The Role of Social Crowdsourcing in Mobile Tourism

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Abstract: Social networks and online communities are increasingly becoming a big player in the field of tourism marketing. Consumer behavior is increasingly more influenced by the information exchanged on these communities. Being a community of individuals linked together based on different criteria such as geographic positioning, centers of interest and needs that may be close or similar, social media users can exchange views, opinions, experiences, their recommendations or their disclaimers. This allows to consider the social networks or online communities as a source of information, procurement and learning
The purpose of this study is to investigate the behavior of tourists towards using a mobile application which is based on the sharing of feedback and opinions of other fellow travelers. We have used a predesigned questionnaire for conducting the survey. The questionnaire was designed to analyze a user's behavior towards the use of mobile technology during a trip and the impact of their reviews on others.

Keywords: Crowdsourcing, Tourism, Tourist, Mobile Technology, Social media, Tourist behavior.

INTRODUCTION

Social networks and online communities are increasingly becoming a big player in the field of tourism marketing. Consumer behavior is increasingly more influenced by the information exchanged on these communities.

Being a community of individuals linked together based on different criteria such as geographic positioning, centers of interest and needs that may be close or similar, social media users can exchange views, opinions, experiences, their recommendations or their disclaimers. This allows considering the social networks or online communities as a source of information, procurement and learning (Brabel el al., 2010).

The enormous sharing of information, opinions and innovative ideas that is spreading more and more fast within the framework of a social system and via various propagation channels remains a essential problem in marketing research (Goldenberg et al., 2001). Godes and Mayzlin (2004) stated that the opinions and feedback posted on word of mouth sites strongly influence the consumer's purchasing decision.

Among the feedback and testimonials that may exist on social networks, we find those of travelers. We can thus speak of the notion of "media tourism social" (Brabel el al., 2010) which allows tourists to be supported throughout along their travel cycle via recommendations and testimonials from other tourists on social networks or specialized sites such as "Tripadvisor" (Scott and Orlikowski, 2010). Social media could strongly influence consumer decision and more particularly issues related to the promotion of destinations. The consumer is happy to learn more about accommodation and products online related to tourism (Raffaele and Fraser, 2014). As for hotels, they are more and more interested as much to the different advertising channels they can use as to feedback of their customers.

On the one hand, crowdsourcing, being the supply by the crowd and the exploitation of "its wisdom ", will benefit the growing number of social media users (Willett et al., 2012). Crowdsourcing, also called harnessing the wisdom of crowd, can be a very effective way to seek out new ideas and collect the opinions of a large number of Internet users. Unlike the classic platforms of the crowdsourcing, its fields of application have evolved over time. Again collaborative environments have emerged with both human-provided services and others provided by software or systems (Schall, 2013). This is crowdsourcing a fairly large field of study in several areas of research.

On the other hand, the number of mobile phone users is also growing. According to a study by Ericsson (2010), individuals are becoming increasingly dependent on their mobile phones. On average, every individual on this planet has a phone mobile. This small machine could therefore be a source of supply and learning for its user,

among others, in the field of tourism. The notion of "mobility" is the convergence between the "mobility" of the mobile phone, which has become like a small computer in the pocket (the smartphone) and the "ubiquity" of the internet (Miranda, 2011).

Mobile phones offer their users various services. Interest in these services depends the needs of one consumer to another. A mobile can, for example, offer a service which meets the needs of a tourist during his trip for a specific activity. We is interested in this study in mobile technology which allows access to the Internet like tablets, netbooks and "smartphones". Raento et al. (2009) describe the smartphone or the smart phone as a mobile phone that has a color screen, a camera and which offers the messaging service with quick access to the web browser and social networks. Palumbo and Dominici (2015) define this "intelligent technology"by "the complexity of simplicity". They think the biggest challenge of this intelligent technology revolution is to provide users with products and complicated services but which will be perceived as simple by consumers. The objective would be to simplify the daily life of individuals with the usefulness and time saving that they may have with these. The authors propose the emergence of the concept of "smart tourism" where the tourist experience can be improved with this type of new technology. This allows, thus, reducing the complexity of the tourist decision. Connection to networks social with this type of technology allows travelers, according to Lamsfus et al. (2013), no only the satisfaction of their desire to be connected to their families or friends but also a tourism decision-making tool. Conventional mobile phones which do not allow not at least one access to mobile applications are excluded from our study context. Of even, according to Hwang (2010), the smartphone helps the tourist to make spontaneous decisions that are time sensitive.

