on the person-environment fit theory (Edwards *et al.*, 1998; French *et al.*, 1974; Harrison, 1978) and the transactional model of stress (Lazarus and Folkman, 1984), this study successfully stresses employees' STARA awareness-induced active and passive coping behavior in organization's innovation process.

The present study employed an online survey to access cross-sectional quantitative data from 389 full-time non-management employees in the U.S. quick-service restaurant industry. Partial least squares structural equation modeling (PLS-SEM) was applied for data analysis. Figure 1 shows the path coefficients significance from PLS-SEM analysis.

Figure 1. Path Relationships Among the Latent Variables



3. Discussion and Implications

Empirical study relating to advanced technology-generated job insecurity stress and innovative work behavior is rarely explored in the U.S. quick-service restaurant industry. The current study fills this gap and emphasizes the role of STARA technology adoption in promoting restaurant employees' innovativeness.

Employees' challenge and hindrance appraisals towards STARA awareness transmit the job insecurity stressor to a high level of innovative work behavior. As STARA adoption deepening in the quick-service restaurant segment, managers need to be aware of full-time non-management employees' stress and psychological responses towards STARA adoption. Restaurants are suggested to provide employees adequate resources and support to help employees' professional competency growth. The capable employees will appraise the job insecurity stressor induced by STARA adoption as an opportunity and be motivated to perform innovatively in the workplace. The quick-service restaurants may enjoy the competitive advantage in the market through the value-added innovative activities.

Note: This extended abstract is not published on the AIRSI2020 conference proceedings.

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Bridging the gap between blockchain and competitiveness in tourism

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1. Research Problem

Blockchains are, potentially, a disruptive technology for the design, organization, operations, and general management of supply chains (Saberi et al., 2019). Recent surveys to the industry highlight the impact of applications of blockchain technology (BCT) not only on the supply chain, but also on the Internet of Things, digital records and identity, cryptocurrencies and payments, voting, etc. (Deloitte, 2018). The main focus of these applications has been on operational cost reduction, settlement time reduction, seize new revenue opportunities, reduction of risk and cost of capital, etc. (Credit Suisse, 2016). Both scholars and practitioners have applied the blockchain concept, beyond cryptocurrency applications, to strategic areas focusing on improvements in productivity and, consequently, increased competitiveness (Queiroz et al., 2019).

Since BCT could provide competitive advantages ahead of competitors, monitoring the business model from a BCT perspective might be useful for managers. According to (Filimonau & Naumova, 2020), due to the disruptive effects of the BCT on the tourism and hospitality industry, further research should be addressed in order to conduct a reality check of BCT's prospects versus its actual uses. This paper contributes to bridge the gaps by presenting blockchain alternatives, already implemented in other business sectors, that might foster new applications by the tourism and hospitality industry.

Recent studies on BCT in hospitality and tourism (Filimonau & Naumova, 2020; Kizildag et al., 2019; Tham & Sigala, 2020; Treiblmaier & Önder, 2019; Valeri, 2020) identified benefits of BCT already seized by innovation in this industry. So far, these benefits have been focused on improving customer satisfaction and brand loyalty (having an impact on these elements of the business model framework: customer segments, value proposition and customer relationships), promoting the trust level and confidence of blockchain users (with impact on: channels, key resources, key activities and key partnerships), fast retrieving and reviewing historical secure transactions or registries (with impact on: channels, customer relationships, revenue streams and cost structure), guaranteeing transparency (with impact on: key partnerships and cost structure) and enabling sustainable tourism development goals (i.e., sustainable supply chain management). In this search of alternatives to improve competitiveness and bottom-line performance, the

hospitality and tourism industry has contributed to innovation on the accommodation sector (e.g. revenue management, inventory control, guest history and financial management), travel agencies (e.g. client information secure sharing and online reliability), food services (safety and security, supply chain), transportation (e.g. railway and airline ticketing). However, there are still opportunities to seize in order to keep competitive advantage.

2. Methodology

Following the sharp increasing interest for the BCT, which has ignited interest across business sectors, the hospitality and tourism industry is no exception. Since the BCT could operate in a transparent, secure and fast fashion at all levels of the business transaction process, this paper aims at reviewing the literature about the different applications of blockchain to improve business models and bridging these applications with those published in the tourism and hospitality realm. We perform a systematic review of academic productivity (Andreu et al., 2020; Palomo et al., 2017) based on three sets: *tourism & competitiveness*; *competitiveness & blockchain*; and *blockchain & tourism*. They are disjoint sets with the exception of a single paper that is focused on the adoption of cryptocurrency payments among small and medium-sized tourism and hospitality enterprises in Taiwan (Nuryyev et al., 2020).

In order to extract theories and competitiveness indicators in the tourism realm, we have obtained 293 documents through a SCOPUS database search based on "*tourism and competitiveness*" keywords. Regarding how the BCT has been applied for competitiveness purposes, through the keywords "*competitiveness and blockchain*" we have obtained 11 documents. Finally, in order review how the BCT has been applied in the tourism realm, through the keywords "*blockchain and tourism*" we have obtained 15 documents. See Table 1 for further details.

Table 1. Main information of the scientific production on each set.

	Tourism & Competitiveness	Competitiveness & Blockchain	Blockchain & Tourism
Timespan	2017:2020	2018:2020	2017:2020
Sources (Journals, Books, etc.)	121	8	13
Documents	293	11	15
Average years from publication	1.58	0.545	0.867
Average citations per documents	5.184	3.364	4.8
Average citations per year per doc	1.879	2.136	2.283
References	16611	761	1071
AUTHORS			
Authors	783	41	51
Author appearances	883	42	54
Authors of single-authored documents	30	0	2
Authors of multi-authored documents	753	41	49
AUTHORS COLLABORATION			
Single-authored documents	32	0	2
Documents per author	0.374	0.268	0.294
Authors per document	2.67	3.73	3.4
Co-Authors per documents	3.01	3.82	3.6
Collaboration index	2.89	3.73	3.77

3. Results

Based on a systematic review of the published articles, we have found that although there are concepts covered in the three considered sets, only cryptocurrency payments in a tourist destination have been studied as a blockchain technology-based that fosters competitive advantage and facilitates tourism sustainable development (Nuryyev et al., 2020). Alternatively, authors doing research on *tourism & competitiveness* have focused on tourist destination, tourism development, market and management, sustainability and sustainable development, destination competitiveness, competitive advantage, innovation and ecotourism. Authors doing research on *competitiveness & blockchain* have focused on sustainability, business development, supply chain management, and technology adoption. Finally, authors doing research on *blockchain & tourism* have focused on technology adoption, decentralization, supply chain management, operations management and tourism development.

See Figures 2,4,6 for further details on the conceptual maps of keywords and Figures 3,5,7 for the corresponding tags-clouds.

Figure 2: Conceptual map for *tourism & competitiveness*

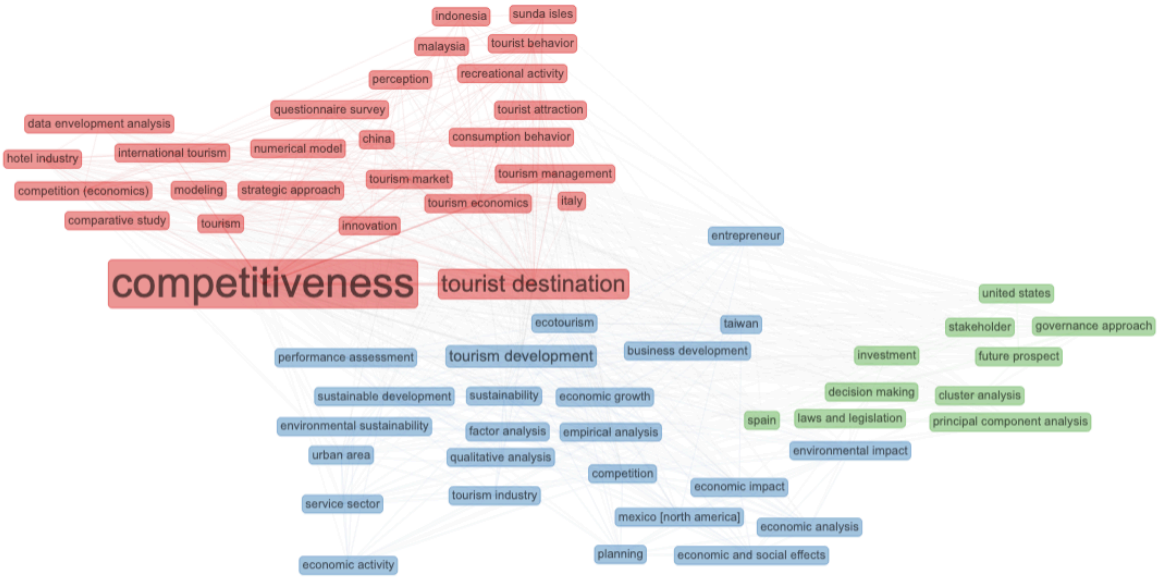

Figure 3: Tags-cloud for the keywords on *tourism & competitiveness*

Figure 4: Conceptual map for *competitiveness & blockchain*

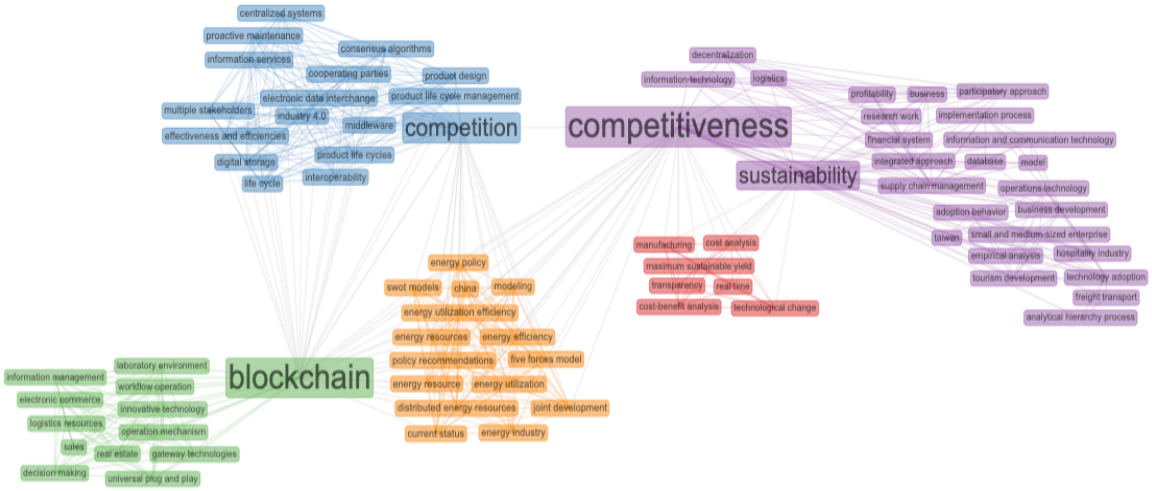

Figure 5: Tags-cloud for the keywords on *competitiveness & blockchain*

Figure 6: Conceptual map for *blockchain & tourism*

Figure 7: Tags-cloud for the keywords on *blockchain & tourism*

A further analysis on the concepts analyzed within the three sets allowed us to conclude that sustainability is the keystone and to confirm the following differences between the perspectives adopted on each set.

