

An Analysis of Services for the Mobile Tourist

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ABSTRACT

Mobile tourism services have become an essential tool for supporting tourists around the world. Our research aims to identify desirable and undesirable features for mobile tourism services from the tourists' perspective. Focus group discussions and surveys were conducted to gather tourists' needs, exploring the problems faced. This paper presents our findings highlighting desirable design features being maps and transportation information, and unpopular features such as gaming activities. The results also reflect differences in preferences between business/leisure travelers and frequent/infrequent travelers. We believe results of our work are useful in providing design insights for mobile service providers when deciding on features to be included in tourist-friendly information-rich systems, and the types of services customized for specific tourist groups.

Categories and Subject Descriptors

H.4.0 [Information systems Applications]

General Terms

Design and Human Factors.

Keywords

Mobile tourism services

1. INTRODUCTION

Around the world, mobile tourism services are becoming well-entrenched. For example, CRUMPET's [8] survey revealed that users value mobile tourism services (78%) and are willing to pay for it (60%). However, other research findings [13] caution that many of such services are not tourist-oriented. Instead, service providers seemed focused on delivering as much information as possible and were not targeting specific needs or interests [11]. Consequently, many have advocated a move from a system-centered design for mobile tourism services, to a more user-centered design. This is challenging, as an understanding of tourist behavior is required [9], including their actual needs [14] and the problems they face [4].

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While past research has dealt with high-level tourist behavior or system implementation, there is a gap between tourists' needs and such actual implementations. Our present work, therefore, aims to understand and translate tourists' needs into specific mobile tourism services. The results of our work may guide service providers when designing mobile tourism services. Specifically, the objectives of the present work include identifying the important features for mobile services from the tourists' perspective and determining if differences exist across different traveler groups on the importance of such features. This paper continues with a description of our work. We next report our survey findings and discuss important and unnecessary features for mobile tourism. We also compare responses to the utility of these features across different traveler groups. The paper concludes by recommending the services essential for mobile tourism and discusses opportunities for future work.

2. SERVICES FOR MOBILE TOURISM

Our research was conducted in three phases. We first reviewed existing tourism services. From the resulting list, a focus group discussion was conducted to refine the set of features. This was then confirmed using a quantitative study.

2.1 Services Survey

Existing tourism literature and websites were reviewed to uncover available tourism services. To organize these services, we adopted Chalmers' first two travel phases [3]. Each phase describes the problems encountered by tourists and their solutions, which translate into categories of features for mobile tourism services. In the *Pre-visit* phase, there are search engines and directories [3] and travel planning [3]. In the *During-visit* phase, there are maps and guides [8], transportation [8], information on places-of-interest [3], reservations [9], safety and health information [3] and location-based services [12]. We excluded the *Post-visit* phase because its activities would typically be accomplished by tourists after returning home, using their personal computers.

2.2 Focus Group Discussion

We adopted a qualitative approach and confirmed the initial categories of features in a focus group session facilitated by scenario-based questions encompassing common tourists' tasks [3]. Two focus group sessions, each with eight participants, were conducted in a 'live', friendly and open discussion format. Participants were working professionals between 25 to 35 years. There were four females and four males, all with self-guided

travel experience. The focus group findings confirmed the categories of features and further yielded detailed descriptions of the services. A questionnaire was then developed using these services as forty items for the purposes of quantitatively determining their appropriateness for mobile tourism.

3. SURVEY OF FEATURES FOR MOBILE TOURISM

3.1 Survey Design

The survey gathered respondents' profiles such as age, education level and their travel concerns. It also required respondents to rank the importance of each feature according to a five-point Likert-type scale. The questions were piloted with five volunteers to ensure understandability. Proposed changes were considered and incorporated into the final version of the questionnaire.

3.2 Demographics

Paper questionnaires were distributed to a group of working professionals from various industry sectors such as information technology, banking/finance and engineering. Respondents were financially independent and had prior experience in planning their trips. A total of 250 people were surveyed of which 86% (216) of them responded. The majority of the respondents were below 30 years old (60%). This is intentional, since people from this age group were deemed as most comfortable with using technology in their daily activities and would be the most likely to use mobile devices. There were almost equal number of males (107) and females (109). A majority (92.9%) of participants held either a Bachelors or Postgraduate degree. Most participants (92.9%) traveled at least once a year, between 3 to 7 days per trip. Holidaying, visiting friends or relatives and business were the three most common reasons for travel. When traveling, participants obtained tourism information mainly from websites (71%) and friends/relatives (51%). The results suggest that many (at least 90%) of the respondents were keen to seek tourism information before their trips and thus, it can be concluded that they actively planned their own trips.

