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### Recommended Citation

Nickerson, Robert C. and Eng, Jamie, "Use of Mobile Technology and Smartphone Apps on the Camino de Santiago: A Comparison of American and European Pilgrims" (2017). *2017 Proceedings*. 20.  
<http://aisel.aisnet.org/capsi2017/20>

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# Use of Mobile Technology and Smartphone Apps on the Camino de Santiago: A Comparison of American and European Pilgrims

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## Abstract

Mobile technology and smartphone apps are increasingly being used by pilgrims on the Camino de Santiago, leading us to wonder what the role of technology is among Camino pilgrims and what impact technology has on the Camino experience. The purpose of this research is to explore these questions. To do so we conducted separate surveys of American and European pilgrims on the Camino de Santiago. This paper presents our analysis of the results of these surveys, focusing on differences between American and European pilgrims. The results showed that some mobile technologies are used extensively by pilgrims, although pilgrims did not consider the technology to be essential. They also showed that technology impacts the Camino experience in both positive and negative ways. Similarities and differences between American and European pilgrims were found in the results.

**Keywords:** mobile; smartphone; apps; Camino de Santiago

## 1. INTRODUCTION

The Camino de Santiago has become one of the world's most popular pilgrimages with over 200,000 pilgrims completing it in recent years (American Pilgrims, 2016). For years pilgrims have found their way on the Camino with a variety of simple aids including guidebooks, waymarks, and directional arrows. In recent years, however, various mobile technologies have begun to appear in pilgrim backpacks. Smartphones, tablet computers, e-readers, and similar technology have seen increased use on the Camino. Software applications (apps) are popping up on screens all along the way (personal observation, summer 2013). With this increased use of technology we wondered what the role of technology is among pilgrims and what impact technology is having on the Camino experience. The purpose of this research is to explore these questions.

To investigate these questions we conducted two online surveys of pilgrims on the Camino, one of American pilgrims and the other of European pilgrims. We sought to answer five specific questions:

1. What do pilgrims think about the use of mobile technology on the Camino?
2. What mobile technology do pilgrims use?
3. What is the impact of mobile technology on pilgrims' Camino experience?
4. What smartphone apps do pilgrims use?
5. What would pilgrims like in an "ideal" smartphone app?

This paper presents our analysis of the responses to these surveys with a comparison of responses from American and European pilgrims.

This paper is organized as follows. The next section provides a review of related literature. Following this we describe our methodology. Then we present the results of the two surveys and our analysis of similarities and differences between the responses of American and European pilgrims. Finally we summarize our results and present our conclusion.

## **2. LITERATURE REVIEW**

In our search of the literature we found only two papers that dealt specifically with the use of mobile technology and smartphone apps by pilgrims on the Camino de Santiago. Nickerson et al. (2014) examine the diffusion of mobile technology and smartphone apps among pilgrims on the Camino. They develop a research model based on diffusion of innovations theory that relates adoption of innovations with perceived behavior regarding previous innovation adoption and show that the model is partially supported by the adoption of mobile technology and smartphone apps by pilgrims on the Camino de Santiago. Antunes and Amaro (2016) explore the factors that affect the intention of pilgrims to use mobile apps on the Camino. They conclude that the most important factor is performance expectancy.

Walking the Camino de Santiago can be viewed as a touristic activity (Collins-Kreiner, 2010). Several papers look at the use of mobile technology and smartphone apps by tourists, although not specifically pilgrims on the Camino. Brown and Chalmers (2003) examine the use of mobile technology by city tourists. They discuss implications for technology that supports sharing of visits with others, provides guidebooks and maps, and supports pre- and post-visiting. Zampou et al. (2013) look at the use of mobile apps in tourism. They include a comparison of fourteen mobile tourism services and conclude that the most common feature of mobile tourism applications are navigation and providing information to tourist through a smartphone.

Beyond these sources, a number of papers examine mobile technology and smartphone apps from different perspectives. Some examples of papers that discuss mobile technology including smartphones are Martin and Ertzberger (2013), which look at the impact of the use of mobile technology on student learning, Burley et al. (2005), which examine the use of mobile technology in healthcare, and Park and Ueda (2011) and Lee and Lee (2014), both of which look at the diffusion of smartphones in certain countries and groups of countries. Smartphone apps are sometimes studied in specific industries. Liu et al. (2013), for example, identify trends in apps in healthcare. Various issues related to mobile apps are examined in a number of papers. Examples

are Wu (2013), which studies the motivation of users for using mobile apps and Verkasalo et al. (2010), which examine the intention of users and non-users to use smartphone apps.