- *Tourism & competitiveness*: while highlighting the importance of the innovation and defining a strategic approach, it has focused on tourism and business development (economic growth and social effects); tourist destination (tourist attraction and perception,

recreational activity and tourism management); and consumer behavior (consumption behavior).

- *Competitiveness & blockchain*: while highlighting the importance of effectiveness and efficiency, maximum sustainable yield and the product design and life cycle management, it has focused on technology adoption (adoption behavior and technology change) and the different uses of the BCT, e.g. participatory approach, consensus algorithm, cooperation parties and transparency; integrated approach and multiple stakeholders; real-time electronic data interchange and interoperability and middleware; electronic commerce, workflow operation, logistics resources and gateway technologies. Also, energy issues have been highlighted, specially energy policy recommendations, energy utilization efficiency, and distributed energy resources.
- *Blockchain & Tourism*: while highlighting the importance of the tourism management and development, and having a corporate strategy, it has focused on consumer behavior (though online reviews and products and services acquired) and issues related to the BCT such as technology adoption behavior; Industry 4.0, virtual reality and smart applications; security solutions; communication cost; and network architecture.

Furthermore, when accounting for all the relations among the three sets, we find the main subjects where each set has been concentrated:

- when considering both *tourism & competitiveness* and *blockchain & tourism* (i.e. having *tourism* in the center) the common interests, besides sustainability, have been consumer behavior, corporate strategy and having a strategic approach, and tourism management and development.
- when considering both *tourism & competitiveness* and *competitiveness & blockchain* (i.e. having *competitiveness* in the center) the common interest, besides sustainability, has been innovation and innovative technology.
- when considering both *competitiveness & blockchain* and *blockchain & tourism* (i.e. having *blockchain* in the center) the common interests, besides sustainability, have been technology adoption and technology change, operations technology and supply chain management.

4. Conclusions and Discussion

This on-going research has highlighted, so far, the research gaps on tourism, competitiveness and blockchain. In one hand, the BCT has not been studied with the perspective of tourism and competitiveness in the following areas:

- Tourist destinations: tourist attraction and perceptions, recreational activities.
- Consumer or consumption behavior.
- Corporate strategy under the strategic approach.

On the other hand, *tourism & competitiveness* has not yet considered the following areas, already studied under the blockchain perspective:

- Technology adoption and adoption behavior.
- Communication cost.

- Network architecture.
- Security solutions.
- Smart applications, Industry 4.0 and virtual reality.
- Energy issues such as energy policy recommendations, energy utilization efficiency, and distributed energy resources.
- Common uses of the BCT, such as participation and consensus algorithms, cooperation among parties, transparency, integrated and multiple stakeholders framework, real-time electronic data interchange, etc.
- Other uses of blockchain such as information management, electronic commerce, workflow operation, logistics resources, and gateway technologies.

Finally, it is crucial to reach a critical mass of BCT adoption, and this could be achieved by sharing experiences among integrated business sectors. Therefore, this paper contributes to the lack of understanding of this technology among tourism managers (Filimonau & Naumova, 2020; Flecha-Barrio et al., 2020) by reviewing BCT applications in other industries within a business model framework and analyzing the consensus of opinions in tourism and hospitality experts.

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Technological innovations in hospitality: Virtual reality and neuromarketing

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Keywords: Neuromarketing technics; Virtual Reality (VR); Travel accommodation; Immersive experiences; Purchase decision.

1. Research Problem

Nowadays the traditional behaviour of travellers is changing due to the emergence of advanced devices that produce increasing impact on tourism industry (Israel et al., 2019). Innovative technologies can generate memorable experiences perceived by potential customers as high value offers (Flavián et al., 2019). Virtual reality (VR) is one of those innovations that is becoming increasingly popular, giving the travellers the ability to virtually explore tourism products that cannot be previously tested (Rainoldi et al., 2018). Hence, VR is changing the way in which tourists search for information and evaluate travel offerings (Tussyadiah et al., 2017), having the possibility to make a free test of their trip experience (Rainoldi et al., 2018; Bruce, 2016). This is why it is important that tourism companies, such as hotels or travel agencies adapt this type of technology to differentiate themselves from competitors when presenting their product (Israel et al., 2019; Bilgihan et al., 2016) and to communicate with potential customers (Tussyadiah et al., 2017), especially in previous stages of the trip where awareness or interest can be created in the mind of the tourist (Jung et al., 2017).

Since the creation of VR tours in hotels is complex and expensive, companies have uncertainty about whether the implementation of this technology is justified (Okumus et al., 2017; Israel et al., 2019). This important practical issue has not yet been addressed by the research. To close this gap, this study uses neuromarketing techniques (eye tracking and heart rate) to analyse whether the use of a 3D tour of a hotel room (compared with the traditional website booking method) influences the willingness of the user to book the room and the speed of the booking decision. Additionally, this research aims to develop a list of hotel room areas that attract the most consumer attention during the VR tour in order to better understand consumer buying behaviour. Finally, practical recommendations for an effective pricing and communication strategies will be proposed.

2. Literature and Methodology

The use of VR may be particularly beneficial for the hotel industry. Thus, some international hotel chains (for example, Hilton or Marriott) already use this technology. In the case of small and medium-sized companies the use of VR can aim to a twofold objective:

differentiate themselves from competitors by offering a completely new form of the room visualization (Bilgihan et al., 2016), and offering entertainment during the booking process. Regarding the former, VR as a marketing tool to promote tourism products has recently received considerable academic attention (Wei, 2019). It has been found that this technology can help customers make better informed decisions and have more realistic expectations about their future tourist experience (Rainoldi et al., 2018). This places the VR as an effective tourist attraction (Marasco et al., 2018) and has great potential to impact the inspiration and information phase, by providing the opportunity to engage with richer information (Beck and Egger, 2018), however, the role that it plays on tourists purchase intentions is quite unknown.

Conventional methods for testing the consumer intentions present some inconvenience because they depend on consumers' willingness and competency to describe their feelings. Neuromarketing offers methods to directly probe minds without requiring demanding conscious participation by the respondent (Morin, 2011). This study aims to link traditional (scales-based questionnaire) and neurophysiological measures (eye tracking and heart rate) to obtain results that would best reflect the real opinions and intentions of the participants.

The whole experimental sample is formed by 40 subjects that was randomly organised in two groups of 20 adults (between 18-60 years, who usually book accommodation online 2 or more times a year). The experimental task consists in observing a hotel room in order to make boking decision. Ten subjects from the Group1 observe the webpage with the pictures of the room type-1 (with descriptive text), and other ten subjects examine the room type-2 throw the VR tour. The Group 2 follows the inverse process (room type-1 throw the VR tour and room type-2 on webpage). Each participant can stop the room review at any moment by pressing one of the two buttons "book" or "not-book", indicating her/his booking intention. When the participant makes the choice, the following question appears: "How much do you think this room costs?" and the subject must choose among different preestablished prices. During the room examination the eye tracking and heart rate measures are collected from the subjects in order to measure the areas/points of the hotel room that attract the most attention of participants during the VR tour. Also, a heat map is generated.

Finally, participants are offered to answer the survey questionnaire, that includes 10 items and 3 constructs: enjoyment (Kim and Jung, 2019), visit intention (Kim and Jung, 2019; Marasco et al., 2018) and intention to use (Walters et al., 2012). Previously validated multimeasurement items for the questionnaire are utilized (Churchill, 1979) after they were adapted to this study's context.

Figure 1. Webpage experiment with pictures and descriptive text

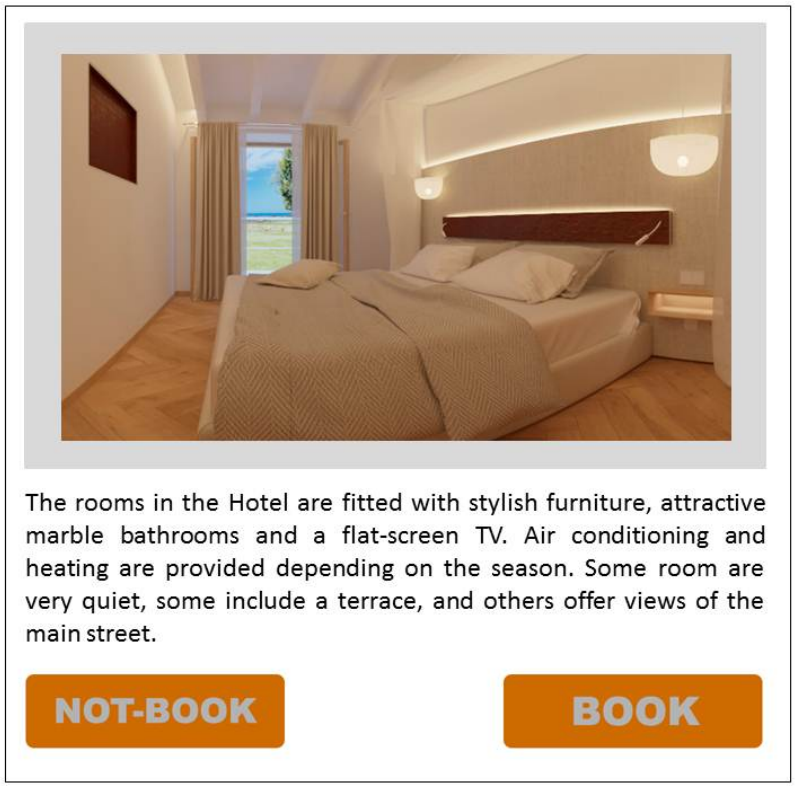


Figure 2. VR tour experiment

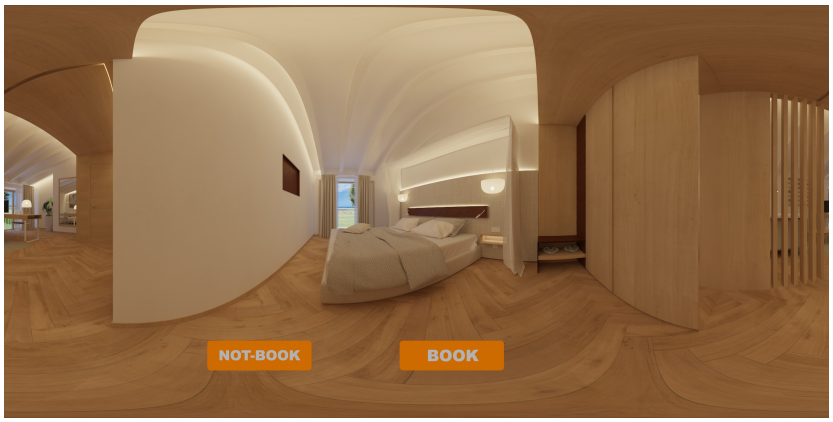
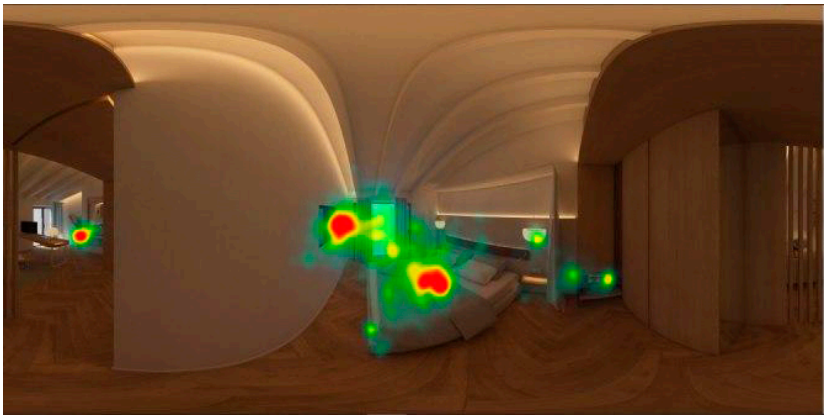