4. FEATURES FOR MOBILE TOURISM

An average score method was adopted to analyze respondents' preferences for mobile tourism features. First, individual raw scores (5 = "very important", 4 = "important", 3 = "neutral", 2 = "not very important", 1 = "not important") were assigned to each question (feature). The average score for each question was next calculated and ranked accordingly. A higher score indicated a higher level of importance for that feature. The maximum and minimum scores obtained were 4.1 and 2.52 respectively while the mean value was 3.52.

The top eight categories (as shown in Table 1) belong to the preliminary demands of the *During-visit* phase, which are essential for safe and smooth travel. Thus, it is understandable that participants rated them as important. Our findings concurred with CRUMPET's [8] in that map and transportation features were the most important information services.

Table 1. Top 10 features and their categories (Rank 1 being the most important)

Rank	Feature	Score	Category
1	Street maps/routes	4.10	Maps & guides
2	Transport information	4.00	Transportation
3	Information on destination	3.96	POI Information
4	Airport information	3.95	Transportation
5	Emergency contact information	3.93	Safety & health
6	Search for cheap airfares and accommodation	3.93	Search engines & directories
7	Tourist attractions information	3.87	POI Information
8	Opening hours of attractions	3.81	POI Information
9	Health & disease information	3.80	Safety & health
10	Accommodation reservations	3.80	Reservation

Table 2. Ten least desirable features and their categories (Rank 1 being the least important)

Rank	Feature	Score	Category
1	Games offered by your destination	2.52	Miscellaneous
2	Digital souvenirs/mementos	2.80	Miscellaneous
3	Audio/video clips	3.05	POI Information
4	Information about flight	3.07	Transportation
5	Speech-to-speech translation services	3.13	Miscellaneous
6	Sale/promotion information	3.16	POI Information
7	Information for specific groups and settings	3.16	Planning
8	Define preferences so as to tailor tourist information received	3.28	Miscellaneous
9	Travel stories & tips	3.32	Planning
10	Car rentals booking services	3.32	Reservation

Games and digital souvenirs are least desirable are shown in Table 2, possibly because they are available on the Internet and their absence will not critically affect travelers' travel experience.

As shown in Table 3, the maps and guides category was the most desirable. This was consistent with research findings which indicated that the map was an essential tool for travelers [17].

Table 3. List of categories and their scores (Rank 1 being the most important)

Rank	Phase	Category	Mean Score
1	During-visit	Maps & guides	3.93
2	Pre-visit	Search engines & directories	3.81
3	During-visit	Location-based services	3.74
4	During-visit	Safety & health	3.73
5	During-visit	Transportation	3.60
6	During-visit	Reservation	3.58
7	During-visit	Information on POI	3.58
8	Pre-visit	Planning	3.50
9	During-visit	Miscellaneous	3.13

4.1 Difference in Attitudes of Business and Leisure Travelers

The British Tourism Board designed different marketing strategies for business and leisure travelers due to the differences in their preferences [1]. For example, business travelers are required to arrange leisure activities around work commitments. They often select after-office-hours tour activities whereas leisure travelers typically spend an entire day for tours. Chu and Choi reported that leisure travelers are more concerned with hotel rates and value for money than business travelers [7]. Owen however provided evidence that these two groups share common concerns over travel expenditures such as hotel rates [15]. We therefore sought to investigate whether leisure and business travelers would rank the importance of the categories of features similarly.

Among our respondents, there were 62 business and 148 leisure travelers. Chi-square tests were used to identify differences in their opinions towards the mobile tourism features. The results showed that the different traveler groups have different preferences regarding information on places-of-interest, planning, reservation and safety and health categories. Table 4 shows features with large differences in preferences.

More business travelers (18%) than leisure travelers (7%) felt that information about shopping and eating was not as important. Similarly, sales/promotion information was not as important for business travelers (37%) than leisure traveler (19%). This finding was expected since business travelers are generally less interested in shopping. Leisure travelers (46%) were more concerned with information on health and diseases as compared to business travelers (21%). Leisure travelers tend to roam around and explore rural areas. On the other hand, business travelers would most likely dwell in the city and thus, be less concerned with this aspect. Traveler groups also differed in their opinions towards designing tour packages according to personal preferences. More business travelers (23%) felt that this service was unimportant as opposed to leisure travelers (15%). This is possible because business travelers would unlikely sign up for tour packages and make only short tour visits. This is confirmed by ChinaHighlights [5] which promotes one-day tours designed specially for business travelers. Thus, customization of tour packages was unnecessary.