### **3. METHODOLOGY**

We developed a questionnaire based in part on diffusion of innovations theory (Rogers, 1958 and 2003) and technology acceptance theory (Davis, 1989). We pretested the questionnaire with two pilgrims who had walked the Camino. We found several areas for improvement and modified the questionnaire accordingly. Then we created an online version of the questionnaire using Qualtrics software.

The questionnaire asks respondents about their use of mobile technology and smartphone apps on the Camino, what they thought of the technology and apps, and the impact that the technology had on their Camino experience. It also asks respondents what features they would like to have in a smartphone app. The questionnaire has a number of branching points to differentiate among pilgrims who have walked the Camino, carried mobile devices while walking, carried smartphones while walking, and used Camino-specific smartphone apps while walking.

For the American survey, we sent emails with the questionnaire link to 1891 current and former members of the American Pilgrims on the Camino. We also posted the link on the American Pilgrims Facebook group. We received 566 responses of which 467 were from individuals who indicated that their country of origin was the United States. We identified these as the American responses and used them in our analysis.

We used the same questionnaire for the second survey with a few slight modifications, none of which affect the results in this paper materially. This questionnaire was designed for international respondents. Besides English, we had versions in French and German. We sent emails with the questionnaire link to over 60 non-US based Camino associations around the world requesting that the email be forwarded to their members. An announcement about the survey was also posted on the Camino de Santiago Forum website ([www.caminodesantiago.me](http://www.caminodesantiago.me)). We received a total of 440 responses. We separated the responses received from individuals who indicated that their country of origin was a European country, which we defined as the 28 European Union countries plus Norway and Switzerland, from respondents who indicated a different country of origin. We received 185 responses from individuals in European countries, which we analyzed for this paper.

### **4. SURVEY RESULTS AND ANALYSIS**

This section presents our analysis of the results of the two surveys, with separate results for the American and European surveys, and our analysis of the similarities and differences. Results apply

to different categories of respondent: all respondents, respondents who walked the Camino, respondents who walked and carried mobile devices, respondents who walked and carried smartphones, and respondents who used Camino-specific smartphone apps.

In the following analysis, percentages are rounded to the nearest whole percent and significance tests are at the .05 level. Detailed tables of the data are not included in this paper because of conference paper length limitations.

#### ***4.1. Characteristics of respondents***

The questionnaire included questions about the country of origin, first language, age, and sex of the respondents. These questions were answered by all respondents (N=467 American survey, N=185 European survey).

The country of origin and first language of the respondents were, as expected, different in the two surveys. The country of origin for the American survey was by definition exclusively from the United States. Fifteen countries of origin were represented in the European survey ranging from the Netherlands (32%) to Austria, Belgium, Romania, and Sweden (1% each).

The first language of the respondents followed a similar pattern as the country of origin, although both English (96%) and Spanish (3%) were represented in the American survey. Twelve different first languages were reported in the European survey ranging from Dutch (33%) to Icelandic, Romanian, and Swedish (1% each).

The distributions of the ages of the respondents in the two surveys were similar. We found no significant difference between the two surveys using a chi square test. Selecting the midpoint in each age range for the calculation, we found that the mean ages of the two groups are close: 60.02 for the American survey and 58.47 for the European survey. A t-test showed no significant difference in the mean ages of the two groups.

The distribution of sex in the American survey was close to being equal between male and female with slightly more females than males. The distribution in the European survey, however, was weighted to male respondents (60%). A chi-square test showed that there is a significant difference between Americans and Europeans in the sex of the respondents.

#### ***4.2. Camino Experience of Respondents***

The questionnaire included questions about the Camino experience of the respondents including the number of times walked, the number of times completed, the mode of travel, the plans to walk again, and the routes walked. These questions were only answered by respondents who had walked the Camino (N=419 American survey, N=175 European survey).

Americans and Europeans differed in the number of times walked. Europeans tended to walk more times than Americans. The difference is statistically significant using a chi-square test. On the other hand, Americans tended to complete the Camino in Santiago de Compostela more than Europeans. 95% of Americans and 85% of Europeans have completed the Camino at least once. A chi-square test showed that the difference between Americans and Europeans is significant.

Little difference was found in the mode of travel, which was overwhelmingly by foot (bicycle and horse are other options). The chi-square test cannot be used with this data because it is not reliable with expected values less than 5. Also, little difference was found in the plans to walk again, which was high for each group (70% for Americans, 75% for Europeans). The difference is not significant according to a chi-square test.