Figure 3. Room type 1 vs. Room type 2 (bedroom + studio)

Figure 4. Heat map of the VR tour



3. Discussion and Implications

This study is pioneer in using neuromarketing techniques to analyse the influence of VR hotel room tours in consumers booking decision. Our results might be of interest to VR technology developers, since they can help them to better tailor applications targeted to the hotels sector. Furthermore, it will contribute to enhance the theoretical knowledge about the use of VR as a promotional tool and to better understand the consumer buying behaviour. However, research related to the incorporation of specific technological solutions within the context of hotel tourism is limited, especially in small independent companies. Despite the importance of the implementation of new technologies, small and medium-sized companies are not sure about the convenience of investment in VR technologies, so the identification and confirmation of the value that these technological solutions may provide to consumer will be of a practical interest for tourism businesses. Our future results therefore can help hotel managers to establish a competitive advantage by using VR as an innovative marketing and communication tool and help them to make more accurate decisions related to pricing policy.

Acknowledgments: The authors gratefully acknowledge the 3D development and financial support provided by Kinacu Systems SL, and the financial support provided by the Balearic Government through the subsidy focused on the R+D project development in SMEs (50% of the subsidy is cofounded by FEDER program from EU institutions) ES01/TCAI/30_2018.

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An Analysis of the Impact of Augmented Reality Marketing (ARM) on Maltese Millennials in the context of Online Shopping

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Keywords: Augmented Reality, Augmented Reality Marketing, Retail, Online Shopping, Technology Acceptance.

1. Research Problem

The Internet has revolutionised the way consumers purchase. While online shopping can be thought of as a service experience (Hilken et al., 2017) providing customers with numerous benefits, it can also present numerous limitations. One of the most significant limitations is that online shopping prevents customers from experiencing physical contact with the product that they intend to purchase, thus, forcing them to evaluate the product based upon their judgment and perception. Rapid technological advancements in recent years have led to the emergence of numerous immersive technologies, one of which is Augmented Reality (AR). Augmented Reality augments computer simulated objects within a real environment, giving customers the impression that the virtual object exists within a real environment (Dacko, 2017). Such technology has been developed through the use of mobile applications due to advances in mobile device technologies (Irshad and Awang, 2016) and in various sectors, most prominently within the marketing sector. Augmented Reality Marketing and its ability to place a virtual product in the customer's hand, enables potential customers to interact with the virtual product, prior to making an effective purchasing decision (Yaoyuneyong et al., 2016).

The purpose of this research is to analyse the impact of Augmented Reality Marketing by investigating the perception, acceptance and adoption of AR applications by Maltese Millennials when shopping online. The focus of this research is upon the Maltese Islands, since the Maltese population in general tends to have a preference for avoiding uncertainty and resisting innovation when compared to other EU countries such as Germany and the Netherlands (Hofstede Insights, 2020).

2. Literature and Methodology

Augmented Reality, innovates the marketing field primarily by blurring the boundaries that exist between the real and virtual environments, as AR simulates digital content within the real world in real time (Javornik, 2014). This gives rise to the concept of spatial presence where the

consumer becomes completely immersed into the experience to the extent that the role of AR, making that experience possible, would be forgotten. This results in the individual believing that the entire experience is real (Hilken et al., 2017).

The willingness of consumers to utilise a technology is critical for its success within the market (tom Dieck and Jung, 2018). To illustrate, Google Glass, an early entrant AR technology within the market failed because it was not accepted and utilised by individuals due to privacy concerns (Hilken et al., 2017). User acceptance of an innovative technology can be determined through the application of various models, with the Technology Acceptance Model (TAM) being the most renowned model for predicting user acceptance, being accepted and validated by various researchers (Leue, Jung and Kingdom, 2013; tom Dieck and Jung, 2018). A variant of the TAM is the Consumer Technology Acceptance Model (cTAM) (Figure 1), adapting technology acceptance to the consumer context (Bruner and Kumar, 2005).

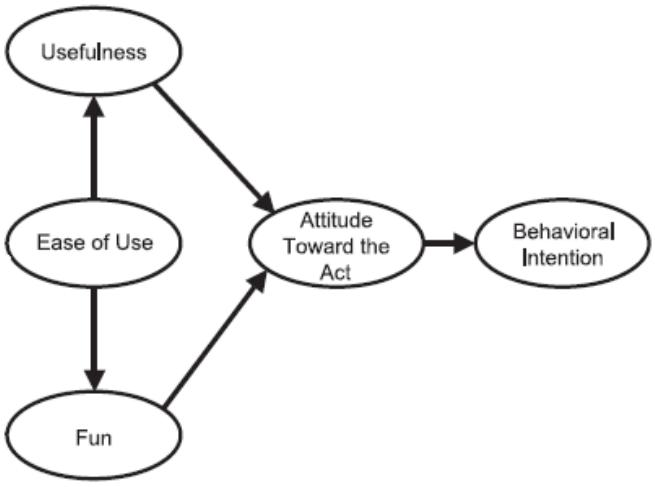

Figure 1 – The cTAM, as proposed by (Bruner and Kumar, 2005).

Through a proposed framework (Figure 2), integrating the cTAM and three external variables (Interactivity, Physical Control and Information Quality), this research explores the antecedents of the attitude and behavioural intention of customers to make use of AR applications when shopping online. 'Attitude', is often associated with the acceptance of a particular technology, being defined by Renaud and Biljon, (2008, p.2) as *"...an attitude towards a technology..."* being *"...influenced by various factors"* whereas 'Intention' is often associated with the adoption of a particular technology, being defined by Renaud and Biljon (2008, p.1) as *"...a process – starting with the user becoming aware of the technology, and ending with the user embracing the technology and making full use of it"*.

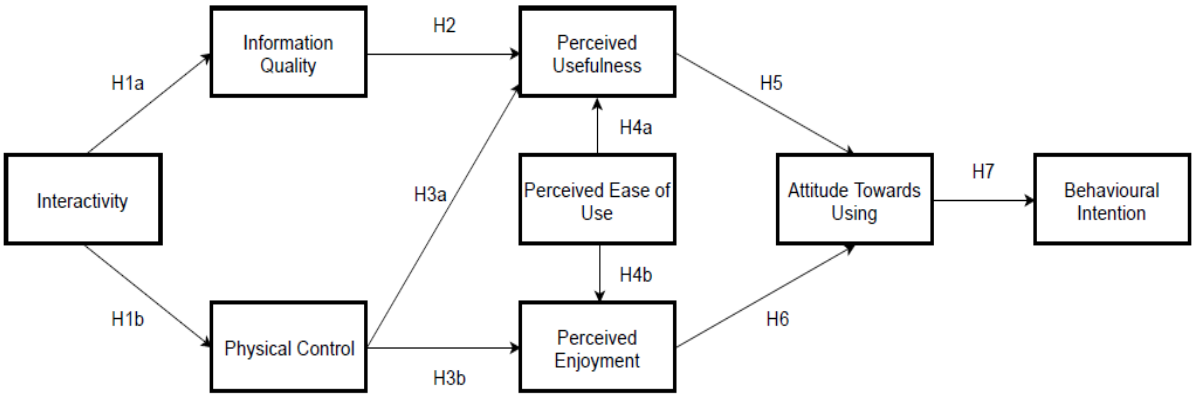

Figure 2 - The proposed framework, where a total of 10 relationships were defined through hypotheses.

3. Discussion and Implications

This research has analyzed the extent to which Maltese Millennials will accept and adopt AR applications in their online shopping activities, in an effort to satisfy the research objective, that is, to investigate the impact of ARM on Maltese Millennials. Our research found support for all hypotheses explaining relationships between the constructs within the proposed framework. Furthermore, through multiple regression analysis, *Information Quality* and *Perceived Enjoyment* were identified as the antecedents of *Attitude* whereas *Perceived Usefulness* and *Attitude* were identified as the antecedents of *Behavioral Intention*.

Overall, Maltese Millennials seem to have favorable perceptions and attitudes towards AR applications. Maltese Millennials also exhibited favorable behavioral intentions towards adopting AR applications. Taken together, these findings suggest that in actual fact, Augmented Reality Marketing seems to have a positive impact upon Maltese Millennials provided that they are likely to accept and adopt such technology in their online shopping activities.

Based upon the results emerging from this research, brands implementing AR applications should focus on three aspects, namely *Information Quality*, *Usefulness* and *Enjoyment*. Brands should provide high quality information to users through high quality tracking in an effort to ensure that the virtual object is appropriately aligned with the users' real environment. Brands should also ensure that the AR application is enjoyable to use, by for instance providing more control to users. Finally, brands should make the AR application useful for its purpose through, for instance, the generation of high quality information. Focus on such elements might be beneficial since Information Quality and Perceived Enjoyment were identified as the antecedents of Attitude, resulting in technology acceptance whereas Perceived Usefulness was identified as one antecedent of Behavioral Intention, resulting in technology adoption.

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Immersive virtual experiences: shaping the future of museum visits?

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Keywords: virtual reality, museums, immersive, engagement, visit intentions, TAM model.

Extended abstract

Museums have been facing the challenge of continuously adopting Information and Communication Technologies (ICTs) so as to not only enhance visitors' satisfaction but also to preserve artworks (Recuero & Francis, 2019). Precisely, most of museums attendance indicators report a decrease in visitor numbers (Mencarelli et al., 2010) which is making that museum managers constantly look for tools that help them balance their need of increasing visitor arrivals and their preservation objectives.