The tourist uses the smartphone before, during and after the trip. It may thus be a tool that plays the role of a mediator in the tourist experience (Wang et al., 2012). Several studies cited in the study by Palumbo and Dominici (2015) showed its importance in the tourist experience which makes it the most promising theme in tourism research. Since the emergence of studies on the use of mobile technology, other studies have studied this in a tourist context. Like the Langelund study (2007) that showed that "mobile travel" is a promising research theme in the future. The author sees, as future research, that mobile services will become soon an essential utility for travelers and will therefore be a key element of the multichannel distribution and services strategy. Mobile search engines will become the most popular way to find mobile travel services. This which will change consumer behavior where it will become more and more spontaneous. Where does the interest that suppliers and intermediaries of large and large travel medium-sized people launch mobile services to claim their brands on the Internet mobile.

Brown and Chalmers (2003) identified the different problems that a tourist can have in regards to tourism via technology. The authors say that the tourist seeks to know what to do, how to do it, where and when to do it. The tourist being in a new place where he does not yet know what to do and where to go is found automatically in an immediate decision-making process. This decision must take into account the number of places to visit and time spent for each attraction. Brown and Chalmers (2003) say that even if the tourist has already planned his visit before the trip, he will find himself most of the time in an on-site situation where he still has to decide what to visit. As is the example of deciding on the spot which parts of a large museum to visit, even if we know in advance and before our trip that we are going to visit this museum. In addition, the tourist should know how to act given that behavioral norms differ from country to country.

Research Objectives
- To provide an overview of social networks, study their use and identify use cases related to tourism,
- To assess the expectations and behavior of the tourist in the search process
- To study the impact of recommendations, testimonials and feedback from the Internet community and social network users on tourist behavior and its activity decisions once on site.

Research Questions
- Factors related to mobile technology and perceived rewards of the mobile application will they influence the behavior and decisions of the traveler?
- How will time pressure influence the tourist's decision?
- How will the nature of the opinions shared on the mobile application influence the decision of the tourist?

LITERATURE REVIEW
The fields of use of crowdsourcing have evolved over time. It can be applied in different activities in the field of marketing and electronic commerce such as market research, communication, innovative ideas and the development of new products. Also, in solving complex problems and R&D projects. By way of example, Demartini et al. (2012) tried to show the use of techniques crowdsourcing by the community of databases in the creation of systems RDBMS (relational database management system) capable of responding to complex queries. Their objective was to assign identifiers to large entities on the Web. The same principle was used with Finin et al. (2010) for crowd annotation of entities on Twitter by extracting for each entity the type that corresponds to it as person, organization or place. These two outsourcing could complement each other in extracting and linking these entities. The study by Rahman et al. (2015) focused on identification of weeds in

agriculture by a non-expert crowd (farmers) of the "Amazon Mechanical Turkish" platform and another composed by expert agents in Agriculture. The identification is done, under a maximum latency of three hours, by the exposure images on a mobile application.

Crowdsourcing has also been used in the field of medicine, in particular in prediction of protein structure, based on the principle of computer games (Cooper et al. 2010). The authors proposed the online game called "Foldit" where nonscientists can be involved in solving difficult scientific tasks. The game relies on solving the localization problems of the biologically native conformation and relevant to the protein. Players collaborate in the development of new algorithms and new possibilities for search strategies. The results showed that the best players have excelled in the refinement of the protein structure.

Another area where crowdsourcing has also been used is the generation of large quantities data, as is the case with the study by Heer and Bostock (2010) which was based on mobile gamification. Komarov et al. (2013) used crowdsourcing to assess the performance of graphical interfaces. The study by Mason and Suri (2012) focused on the Mechanical Turkish platform, especially the behavior of its workers. They treated its different functionalities during data collection starting from the recruitment of subjects up to data privacy. They showed that the behavior of workers on the platform looks like that of experienced goods or laboratory researchers. We have tried in this part to list the different areas where we can apply the principle of crowdsourcing. In the following part, we will get closer to our study context and show the role of crowdsourcing in communities.