Finally, some difference was found between Americans and Europeans in the route walked. Americans tended to concentrate on the Camino Francés, whereas Europeans tended to walk other routes. The differences between Americans and Europeans are statistically significant using a chi-square test. The Camino Portuguese was walked by 11% of Americans and 13% of Europeans.

#### ***4.3. Use of Mobile Technology by Respondents***

The questionnaire included questions about the use of mobile technology on the Camino including the respondents' feelings about the use of technology, the devices respondents carried, and the impact of mobile technology on respondent's Camino experience. These questions were only answered by respondents who carried mobile devices (N=318 American survey, N=160 European survey).

The questionnaire asked for the respondents' strength of agreement with six statements about the use of mobile technology on the Camino. These statements were mostly derived from Rogers (1958, 2003) work on diffusion of innovation as adapted by Moore and Benbasat (1991). Respondents to both surveys felt that using mobile technology on the Camino was not essential; 74% of Americans and 73% of Europeans strongly agreed or agreed with this statement. Respondents felt less strongly that mobile technology made it easier to walk the Camino; 41% of Americans and 54% of Europeans strongly agreed or agreed with this statement. They also felt less strongly that mobile technology was easy to use and easy to learn. Americans felt more strongly than Europeans that the technology improved their experience and fit well with the way they walked. The differences in the responses between Americans and Europeans are statistically significant for these last two statements but not significant for the other statements using a t-test.

Smartphones were the first choice of mobile devices carried by American and European respondents; 68% of Americans and 61% of Europeans carried smartphones. Basic mobile phones were more common among European respondents (40%) than Americans (28%), while tablets

where more common among American (21%) than Europeans (10%). The difference between Americans and Europeans for tablets is statistically significant but the differences for the other devices are not significant using a chi-square test.

In order to gauge the impact of mobile technology, the questionnaire asked respondents how mobile technology enhanced their Camino experience. For both Americans and Europeans, the primary way that mobile technology enhanced the experience was in the ability to keep in touch with friends and families at home. Locating accommodations and finding one's way on the Camino, common uses of paper guidebooks (e.g., Brierley 2015), were considerably less important. Europeans (31%) more than Americans (16%) felt the technology did not enhance the experience, a difference that is statistically significant using a chi-square test.

The questionnaire also asked how mobile technology detracted from the Camino experience. Primarily respondents felt that the need to charge devices regularly detracted from the experience. Overall, however, respondents felt that mobile technology did not detract from the Camino experience, although Europeans (71%) felt this way more so than Americans (57%), a result that is statistically significant using a chi-square test.

#### ***4.4. Use of Apps by Respondents***

Apps can be generic, that is, not specifically related to the Camino, or Camino-specific, that is designed to be used only by pilgrims walking the Camino. The questionnaire included questions about the use of both types of apps. It also asked if Camino-specific apps are better than paper-based guides for walking the Camino.

Questions about non-Camino-specific apps were asked of respondents who carried smartphones (N=215 American survey, N=97 European survey). The dominant app for both Americans and Europeans was email, although Europeans (74%) used email less than Americans (92%). Facebook use was also relatively high in the American survey (51%), but less so in the European survey (30%). Skype was also more popular among Americans (32%) than Europeans (11%). The use of other apps varied. The differences between the Americans and Europeans are statistically significant for email, Facebook, and Skype, but not significant for the other apps using a chi-square test.

The questions about Camino-specific apps were only asked of those who indicated that they carried a smartphone with Camino-specific apps (N=81 American survey, N=36 European survey). No app was used by more than 19% of the respondents. The most commonly used app among Americans was "Camino-A Wise Pilgrims Guide". Among Europeans the most commonly used apps were "Camino de Santiago-Camino Francis 2.0 (Maps)" and "Camino (Eroski)". This last app along with "My Camino de Santiago" were more popular among Europeans than

Americans perhaps because “Camino (Eroski)” is only available in Spanish and “My Camino de Santiago” is available in multiple languages. A chi-square test could not be used for all apps because the mean values were less than 5, in which case a chi-square test is not reliable.

The questionnaire identified respondents who had used paper-based guidebooks such as Brierley (2015) in addition to Camino-specific apps on smartphones (N=75 American survey, N=27 European survey). The questionnaire then asked these respondents for the strength of their agreement with the statement:

“Smartphone apps are better than paper-based guidebooks for use while walking the Camino de Santiago.”