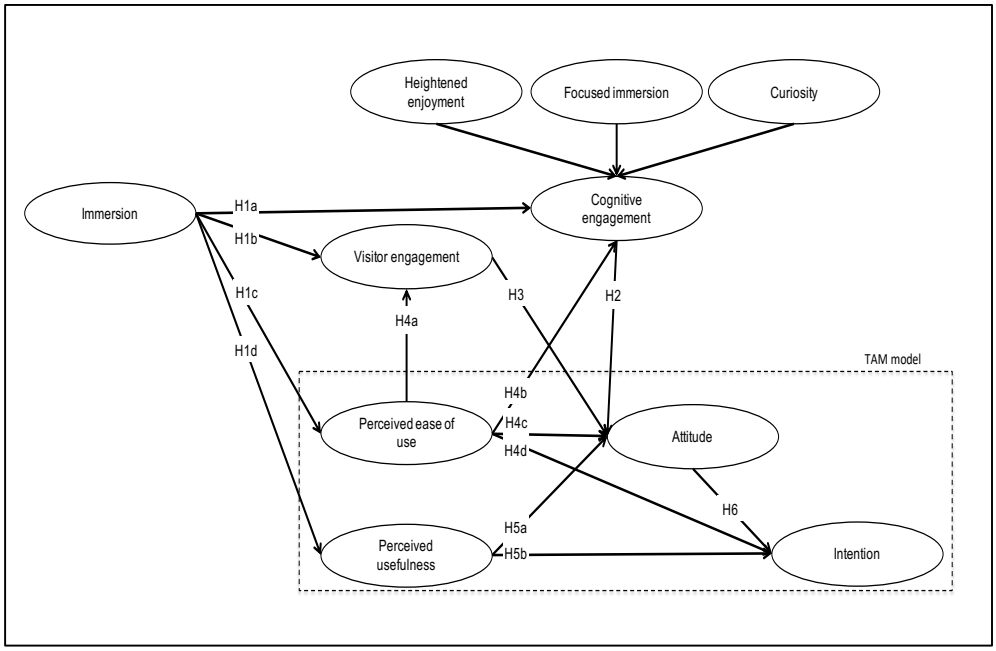
Regarding visitors' satisfaction, the speedy growth of ICTs has completely modified museumgoers' edutainment needs and hence, their customer journey. High-tech tools, such as beacons, Near Field Communication (NFC) tags, Quick Response (QR) codes, bots, apps, wearables, Internet of Things (IoT) devices, allow tracking visitors' behaviours in real time. Therefore, "technology-empowered experiences" seem to be the future of museum visits as these offer interactive, embodying and immersive options for a wider range of target audiences (Hede et al., 2014; Wilson-Barnao, 2017).

The adoption of mixed reality (i.e. augmented reality, virtual reality, 360-degree video and holograms) is not recent in the museum sector as in 1976 the first Museum of Holography was opened (Shepard, 1976). It has been recognised that museum service experience entails many different aspects such as lighting, atmosphere, staff attitudes, promotion, volunteers, etc. (Del Chiappa et al., 2014; Goulding, 2000; Kemp, 2017). Besides, it has been acknowledged that museumgoers demand high-quality content and personalized information that makes their experiences more immersive and participative (Dieck et al. 2016). Thus, virtual reality (VR) is been now considered as an opportunity to museums as it provides users a full immersion experience in a digital environment (Guttentag, 2010).

Based on the precedent discussion, this research seeks to bring light on the significance of this ground-breaking innovation following the Technology Acceptance Model (TAM). Particularly, the model aims to examine the influence of immersion and visitor and cognitive engagement as external variables. Figure 1 details the proposed model. A Spanish museum

superstar has been selected for this research on the basis of its popularity and the adoption of immersive virtual visits.

Figure 1. Theoretical model and hypotheses.



The proposed model is tested using a panel survey based on the quota sampling technique and the data is examined across structural equation modeling. The questionnaire comprises 29 items and 7 socio-demographic variables. All items were adapted from published studies and are measured on seven-point Likert scales. The items for immersion were adapted from Flavián et al.'s (2019) study. Perceived ease of use and the second order construct cognitive engagement are measured using Pallud's scale (2016). The scale developed by Kim and Hall (2019) is used to measure perceived usefulness. Visitor engagement was adapted from Dieck, Jung and Rauschnabel's (2018) study. Attitude and visit intention are captured using the scales of Chung, Han and Joun (2015). The items are slightly adapted to the museum context and precisely to the Spanish museum selected.

Partial Least Squares Structural equation modeling (PLS-SEM) is used to test the proposed model, as it allows the inclusion of second order constructs without diminishing the model with identification problems.

As far as we know, this research is the first that analyses TAM model and the external variables immersion and engagement in a VR context. Furthermore, this research offers new insights concerning the behavioural effects of VR environments. Besides, the theoretical contributions of the proposed model add value to TAM model literature by considering other variables (i.e. immersion and engagement). Moreover, the second order construct (i.e. cognitive engagement) will probably offer new interesting additional contributions.

The managerial contributions will offer valuable information not only for museums but also for the tourism industry. Results will pinpoint the attitude, engagement and visit intention among

VR users. The analysis will provide useful insights for the effective management of immersive virtual visits. The principal limitation of this study is that the proposed model will be examined using a quota sampling method.

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A Picture Can Tell a Thousand Words: Understanding Visual Digital Contents of Chinese Restaurants

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Keywords: Image analysis, Text mining, Deep Learning, Restaurants, Digital consumer behavior

1. Research Problem and Literature

In this era of Marketing 4.0, digital content seems very important in the culinary tourism. Before this era, restaurant managers used to utilise costly and time intensive survey to understand their consumers (Greenlaw and Brown-Welty, 2009). Specifically, Restaurant's consumers are posting regarding their experience in the restaurant through different digital contents (Moe, Netzer, and Schweidel, 2017). Previous research has investigated different types of digital contents such as product reviews (Gensler, Völckner, Egger, Fischbach, and Schoder, 2015; Moon and Kamakura, 2017; Tirunillai and Tellis, 2012, 2014), consumer messages posted in online forums (Netzer, Feldman, Goldenberg, and Fresko, 2012), social tags (Nam, Joshi, and Kannan, 2017; Nam and Kannan, 2014), social connections (Culotta and Cutler, 2016), and tweets (Liu, Burns, and Hou, 2017). However, there have been very little research done to investigate the visual digital content such as images or photos posted online. This research fills this gap by implementing image clustering to find out types of contents related to restaurants posted over the online. Visual elements attract the user's attention because they are processed faster and easier than text (Powell *et al.*, 2015). A visual image can also amplify the response of users to textual messages (Geise and Baden, 2015), which can lead to involvement through likes, comments and sharing with others. This visual information can then be used to increase the efficiency of targeted advertising, and to support value and advertising co-creation (Koivisto and Mattila, 2018).

With the advancement of the computer vision field, the researcher can collect and assess visual data (Mulfari, Celesti, Fazio, Villari, and Puliafito, 2016). Deep learning, specifically convolutional neural networks, can now recognize objects (Ma et al., 2018). Therefore, deep learning approaches can be used to classify images based on similarities between images. This research assesses the types of contents posted by consumers and managers of restaurants regarding restaurant experience.

2. Methodology and Analysis

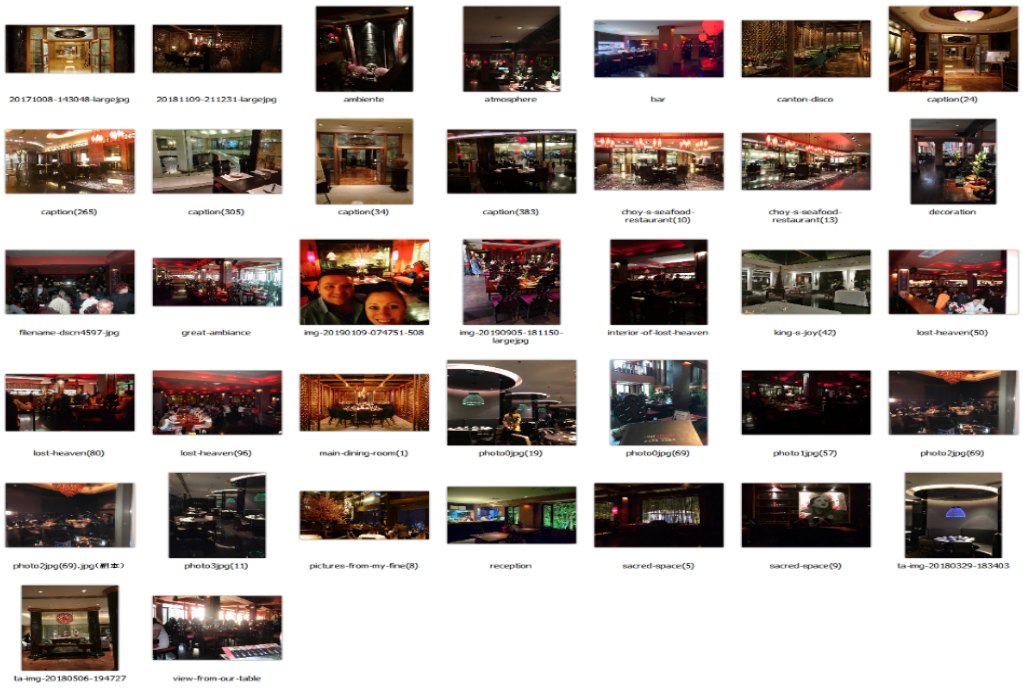
2.1 Image collection and clustering

First, we collected 4000 photos of several Chinese restaurants from Trip Advisor website. In this paper used for analysis Inception V3 for image recognition and it is Google's deep neural

network which trained on the ImageNet data set (e.g., Krizhevsky, Sutskever, and Hinton, 2012). This procedure is called image embedding. Image embedding through the use of neural network produces an enhanced data table for each image based on the contents of the image. During the next step, we measured the similarities between photos by measuring the cosine distance of the corresponding vectors. In the end, the data generated from the cosine distance metric was used for hierarchical clustering. We can find similar types of photos and differences among the group of photos through this hierarchical clustering procedure and it helped us to identify different types of photos related to restaurants posted online. Image analysis and hierarchical clustering generated 12 clusters. These clusters provide the types of photos posted online both by managers and consumers of restaurants:

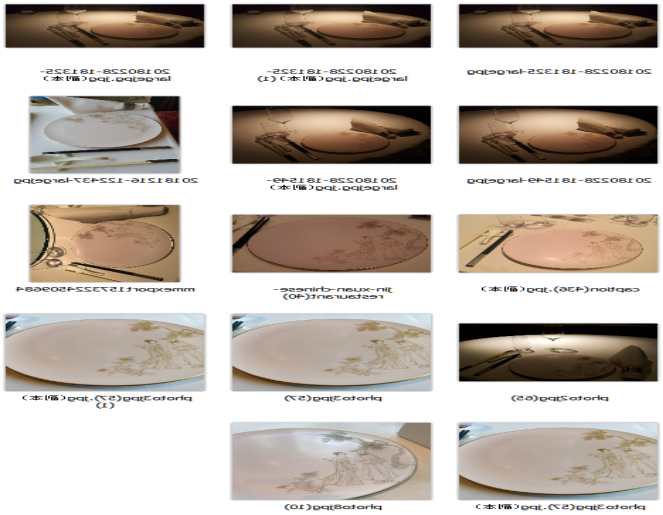
1. Atmospheric: Related to the air or kind of atmosphere, always consisting of lighting and music. It often creates a distinctive mood, especially romantic or nostalgic.