Limits of crowdsourcing

Besides the advantages, crowdsourcing also has its limits. The big critics of crowdsourcing in the literature are generally related to the mixed quality of its contributions. In a study on the quality of crowdsourcing as part of the evaluation of a research, the authors (Kazai, 2011) have listed studies that have addressed the limitations of crowdsourcing like that of Le et al. (2010) where the authors showed that the behavior crowd can be random. In order to show this, the authors carried out a study which integrates an initial training phase by presenting the participants with training data where judgments will be evaluated before a final evaluation. In the event that the assessment of participant is wrong, it will be rejected. The authors have tried to show how the distribution of responses to training packages influence on training and quality overall results of participants in the assessment tasks of the website "Amazon Mechanical Turk". Similarly, Marsden (2009) showed that the majority of the results collected of crowdsourcing is waste. A major limitation for any crowd related area is the cheating. Clough et al. (2013) tried to show the limits of crowdsourcing within the framework the evaluation of the documentary research. According to the results, the evaluators recruited in the framework of a crowdsourcing procedure do not have the same level of evaluation and distinguish different levels of research results as expert reviewers.

The influence of social networks on consumer behavior

Qi and Edgar-Nevill (2011) attest that the use of social networks was initially for search for persons, investigation and surveillance. Several services offered by these networks are used in criminal investigation. Recently we can search on these networks information concerning, for example, employment. In this regard, the website "CareerBuilders.com" speaks in a study in 2009 that candidates say in their job interviews they searched on social media for job applications Haefner (2009). In the presence of the enormous mass of information shared on these sites of social networks, the user can benefit greatly from this quota for various purposes. Lynch and Ellickson (2009) say that obtaining information from these networks can be done by reading public information, using ECPA to obtain information suppliers, or by undercover operations. The prediction of the diffusion of information on social networks is a difficult task according to Lagnier et al. (2012), but can answer quite important problems like the phenomenon of recommendation of information. Thus, they presented three new models of information dissemination based on factors unique to each user. They estimate the probability that a user can activate one of its neighbors and that new links between users can be established. An approach that will be able to determine the degrees of strength and density of these links and established relationships is that of social network analysis. An analysis that allows to model individuals or organizations as nodes and the social relationships between them as links.

Kumar et al. (2006) have discussed the importance of integrating the individual into communities. According to them, this integration will increase its activities and interactions on the network and the strong links it will have afterwards will generally be based on trust between members which are based on friendship.

Kahanda and Neville (2009) see that these strong links are due to similarity (i.e. having common profiles) or connectivity (number of friends in common) or also the transactional connectivity (in the case of Facebook for example, the number of on a wall, tagged photos etc).

Virality software based on social media analytics is on the rise development. This software has the ability to predict purchasing behavior based on on the interactions of individuals and taking into account their different relational networks. The links used (phone calls, bank transfers, etc.) make it possible to extract meaningful measures of interpersonal relationships and reconstruct purchasing practices.

Research Gap

Before, people expressed their recommendations and disclaimers verbally or on paper. Now, they express themselves more on social networks or review sharing sites like "Tripadvisor", "Zomato" (especially for restaurants), etc.

The mobile being more practical to carry in his pocket than his computer, Internet users use it more and more people instead of their computers to connect to the internet or to book a ticket, hotel ... It has therefore become essential to present as many practical services as possible for mobile users in the tourism sector (Pesonen and Horster, 2012).

Several studies have been carried out to study, on the one hand, the influence of these opinions on the behavior of the consumer in the process of a purchase or of the traveler in the process planning your trip, choosing your destination, etc. Other studies have investigated, other hand, behavior in the use of mobile technology in different fields such as online games, mobile internet, travel guides, using a mobile application during a pilgrimage, etc. Studies have been carried out to show the role that smartphones plays in enhancing the experience of a tourist like those of Wang et al., (2012) as well as Wang and Fesenmaier (2013).