Booking services for car rentals were less important to business (32%) than leisure travelers (14%), because employers would often arrange for their transport. On the other hand, leisure travelers may need rental cars for exploration. Bloch, Pigneur and Segev [2] have also explained that repeated business travelers prefer a fully automated reservation system which manages everything from car to hotel reservations.

Table 4. Features with differences between the business and leisure travelers

Features	Business traveler	Leisure traveler
Features less important to business travelers than leisure travelers		
Obtain sale/promotion information	37%	19%
Provide information about shopping, eating, etc.	18%	7%
Design tour packages according to personal preferences	23%	15%
Provide car rentals booking services	32%	14%
Features more important to leisure travelers than business travelers		
Provide health and disease information of destination	21%	46%

4.2 Difference in Attitudes of Frequent and Infrequent Travelers

Chircu, Keskey and Kauffman's work revealed that frequent travelers use online booking features with less cognitive effort than infrequent travelers [6]. They reported differences in usage preferences, for example frequent travelers are more likely to use online booking service. Thus, we hypothesize that there would be a difference in frequent and infrequent traveler's attitudes towards various mobile tourism services.

Our survey respondents were also classified into frequent and infrequent travelers according to current research [18]. In our work, respondents were found to have traveled between one to five trips per year. As such, respondents with 1-2 trips per year were classified as infrequent while those with 3-5 trips per year were classified as frequent travelers. There were 50 frequent and 160 infrequent travelers participating in the present survey. Chi-square tests were used in our analysis and results showed that the two groups shared similar feature preferences only in the categories of planning, and search engines and directories. Table 5 shows the features with large preference differences.

Results showed that both infrequent (86%) and frequent (75%) travelers agreed that information about the destination (e.g. language, currency, etc.) is important. However, most frequent travelers may have repeated visits and are very familiar with the places, thus, they are less keen to learn about their destination. More frequent (88%) than infrequent travelers (77%) felt that street maps were important, possibly because they were more likely to roam around on their own. Infrequent travelers might

follow guided tours and thus did not require maps. Fewer frequent travelers (8%) rated location-based services less important as opposed to infrequent travelers (13%). The infrequent travelers may sign up for tour packages and hence not require location-based services. On the other hand, frequent travelers may require such services to facilitate their exploration.

Table 5. Features with significant differences between the frequent and infrequent travelers

Features	Frequent traveler	Infrequent traveler
Features more important to infrequent traveler than frequent travelers		
Information about destinations	75%	86%
Features more important to frequent traveler than infrequent travelers		
Provide street maps or sightseeing routes	88%	77%
Features less important to frequent traveler than infrequent traveler		
Provide tour package booking services	22%	11%
Provide car rentals booking services	26%	18%
Provide health and disease information of destination	16%	6%
Features less important to infrequent traveler than frequent traveler		
Provide location-based services	8%	13%

Safety and health information were less important to frequent travelers than infrequent travelers (16%, 6%). Based on the assumption that frequent travelers were seasoned travelers, they might already know how to protect themselves against local diseases and would not require such information. Booking services for tour packages and car rentals were rated as not important by more frequent travelers (22% and 26% respectively) than infrequent travelers (11% and 18% respectively). Again, frequent travelers may be familiar with their destinations and comfortable in exploring on their own. Thus, they might not be interested in tour packages. They might also prefer to experience the local lifestyle by taking public transport. In contrast, infrequent travelers, being inexperienced, would find it important to book tour packages and rent cars.

5. CONCLUSION

Our work complements existing research by focusing on tourists' information and service needs and examines the necessary services to support these needs on mobile devices. We propose that focus should be on the delivery of important features only, especially in resource-constrained environments such as mobile devices so as to avoid overwhelming the users with unnecessary information [10]. Our results yield useful insights that may guide design of mobile tourism software. For example, providers could include the top 10 most important features, for example, transportation information, and not provide the 10 least important features, for example, games, as highlighted in our study. In

addition, our analysis on the service expectations of difference tourist groups suggests that solution providers could customize their software accordingly, for example, allowing leisure travelers to see their preferred features (e.g. health and safety information) among the top items in the menu and place this as the last item in menus for business travelers [16]. Features essential across different traveler groups should also be easily accessible, for example, including accelerators to facilitate quick access.

This research was conducted on respondents aged between 20-40 years. Future work may consider travelers above 40 years as well as teenagers who are likely to have differing needs. Survey respondents were Asian and the opinions gathered might be biased towards Asian cultures and beliefs. Responses from non-Asian samples would therefore be required to verify our findings. Future work could also investigate deeper into the needs of different traveler groups. For example, different sets of questionnaires with specific questions targeting business and leisure travelers could be used to gather more precise information about both groups. Finally, given the results of this research, the next step would involve translating our findings to inform design and development of mobile tourism services.

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