Figure 1. Images of Atmospheric in restaurants (Source: Images cluster generated through the help of deep learning)



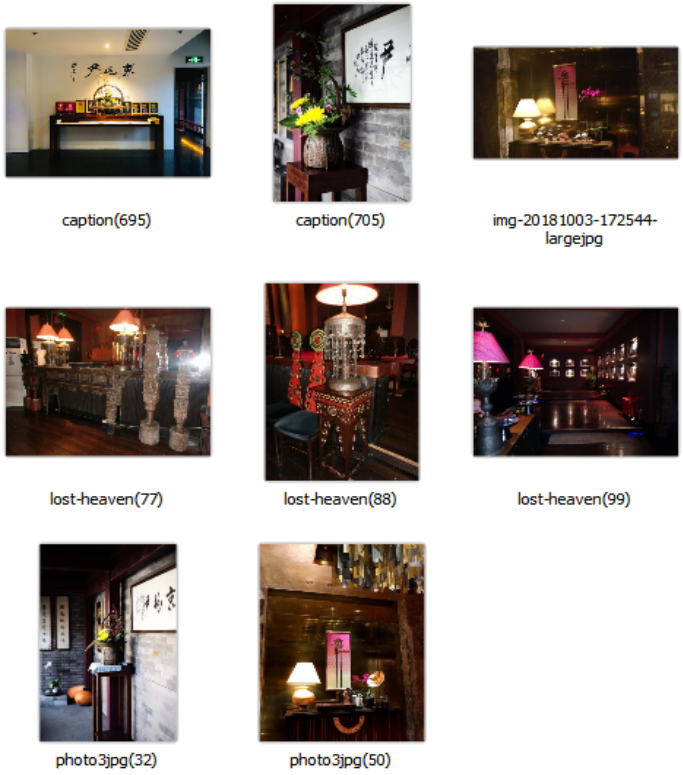
2. Table Decorations: The design of components on the table which includes plates, chopsticks, spoons, forks, cups, etc. They use customized patterns or different colors to match the tone of the restaurant or the connotation of the dishes.

Figure 2. Images of Table Decorations (Source: Images cluster generated through the help of deep learning)



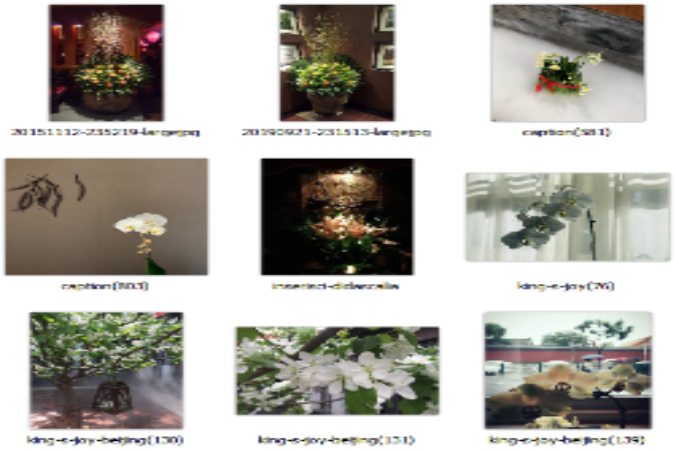
3. Decorations using lamps in Restaurants: Different brightness, different colors, different appearances, sizes, and placement methods will create different dining environments.

Figure 3. Images of Lamps in Restaurants (Source: Images cluster generated through the help of deep learning)



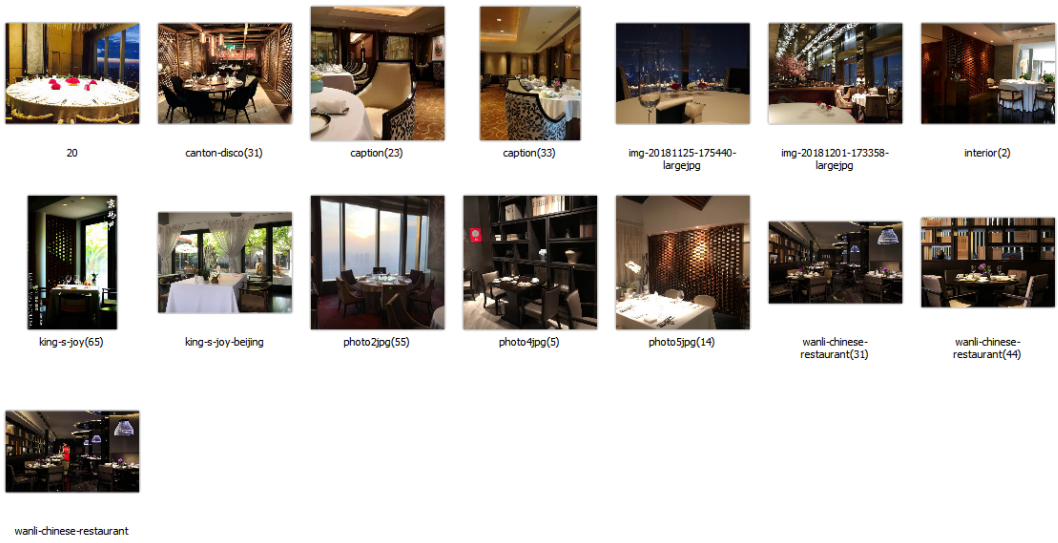
4. Decorations using plants in Restaurants: Chinese people believe in feng shui, so the placement of indoor plants is usually very particular.

Figure 4. Images of Plants in Restaurants (Source: Images cluster generated through the help of deep learning)



5. Pictures of Interior Design in Restaurants: Round table or a square table, what material furniture to use, the main color of the dining area, the number of tables and chairs in a certain space, and the placement of different furniture in the private room can be seen in the restaurant's careful thinking.

Figure 5. Images of Interior Design in Restaurants (Source: Images cluster generated through the help of deep learning)



6. Award Picture of Restaurants: The certificate of merit is a reflection of the restaurant's capabilities and specifications, and is used to reflect the restaurant's professionalism, popularity, and compliance with hygiene standards.

Figure 6. Images of Award Picture of Restaurants (Source: Images cluster generated through the help of deep learning)

2014

2015(1)

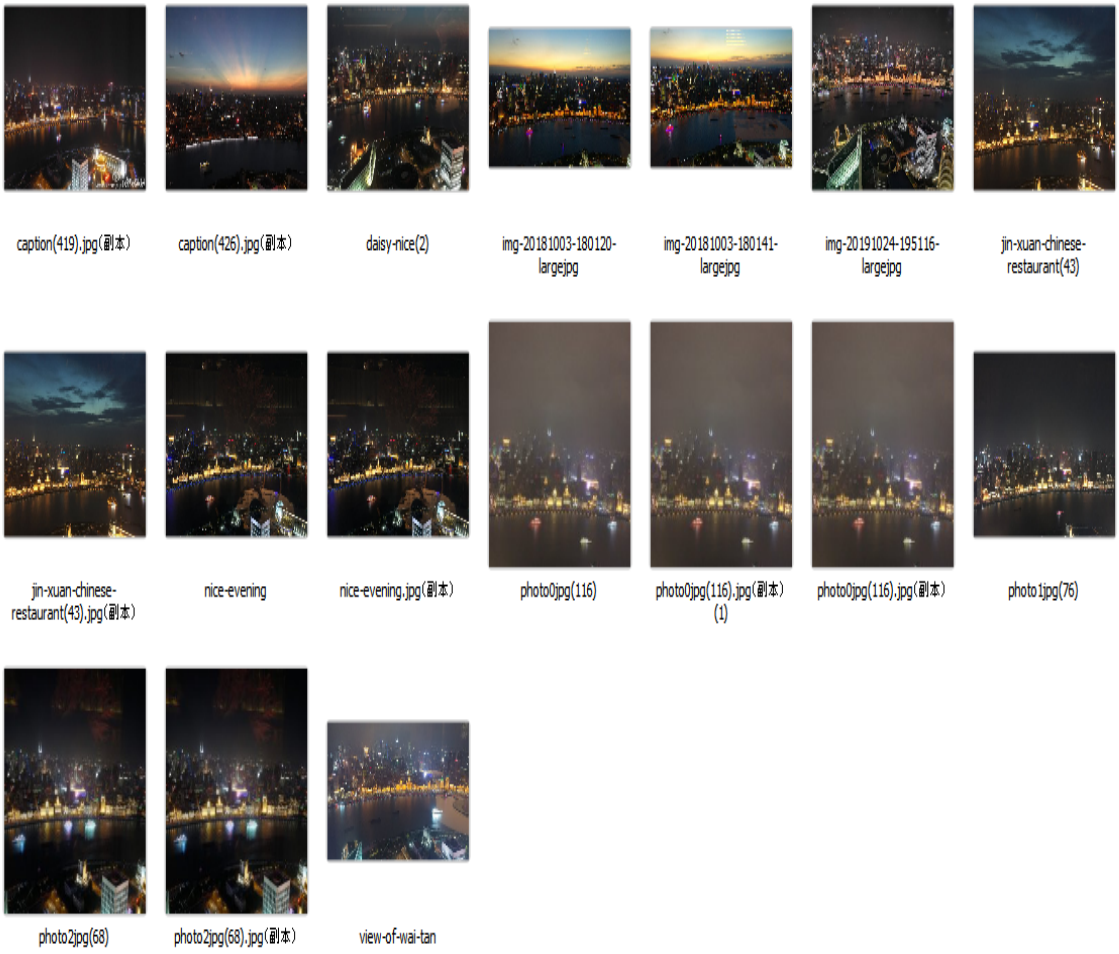
caption(835)

kingsjoy(34)