We can therefore wonder about the use of technology in the research process. Information of a tourist once he is on site and the influence of recommendations and opinions shared on social tourism networks, on the decision and behavior of the consumer towards the choice of an on-site activity.

Research Methodology

To analyze the empirical data obtained from surveys, the graphs and tables were used previously produced using SPSS. The graphs produced were bar graphs and pie chart. The reason why these two were chosen is that they pictorial representation of the result and they could be compared against each other. Chi-square tests were also used to analyze this quantitative result. A chi-square test is a test you can do to check the significance level for different variables (Trobia, 2008). This control gives the author a clue what chance is there that the author's survey data is relevant to a collection of data. Chi-square tests can be used to analyze whether two variables are interdependent. Say, a researcher wants to know if gender is related to a negative attitude towards a particular topic. Then researcher can then use a chi- square test to check if there is anything clear dependence between the two variables in the data set. The null hypothesis in this test is that there is no significant dependence between the variables, and if you get a p-value below 5% you can reject the null hypothesis, which means that the data material indicates that there is a relationship.

This study will effectively utilize quantitative analysis to analyze the data collected for this study. In this the researcher will conduct a survey to collect data and this data will be analyzed statistically with the help of SPSS.

Sampling

The sample we chose for our study consists of users of the social network Facebook who have joined travel related groups. The publications made on this type of groups are travel photos, feedback, recommendations or withdrawals. Group members respond to these posts with comments to help people with their feedback to better organize their trips. The users of these groups mainly registered in order to exchange feedback on their travels and trips (positive or negative), photos, videos, reviews and recommendations. The same users can also post questions about their plans for future trips.

The profile of the members of these groups corresponds perfectly to our study context. The table below represents the list of groups we used to publish our questionnaire and collect data. We found some difficulties with others groups of travelers not mentioned who did not accept the publication of the questionnaire. We collected 25 responses that we consider to be individual given the comments received by respondents each time the questionnaire is published. We tried to send the questionnaire by message to a few users of Tripadvisor whose profiles we had thanks to their publications or comments on the site but we have not had any answers. The survey questionnaire was shared with the respondents via google form. The collected data was then sorted in an excel file. It made easier for the researcher to analyze the data in an effective manner.

Research Hypothesis

H1: The expectation of performance has a positive influence on the behavioral intention of the use of mobile technology during the trip.

H2: Expectation of effort has a positive influence on behavioral intention ofthe use of mobile technology during the trip.

H3: Social influence has a positive influence on the behavioral intention of the use of mobile technology during the trip.

H4: Hedonic motivation has a positive influence on the behavioral intention ofthe use of mobile technology during the trip.
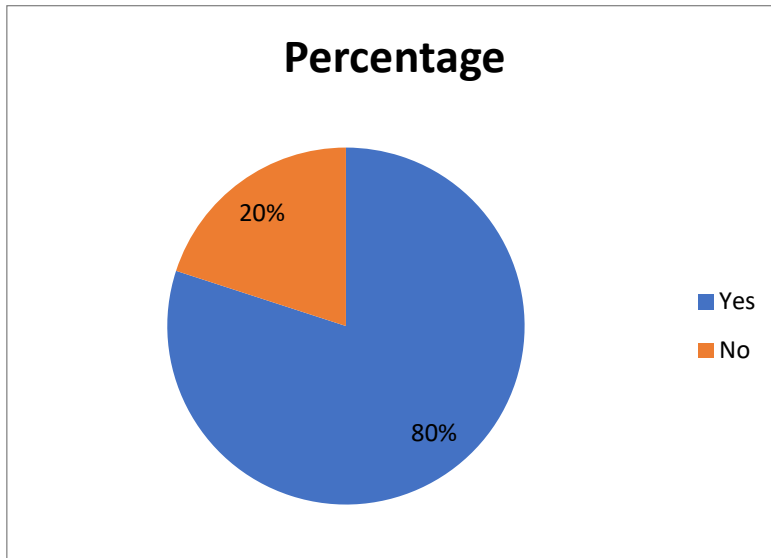
H5: Facilitating conditions have a positive influence on the behavioral intention ofthe use of mobile technology during the trip.