12% of American respondents and 11% of European respondents either strongly agreed or agreed with this statement, while 56% of American respondents and 52% of European respondents disagreed or strongly disagreed with it. Using a 5 point Likert scale ranging from 5 for Strongly Agree to 1 for Strongly Disagree, the mean responses were 2.33 for the American survey and 2.44 for the European survey. These means are less than the neutral answer, which supports the conclusion that in general respondents did not agree with this statement. The difference in the mean responses between Americans and Europeans is not statistically significant according to a t-test.

#### ***4.5. Preferred App Characteristics and Features***

The questionnaire listed 19 possible characteristics and features of a Camino-specific smartphone app and asked for the respondents feeling about the importance of each from Extremely Important to Not Important at All. All respondents were asked to answer this question (N=467 American survey, N=185 European survey).

Responses to the American survey differed considerably from the European survey. Americans rated all characteristics and features higher than Europeans. All the differences between Americans and Europeans are significant except for “Info on different routes” and “GPS” according to t-tests. There were, however, similarities and differences in the rankings. “Availability in English” was highly rated in the American survey but much lower rated in the European survey. Ignoring “Availability in English” in the surveys, the first eight characteristics and features in each survey were the same, albeit in slightly different orders. These were “Accuracy/currency of information”, “Usability”, “Listings of albergues”, “Route maps”, “Ability to use off line”, “Town maps”, “Cultural and historical information”, and “Listings of hotels/inns.”. Beyond these characteristics and features the two surveys diverged until the very end when both ranked “Social connections” last.



## **5. SUMMARY AND CONCLUSION**

At the beginning of this paper we asked five specific questions about mobile technology and smartphone apps among American and European pilgrims on the Camino de Santiago. Our two surveys found answers to these questions, and similarities and differences in the answers between Americans and Europeans. Here we summarize the main results for each question.

1. What do pilgrims think about the use mobile technology on the Camino? Respondents to the surveys had varying opinions about the use of mobile technology on the Camino. Of respondents who carried mobile technology on the Camino, a sizable majority (74% American, 73% European) agreed or strongly agreed that mobile technology was not essential. Much fewer (41% American, 54% European) agreed or strongly agreed that mobile technology made it easier to walk the Camino. The differences between Americans and Europeans for these questions were not statistically significant.
2. What mobile technology do pilgrims use? Respondents who carried mobile devices carried smartphones mainly although Europeans were less likely to carry smartphones than Americans (68% American, 61% European). Some respondents carried other mobile devices including basic mobile phones, tablets, and e-readers. Europeans were more likely to carry basic mobile phones than Americans (28% American, 40% European), but Americans were more likely to carry tablets than Europeans (21% American, 10% European). The differences between Americans and Europeans were not statistically significant except for tablets.
3. What is the impact of mobile technology on pilgrims' Camino experience? For both Americans and Europeans the most common way that mobile technology enhanced their Camino experience was by making it easier to keep in touch with friends and family. The most common way technology detracted from the experience for both Americans and Europeans was the need to be charged regularly. Only 16% of Americans and 31% of Europeans said the devices did not enhance their Camino experience while 57% of Americans and 71% of Europeans said mobile devices did not detracted from their Camino experience. The differences between Americans and Europeans were statistically significant.
4. What smartphone apps do pilgrims use? The most widely used non-Camino-specific apps were those designed for personal communication, mostly email (92% of Americans, 74% of Europeans). The difference between Americans and Europeans was statistically significant. Camino-specific apps were used by fewer pilgrims than non-Camino-specific apps with no app dominating the group. The majority of pilgrims (56% American, 52% European) felt that smartphone apps were not better than paper guide books. The difference between Americans and Europeans was not statistically significant.

5. What would pilgrims like in an “ideal” smartphone app? The characteristics and features of a smartphone app most highly rated by both Americans and Europeans were accuracy/currency of information, usability, listings of albergues, route maps, ability to use off line, town maps, cultural and historical information, and listings of hotels/inns. Americans rated almost all characteristics and features higher than Europeans, and the differences were statistically significant.

This research is the first attempt at trying to understand the role and impact of mobile technology in a pilgrimage experience. Although the results of the surveys did not point to a single conclusion, they did show certain patterns in the role and impact of mobile technology and smartphone apps among pilgrims on the Camino de Santiago. They also showed similarities and differences between American and European pilgrims.

Future research using similar methodology with different populations and/or different pilgrimages may yield more conclusive results, especially when the data is compared to that of these surveys. Future research using similar methodology to study the use of mobile technology and smartphone apps in other types of touristic activities may also be fruitful. We intend to pursue these avenues of research in the future.

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