that-s-beijing

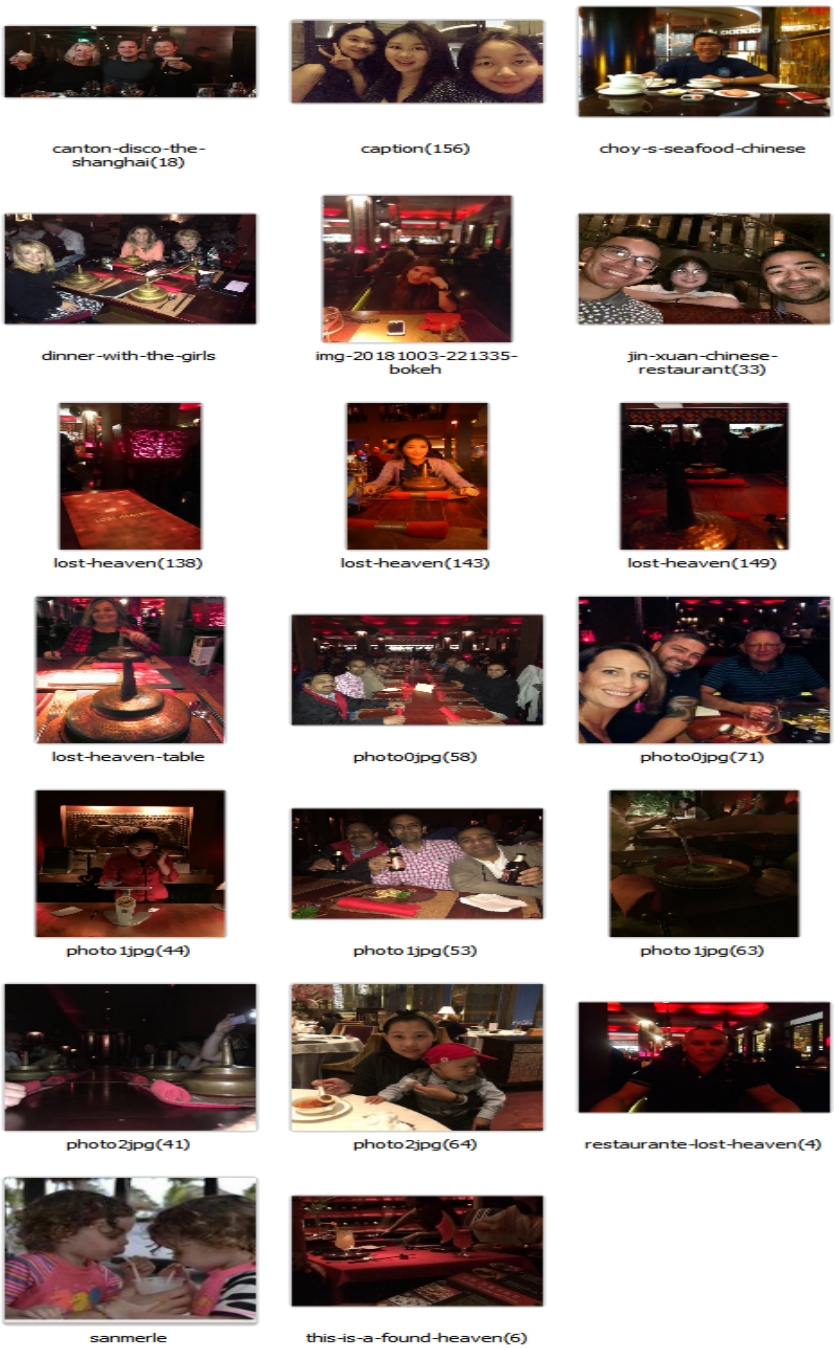
7. Views from the restaurants: Depend on the location of the restaurant, the visual experience while dining is different. Many customers patronize a restaurant for good visual enjoyment while dining. Places overlooking the city are often noticed, and good nights are lingering.

Figure 7. Images of Views from the Restaurants (Source: Images cluster generated through the help of deep learning).



8. Consumers having fun in the restaurants: When people are happy, they always think of using the camera to record the momentary beauty and use photos to convey the sense of joy. Three or five friends, family members, group photos posted online, can show the restaurant's dining service quality and dish satisfaction.

Figure 8. Images of Consumers Having Fun in the Restaurants (Source: Images cluster generated through the help of deep learning)



9. Consumers Promoting Foods: When expressing their satisfaction with the dishes and customers, the guests will ask for photos with the restaurant's signature dishes or logos. Sometimes they take the initiative and sometimes they invite them to the restaurant.

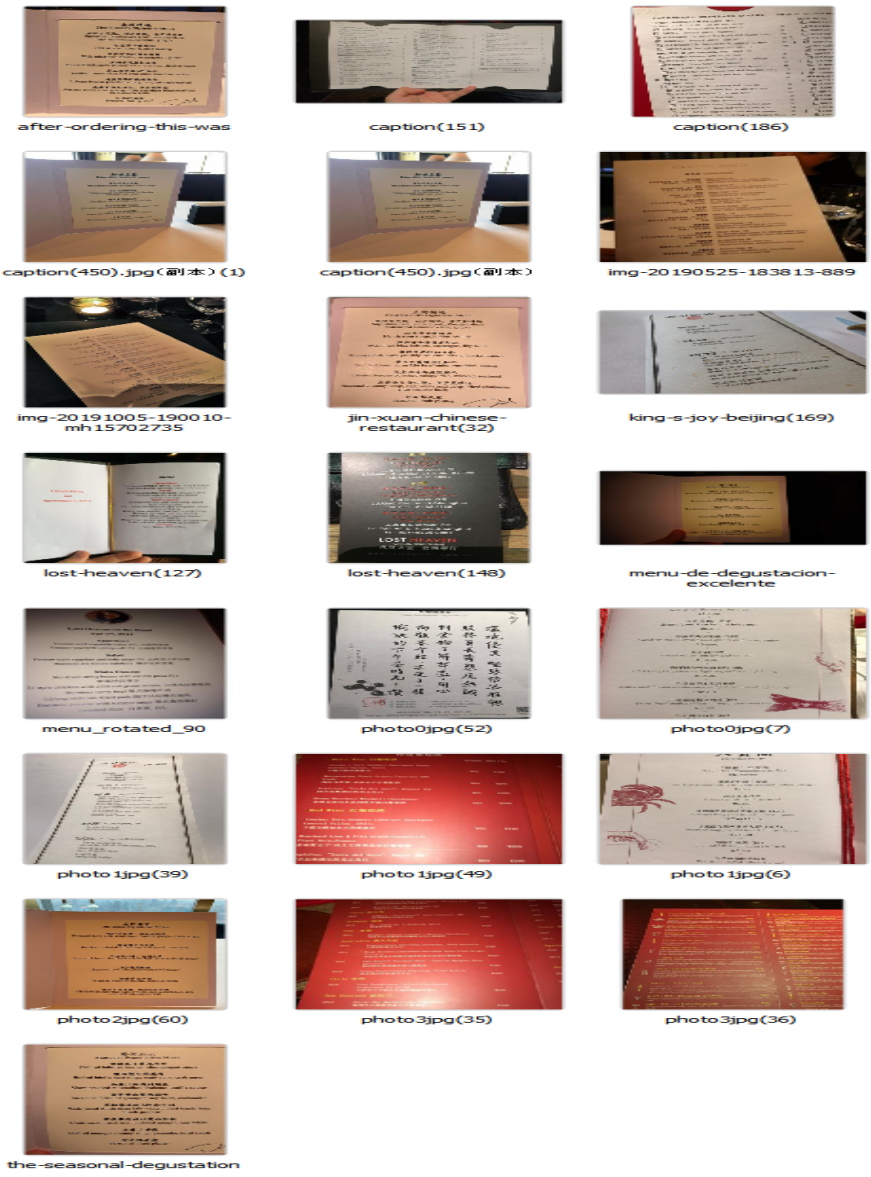
Figure 9. Images of Consumers Promoting Foods (Source: Images cluster generated through the help of deep learning)

10. Consumers Testimonials: In some restaurants, there will be a space to show the customer's evaluation of the store, or a message board is hung at a certain place in the restaurant, or a photo is taken with a similar blessing, or message book is used to leave an impression. Through this form, the restaurant has established more connections and concerns with customers. These customers also endorse the restaurant, which is more convincing. This is very important for the restaurant to establish a good image in the minds of the public.

Figure 10. Images of Consumers Testimonials (Source: Images cluster generated through the help of deep learning)

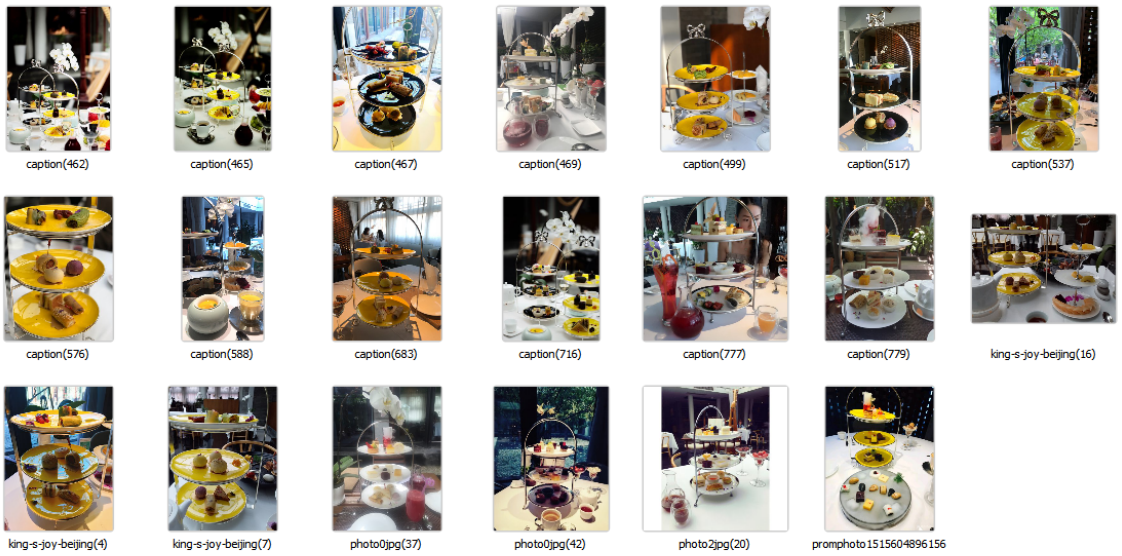
11. Pictures of Menus: The menu is mainly used to remind customers of the dining content of this restaurant. It usually highlights some special dishes to attract customers and give customers the opportunity to make their order in advance. The design of the menu is usually very particular. Its color should be consistent with the decoration color of the restaurant. It should pay attention to the classification. It recommends special dishes through special symbols.