Data Analysis
Demographic Analysis
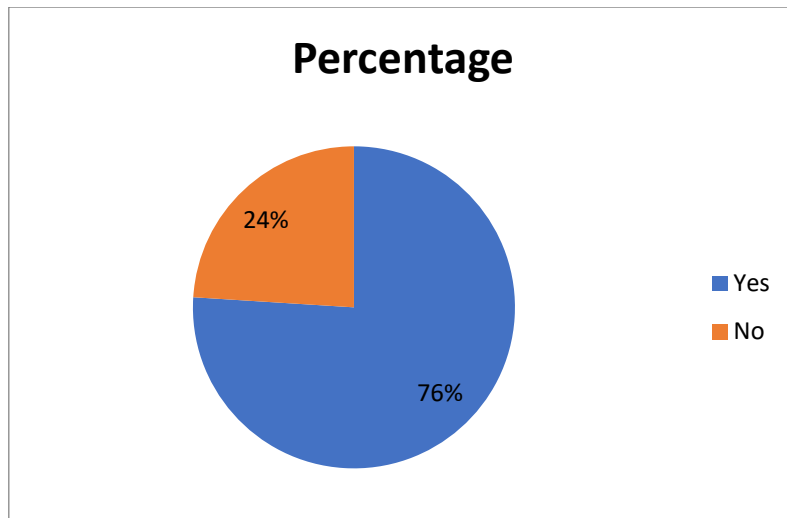**Do you use mobile technology for your day to day life chores?**

Variable	Frequency	Percentage
Yes	20	80
No	5	20

The above tables and figures indicated that majority of the respondents (80%) said that they use mobile technology for their day to day life chores.

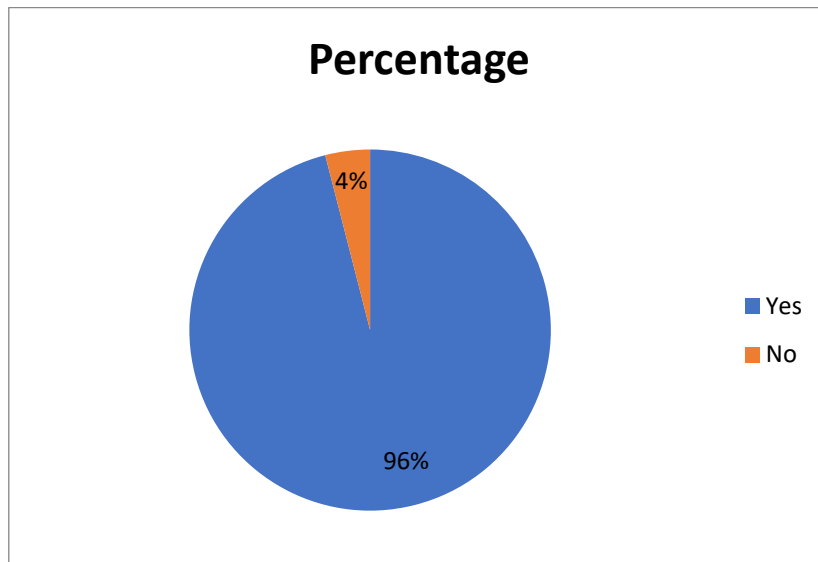**Did you depend a lot on your smartphone when you are on a trip?**

Variable	Frequency	Percentage
Yes	19	76
No	6	24

The above tables and figures indicated that majority of the respondents (76%) said that they depend a lot on their smartphone when they are on a trip.

Mobile technology helps you to access up to date information of your destination?