Figure 11. Images of Menus (Source: Images cluster generated through the help of deep learning)



12. Food and Drink Presentation: Among the pictures uploaded by many customers, the photos of dishes and drinks are the most, which is enough to show that customers value this part of the content. Some well-prepared foods and drinks often arouse customers' favor. For customers, a good dish appearance can add points to the meal and increase the value of the meal. The analysis found some of the noodles installed by the steamer are mostly traditional Chinese food. For many Chinese families, this is an indispensable food for three meals a day. Some beautifully set afternoon tea dessert sets are the first choice for delicate girls. Some quilts and drinks with different decorations are printed on each other, which further enhances the customer's love. Customers are likely to be in love with this restaurant because of such a photo.

Figure 12. Images of Food and Drink Presentation (Source: Images cluster generated through the help of deep learning)



2.2 Extracting information from texts

In this research have been asked 125 respondents from China to complete three open-ended survey questions. A word cloud analysis was conducted using the orange program. The size of the word represents how frequently a word compare to other words appeared in the responses. It provides a visual illustration of frequently used words and other words used in open-text responses. It helped to get meaningful and informative data from short responses:

I."What they want to know before going to a restaurant?": 1) Dishes: 2) Price; 3) Taste; 4) Environment; 5) Service.

II."What motivates them to post reviews online?": 1) Discounts; 2) Gifts or Coupons; 3) Good Service from owner or employees; 4) Good Photos.

III."With whom they want to share their reviews?": 1) Owners (Charming); 2) Employees; 3) Other consumers; 4) Other restaurants; 5) Everyone.

3. Conclusion

This empirical study has theoretical and practical implications for restaurant image and marketing management in social media. First, the study shows which specific aspects of

restaurant services, reflected in the visual content provided by users and managers of restaurants, actually led to a positive assessment of the reviews. Secondly, this paper provides a text analysis of consumer's behavior before going to a restaurant and motives to share information after purchasing. Further research should study the behavior of tourists with the addition of variables such as the publication of posts on the first visit and repeated visits to restaurants, time of visit, level of tourist satisfaction.

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An analysis of the impact of digital competence in customer performance in the hotel industry in Brazil

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Do emerging markets organizations present differences compared to those of developed countries that require a different approach in the study of the derived phenomena? Evidence from strategic management and innovation literature indicates that institutional aspects in emerging Market countries may affect corporate strategy, configuration, and performance (Govindarajan & Trimble, 2012).

Kahnna, Palepu, and Sinha (2005) mention that to succeed in emerging markets multinational firms must adapt to context: political system, degree of market openness, product market structure, labor market, regulatory system and capital markets. On the other hand, local large successful local firms tend to be diversified and incorporate parts of the intermediary services scarce on the context but relevant to succeed, as part of their competitive advantage strategy. Van Doorn et al (2016) proposes that automation in frontline could foster better results for the service industry, but is this true for emerging markets? This study aims to help companies to improve their strategies in emerging countries since the literature points to difficulties from global firms to either develop successful strategies in emerging markets and to succeed outside their local economies (Kahnna, Palepu & Sinha, 2005)

Regarding artificial intelligence (AI) and automation, what is the landscape in the Brazilian environment for the hospitality sector? Does the use of AI improve performance in ratings and customer engagement? What are the key areas of automation for this environment, and how does it relate to customer performance?

In order to investigate those aspects, the hotel industry was selected as the research setting. The recent hotel industry transformation offers a diverse research setting that is suitable for investigating the use of AI in hotel management and their relationship with the performance. Over the last three decades, the Brazilian hotel industry has changed significantly, and the competitiveness of the hotel supply has intensified. The management model started a migration from family-owned and managed hotels to hotels that are affiliated to both Brazilian and international chains. This new competitive landscape puts pressure on Brazilian hotels to modernize their products and improve their operations system (Cypriano, 2014).

Considering that management practices are dependent on the context of which the firms are part, the first stage of the study aims to identify the relevant drivers and/or barriers for the adoption of AI in the hotel industry.

Using a qualitative approach, we will collect primary data through in-depth interviews with C-level executives of hotels of various categories (economy, midscale, upscale and resorts)

affiliated to hotel chains, located in Brazil. Based on the publication of JLL (Lodging Industry in numbers – Brazil 2019), the research target population is composed of 1300 hotels. To

access these demographics, a partnership with two main Brazilian Hotel Associations will be established to collect the primary data: (i) Brazilian Hotel Operators Association (FOHB) that represents the major hotel chains; and (ii) Resorts Brasil that joins the most important resorts operating in the country. We will also access secondary data through an analysis of the annual reports of hotel chains, from the past 3 years (2018-2020), as data from Google Trends Brasil (2020) shows that the interest for this search term has been increasing steadily since 2018.

We create the questions for the interview script, about the state of the automation and the use of AI in the hotel industry in Brazil, using the Unified Theory of Acceptance and Use of Technology/UTAUT (Venkatesh et al., 2011), widely used in information systems research as a theoretical framework for explaining technology acceptance and use, composed by the following variables: performance expectancy, effort expectancy, social influence and facilitating conditions. We will also measure the perceptions of different stakeholders, such as clients (customer experience management), intermediates in the value chain (revenue management), employees (Human Resource Management), suppliers (Cost Management) e investors (hotel asset management).

As proposed by Chandy and Narasimhan (2015), much of the economic growth happening in the world comes from emerging market economies. Unfortunately, emerging markets are understudied in the business literature, in much overlooked segment (hospitality), since research in digital competence is mainly focused in the global north, we aim to bridge this gap in the literature and bring to light the strategies and results of the brazilian hospitality sector, helping professionals to improve their hotels´ performance and locations (cities, states) to foster and improve their economic outcomes.

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Management and leadership practices of organizations in the digital transformation context

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Keywords: Digital transformation, virtual work, management, leadership, distributed workforce

1. Research Problem

Digital transformation (DT) and the growing use of new digital technologies impact business en- vironments, and organizations as a whole, allowing new business model creation and ways of do- ing business by rearranging processes, tasks and overall strategy to create value in organizations and remain competitive (Verhoef et al., 2019; Vuori et al., 2019). Implementation of new digital technologies in organizations enable connectivity and thus flexibility for individuals to take work activities outside of office locations and collaborate across functions. Digital technologies e.g., digital devices, online platforms, cloud services and analytic tools, facilitate quicker and easier information exchange between individuals, organizations and governments without the restrictions in location and time. As a consequence, individuals can choose when and where to carry out their work tasks, and therefore achieve increased independence (Dittes et al., 2019; Kelliher & Ander- son, 2010), while concurrently ensuring fast and efficient knowledge flow across the organization. Digital technology enables novel forms of dispersed and virtual work where both time, geography, organizational boundaries and culture create a distance to co-workers and colleagues (Fisher & Fisher, 2001; Jimenez et al., 2017; Martins et al., 2004; Taras et al., 2019).

The phenomenon of DT affects organizations and brings along changes to the organization and management of work. While advancing digital technology is at the core of DT, at the same time, digital technology alone is insufficient for effective management of dispersed and virtual teams (Dittes et al., 2019; Fisher & Fisher, 2001). To gain the most value from digital technology in organizations, organizations require rearrangements in structure, strategy, processes, culture (Gui- nan et al., 2019; Mergel et al., 2019; Orellana, 2017; Schwarzmüller et al., 2018; Vuori et al., 2019), and how work is managed (Singh et al., 2019). Because of this, large organizations across industries are beginning to place DT among the most important strategic priorities. Despite the increasing interest in DT by practitioners and researchers alike, existing studies tend to focus on changes in strategy, marketing and operations (Verhoef et al., 2019), managers role in strategic changes and DT activity coordination across an organization (Singh et al., 2019). At the same time, the effects of DT on the management and leadership of individuals in organizations are still un- clear. Therefore, this study aims to identify the practices for managing and leading individuals in organizations in the DT context.

2. Literature and Methodology

Organizations undergoing DT and wanting to employ dispersed and virtual teams experience chal- lenges connected to having a workforce that operates in different geographic locations and time zones and includes diverse cultures (Fisher & Fisher, 2001; Larson & DeChurch, 2020). These challenges are also present in organizations where individuals work in distributed intra-organiza- tional (i.e., different location within one organization, e.g., team members distributed in different business locations) and inter-organizational (i.e., different location between organizations) con- texts.

Many of the same challenges exist in traditional work teams, such as creating a successful team and developing effective interaction and task coordination between the team and manager (Neeley, 2015). However, management of work and task coordination in virtual environments becomes more complex than when employees are co-located, because achieving a shared understanding of information and communication on goals and priorities is more challenging when individuals work in a variety of different physical contexts, frequently with different needs in their local environ- ments. Work distributed in different countries, locations, with individuals of diverse backgrounds can result in communication issues, misunderstandings, challenges in collaboration, poor knowledge management, and social distance and distrust (Bisbe & Sivabalan, 2017; Fisher & Fisher, 2001; Larson & DeChurch, 2020). However, managers who can lead virtual teams suc- cessfully bring competitive advantage to the operations they manage (Fisher & Fisher, 2001; Liao, 2017).

Large organizations in retail, tourism, market research and financial services establish a dedicated role for managing digital transformation: chief digital officer (CDO). CDOs carry the responsibil- ity to drive digital initiatives, pursue and implement DT activities and drive change across an or- ganization (Singh et al., 2019). In addition to CDO, organizations appoint other roles such as Chief Information Officers with the focus on IT support and deployment, Chief Data Officers with re- sponsibilities in the area of data management and data analytics, Chief Innovation Officers with a focus on innovation, and Chief Strategy Officers with the focus on corporate strategy and processes (Singh et al., 2019; Singh & Hess, 2017). Yet, while the literature suggests establishing CDO as a position to drive DT in organizations, it is not clear how these professionals can lead the change from initiating DT activities to fully integrating them into the organization. Additionally, none of the aforementioned roles are concerned with the management and leadership of the employees in organizations. Therefore, this study outlines the management and leadership practices in organi- zations undergoing DT and employing dispersed and virtual teams to gain insight into practices employed in DT context. For this purpose, we carry out a qualitative literature review and analyze the literature to investigate the main aspects of managing and leading dispersed and virtual teams. Further steps of this study include conducting semi-structured interviews in a large organization undergoing DT.

3. Discussion and Implications

The preliminary findings raise the issue of understanding the importance of managers establishing strong managerial perceptual skills, encouraging collaboration and knowledge sharing in dispersed and virtual teams, encouraging feedback and dialogue, and coaching team members on self-man- agement and organization (Fisher & Fisher, 2001; Poulsen &

Ipsen, 2017). In the next steps of the study, we will outline which practices of management and leadership in organizations undergoing DT emerge from our primary data collection.

Overall, the study contributes to research on the DT by clarifying and organizing key aspects of the management and leadership of dispersed and virtual work in organizations undergoing DT.

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Technology with a purpose: The impact of disruptive technologies on retailers' competitive advantage.

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Keywords: retail, technological solutions typology, value chain, competitive advantage, winning strategies.

1. Research Problem

Technology has always played a key role as enabler of change in the evolution of retailing (Grewal et al., 2018; Inma and Nikolova, 2017). In today's competitive world, survival is not possible without investments in technology that is substantial enough to deliver superior value to customers while supporting retailers' long-term economic goals (McKinsey, 2018; Kahn, 2018). Therefore, companies need to direct their inherently limited resources towards retailing technological solutions that have the greatest impact (Grewal et al., 2020). However, given the vast array of technologies available, firms may find it challenging to identify the investments that have the greatest pay-off potential (Linzbach et al., 2019).

Current advancements in technology encourage and sustain strategies that fulfil customer needs in unprecedented ways and increase the retailer productivity (Willems et al., 2017). Extant literature suggests more in-depth research is required on the use and challenges of technology as a driver of new marketing strategies (Verhoef and Bijmolt, 2019; Kumar, 2018; Roy, 2018). Accordingly, the objectives of this paper are twofold. First, to understand which are the key technological solutions that retail experts identify as enablers of a superior competitive advantage. The second objective is to identify the perceived competitive positioning of retail companies that are successfully operating in the Spanish retail playfield, as suggested by the Kahn Retailing Success Matrix (Kahn, 2018).

2. Literature and Methodology

The evolution of customer behaviour, combined with increased digital competition and transformative technological developments, is re-shaping the retail environment (Kumar, 2018; WEF, 2017).

Technology brings tremendous changes in terms of customer behaviour, from how shoppers search and organize information to how they purchase and consume products (Flavián et al., 2020; Goode and Main, 2019). Conversational platforms, digital catalogues powered by augmented reality (AR) and personalized recommendations streamed via social media are some of the technological solutions used by customers to gather and curate pre-purchase information. The shopping experience is also changing as retailers digitize their physical stores and invest in AR, in-shop navigation, geo-fencing, smart dressing rooms, mobile payments and automated check-out solutions (Grewal, 2020; Bonetti, 2019; Mosquera et al., 2018; Willems et al., 2017).

With advancements in IoT sensors, RFID, mobile technology and predictive analytical technics, companies can collect and interpret an immense amount of structured transactional data as well as unstructured behavioural data (Linzbach, 2019; PWC, 2016; Hofacker et al., 2016). Through the creation of a rich customer data foundation and the integration of disruptive technology, the sector's digital transformation allows new sources of value creation. Reinatz et al. (2019) conceptualize five such sources at the firm level that are enabled by digital technologies. Their categorization, together with an extensive literature review and a qualitative study, provided input for developing the initial inventory of 20 game-changing technological solutions that guided our research.

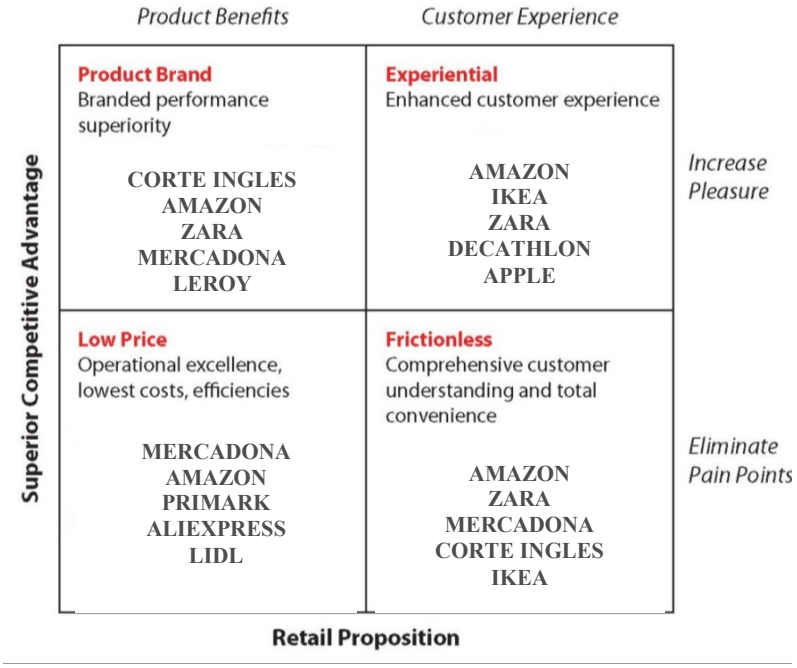
Reinatz et al. (2019)'s model suggests that the new sources of value creation can enhance perceived customer benefits along the purchase decision process. According to Kahn (2018), whether a retailer's proposition is based on product benefits or on improving the customer experience, companies succeed when they either provide more hedonic benefits to their customers or eliminate pain points from their shopping experience, thereby creating a superior competitive advantage. The Kahn Retailing Success Matrix (Kahn, 2018) provides the theoretical framework for our research and allows us to study the retailing strategy that is best enabled by each technological solution. We also follow Kahn's framework to analyse the perceived competitive positioning of the leading retail companies in Spain.

As part of our research, we carried out a comprehensive literature review as well as a qualitative study comprising three in-depth interviews and three focus groups. The qualitative analyses were followed by an empirical study. Survey data was collected from a sample of 168 consumer-good manufacturers, retailers and technological service providers operating in Spain. We applied multiple correspondence analysis to develop two positioning maps. The first one plots the positioning of the technological solutions combined with the retail strategies proposed by Kahn (2018). The second one is a graphic representation of the perceived competitive positioning of retailers relative to Kahn (2018)'s four winning strategies.

3. Results and Discussion

This study identifies the technological solutions that retail experts believe have the greatest impact on each one of the four quadrants of Kahn's matrix. In addition, our results shed light on the perceived competitive positioning of key retail companies. "*Leadership depends on offering superior value in two quadrants and meeting fair value in the other two*" (Kahn, 2018, p. 13). Our findings corroborate this statement. In Spain, Amazon is perceived as

the leader in delivering both frictionless shopping experience and enhanced customer experience. Moreover, Amazon seems to be leveraging its inherent advantage in these two dimensions to be number two in the branded product superiority and low price quadrants. Our results further suggest that El Corte Inglés is the leader in the brand trust quadrant while Mercadona wins in the low price strategy (see Figure).



The main theoretical contributions of this study are twofold. First, this paper is pioneer in applying the Kahn Retailing Success Matrix to the empirical study of today's competitive retail landscape in Spain. Second, to our knowledge, this is the first academic paper that categorises technological solutions focusing on the retailing success strategy they enable. From a managerial perspective, our research may help practitioners to prioritize their technology investments depending on the competitive strategy they aim to create.

This study was developed before the COVID-19 outbreak. Challenges arising from the coronavirus pandemic will require companies to rebalance existing focus areas with emerging health concerns, and will accelerate the use of technology in the retail industry.

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Extending UTAUT2 to address digital transformation in healthcare

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1. Purpose

This study aims to investigate the factors that influence people when it comes to decide whether they should use virtual doctor appointments. By integrating perceived security and product advantage, this paper extends the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2, Venkatesh, Thon & Xu, 2012) and proposes a theoretical model that includes eight explanatory variables (effort and performance expectancy, social influences, facilitating conditions, habit, hedonic motivation, perceived security and product advantage) of customers' behavioral intention to use virtual doctor appointments, one of the most interesting trends in eHealth (Gardner et al., 2014).

From a marketing point of view, studying the factors that influence an individual when accepting or rejecting a new product, service or technology is a mature and consolidated research line that exists within the field of customer behavior (Williams, Rana & Dwivedi, 2015). It is. However, far from becoming obsolete thanks to the continuous evolution of technology. In today's world, where digitization plays such a transcendental role, it is important to ensure that the new information systems that are developed are well accepted by their potential users.

Despite the fact that telemedicine is considered a turning point in healthcare (Bashshur et al., 2011), the actual use is, to this day, still limited. While it is easy to point out the advantages and benefits of incorporating it into standard medical care, it is crucial to analyze the factors that influence an individual when accepting or rejecting this new service.

To the best of our knowledge, integrating perceived security and product advantage into UTAUT2 represents a primary approach. Studying telemedicine acceptance from the patient’s point of view throughout a modified UTAUT2 model is a pioneer undertaking. Therefore, this investigation not only contributes to extend existing knowledge in the telemedicine adoption from the demand point of view, but also validates UTAUT2 in the telemedicine context.

2. Methodology

Being aware of the heterogeneous development of telemedicine on an international level, this paper analyses the current situation in two different counties, Spain and the United States of America. Both countries were selected because they represent the situation in and outside the European Union, because they run on two different healthcare systems and because the consulted literature suggests different technology penetration rates in both countries.

Data was collected online from 800 randomly selected people, 400 in each country, applying an age-stratified sampling according to the latest census information. 704 valid surveys were used (380 Spanish and 324 American responses) to subsequently test the proposed hypotheses via structural equation modelling (AMOS 24).

3. Findings

Results confirm a higher percentage of previous experience with virtual doctor appointments in the USA than in Spain (5% versus 19%, respectively). Regarding the Spanish sample, perceived security is the main antecedent, whereas effort expectancy turned out to be the construct with the strongest relationship on usage intention of virtual doctor appointments in the United States.

Habit and perceived security were found to be significant antecedents of usage intention in both countries. From UTAUT2s original constructs, only hedonic motivation and habit had a positive, direct and significant impact on usage intention in Spain and effort expectancy and habit in the American sample.

4. Limitations

Technology is, in essence, very fast moving and dynamic. What today turns out to be the most avant-garde and modern technology or innovation, may be outdated and obsolete tomorrow.

Furthermore, a theoretical model, however complete it may be, never represents 100% of reality. Future research could furthermore consider new antecedent or moderating variables.

5. Practical implications

Due to the profound digital transformation that modern societies are experiencing since the first two decades of the 21st century, the way of obtaining and providing healthcare is changing. Thanks to the development of the Internet, the eHealth market has grown exponentially in the last years.

Given the economic advantages of incorporating telemedicine services into standard healthcare, public administrations should encourage the use of medical video appointments for both patients and healthcare professionals, since the results of this study show that they are perceived as a save and easy to use tool. Additionally, since they can be carried out through a simple video conference, no large financial investments are necessary.

Medical video consultations can help reduce work absenteeism. Any company should promote their use from the workplace in order to minimize the costs associated (for both employers and employees) when employees leave their workplace to see a doctor. Likewise, virtual healthcare can increase productivity and contribute to employee satisfaction and retention. Lastly, health insurance companies should consider incorporating medical video appointments as part of their standard healthcare.

6. Social implications

People are the key element for the functioning of any society. There is a general trend towards patient-centered healthcare and technologies related to eHealth are a fundamental piece in the empowerment of patients.

Telemedicine can be a key element to offer healthcare to those who live in rural or remote areas and who may have difficulties when they precise medical attention. Although it is important to highlight that not everything related to telemedicine are benefits, it can be seen as a good ally to offer medical care in an integrated manner

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