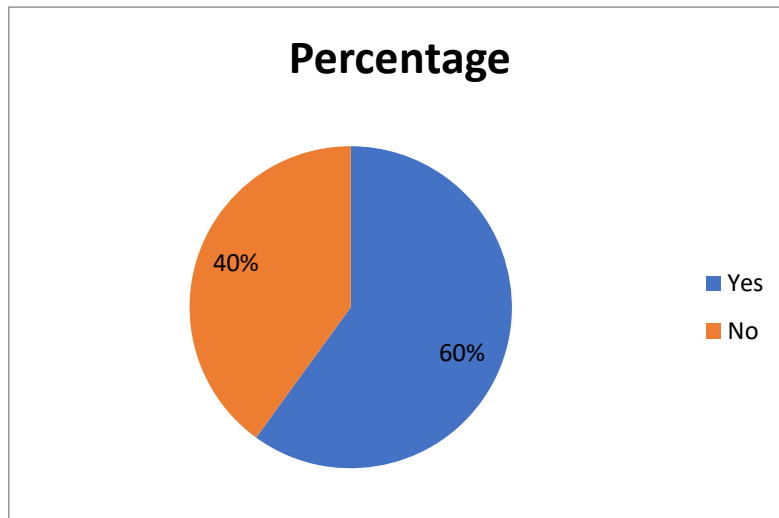| Variable	Frequency	Percentage
Yes	24	96
No	1	4

The above tables and figures indicated that majority of the respondents (96%) said that mobile technology helps them to access up to date information of your destination

Do the information available online influence your choice of destination?

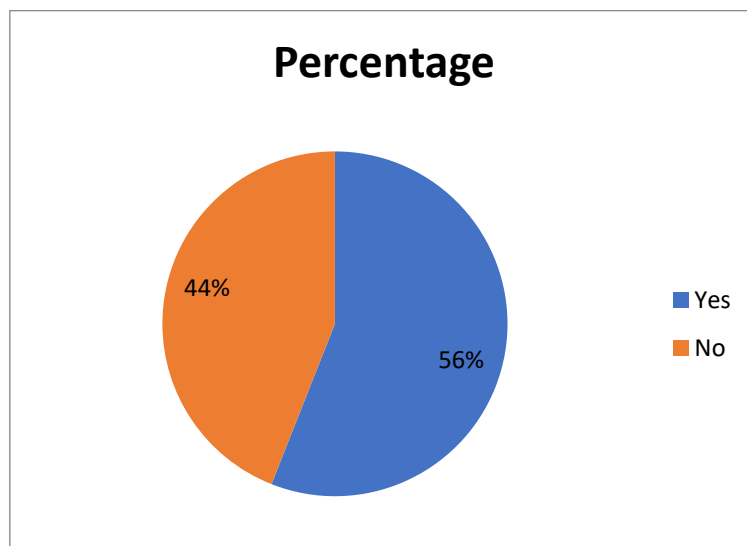| Variable	Frequency	Percentage
Yes	15	60

No	10	40

The above tables and figures indicated that majority of the respondents (60%) said that the information available online influence your choice of destination.

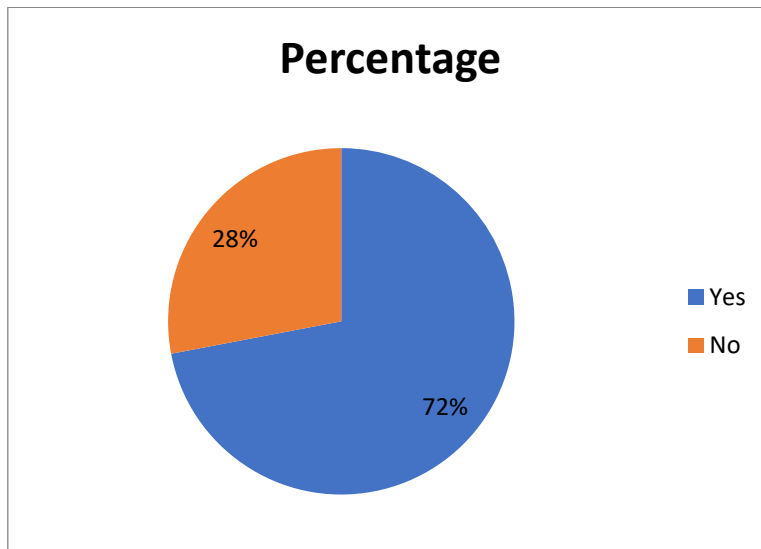**Do you share information regarding your trips online?**

Variable	Frequency	Percentage
Yes	14	56
No	11	44

The above tables and figures indicated that majority of the respondents (56%) said that they share information regarding your trips online.

Do you rely on review sites like TripAdvisor to analyze the quality of a service?
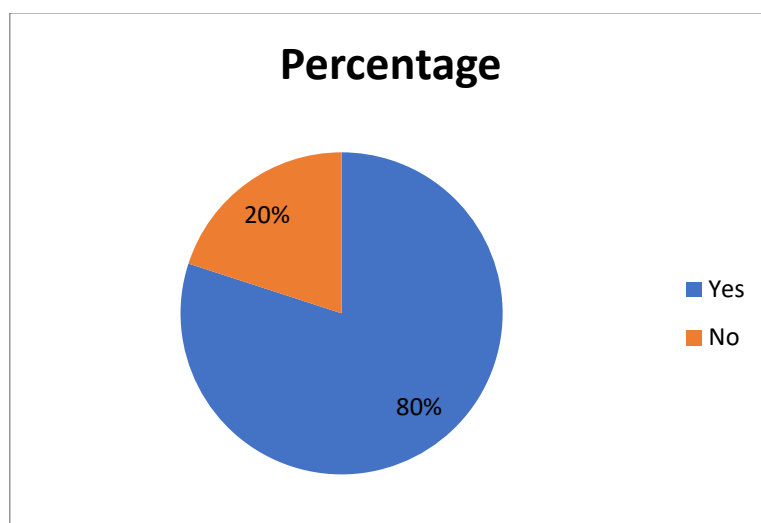
Variable	Frequency	Percentage
Yes	18	72
No	7	28

The above tables and figures indicated that majority of the respondents (72%) said that they rely on review sites like TripAdvisor to analyze the quality of a service.

Do you think that the tourism industry is growing more and more dependent on mobile technology?

Variable	Frequency	Percentage
Yes	20	80
No	5	20

The above tables and figures indicated that majority of the respondents (80%) said that they think that the tourism industry is growing more and more dependent on mobile technology.

Do you think that this shift towards the mobile technology will be beneficial in the long run?

Variable	Frequency	Percentage
Yes	24	96
No	1	4
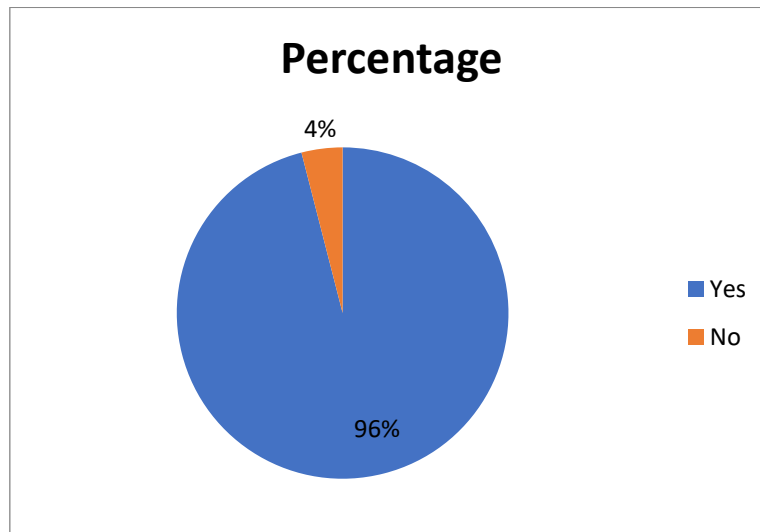
The above tables and figures indicated that majority of the respondents (96%) said that they believe that this shift will be beneficial in the long run.

Chi-Square Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.630[a]	2	.009

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.76.

It can be observed from the table above that the p-value was found to be .009. As this value is less than that of the threshold value of 0.05 hence hypothesis H1 "The expectation of performance has a positive influence on the behavioral intention of the use of mobile technology during the trip" is valid.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.330[a]	3	.004

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.36.

It can be observed from the table above that the p-value was found to be .004. As this value is less than that of the threshold value of 0.05 hence hypothesis H2 "Expectation of effort has a positive influence on behavioral intention of the use of mobile technology during the trip" is valid.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.998[a]	3	.002

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.48.

It can be observed from the table above that the p-value was found to be .002. As this value is less than that of the threshold value of 0.05 hence hypothesis H3 "Social influence has a positive influence on the behavioral intention of the use of mobile technology during the trip" is valid.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.106[a]	4	.011

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.16.

It can be observed from the table above that the p-value was found to be .011. As this value is less than that of the threshold value of 0.05 hence hypothesis H4 "Hedonic motivation has a positive influence on the behavioral intention of the use of mobile technology during the trip" is valid.

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.103[a]	4	.277

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.72.

It can be observed from the table above that the p-value was found to be .227. As this value is more than the threshold value of 0.05 hence hypothesis H5 "Facilitating conditions have a positive influence on the behavioral intention of the use of mobile technology during the trip" is not valid.

CONCLUSION

We started our research work with a first part of the review of literature where we discussed the different research themes such as crowdsourcing social, mobile tourism and the different models used in the literature in the study the behavior of the user of the technology. We found results broadly consistent with the existing literature in this study context. The expectation of performance, the facilitating conditions and the habit have showed an influence on behavioral intention and use behavior technology. The result obtained for the hedonic dimension was disappointing given our tourism research context where the tourist will use the technology in a fairly entertaining

An improvement of the study could take place with the future use of the variables demographic as well as actual use of mobile technology while traveling. The results will be useful to developers of mobile applications as well as stakeholders in the marketing that will further highlight the social dimension in this framework use of technology.

Again in the context of the study of the behavior of the traveler in the use of the mobile technology, in our second empirical part we used the technique of eye tracking to measure the trajectory of the eye when reading shared review pages on TripAdvisor and a second questionnaire which was based on the theory of uses and rewards in order to measure the influence of perceived rewards on purchase intentions macaroons and recommendation from the store. The second part of the results obtained was therefore dedicated to measuring the trajectory of the eye when reading reviews. We have interpreted the results based primarily on the nature of the review page (mixed or homogeneous) and then on how they will be read under the pressure of time. A part of our results supported the theory of cognitive dissonance and showed that the opinion divergent has changed the behavior when reading mixed page reviews. Under the time pressure, individuals showed a difference in reading speed that was more high-level pages having a mixed positive approach than the homogeneous one. This puts highlight the notion of cognitive dissonance. By making the same comparison with the pages having a negative approach. The results have showed an absence of difference in the speed of reading reviews between the two types of pages (homogeneous or mixed).

On the other hand, the reading speed was higher for the pages with an approach negative. Under the pressure of time, the results show that the dissenting opinion was more viewed at a predominantly positive page than a predominantly negative page.

This result could have been different in the case of the study of the influence bonuses on the intention to use the mobile application. In addition, several studies showed the role of gratuities based on the level of consumer satisfaction. This construct was not treated in our study case. We thus had different results of those that exist in the literature. These have also valued the role of the dimension hedonic in this research context. This was not also our case. We do not have measured rewards related to hedonic motivation or perceived playfulness of use an app for sharing a review or purchasing a product. We have chosen to measure the rewards linked to the

discovery and quality of information, the social dimension and the problem solving. Those relating to information discovery can be compared to the case of mobile shopping where the consumer enters a research process of information. Our result is close to the results found in the literature which showed that mobile technology can be a barrier to this process. The social dimension also showed an influence on both purchase intentions and recommendation. A result similar to a study carried out on the behavior of the traveler in the use of review sharing apps during their trip planning process. The latter also showed an absence of social influence on this type of behavior. The quality of information or the credibility of shared opinions also showed an absence of influence on intentions. We justified this result with a study carried out on the credibility of reviews shared on TripAdvisor. The possible lack of trust in reviews also explained our result in the gratification of solving the problem. Problem solving considered itself a fairly important gratuity in our study context given that we put our respondents in a framework of hesitation at the level of a decision, hence a consultation of opinions for the purpose of purchasing a product. Personal status did not also show an influence on the reading of opinions for a purchase decision. The perception of this gratuity should be more valued in the context of opinion sharing.

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