A Survey for Exploring the Possibility of Using Mobile Application's Tourist's Guide in Sri Lanka

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ARTICLE INFO	ABSTRACT
           Corresponding Author: **K.S. Janaka kodippili[1]**	Mobile application-supported tourism services have made it easier for travellers to plan and manage their trip. Smart tourism technological limitations for tourist attraction requires research. These includes decision support in the context of tourists' information processing. This study presents an exploratory study for the possibility of applying rendering based augmented reality mobile application in Sri Lanka. A such, the tourism industry in Sri Lank would improve in terms of convenience in providing information to tourist as much as possible.A questionnaire is designed and administered to potential customers; stake holders and tourists, who experience tourism in Sri Lanka. The significance level of the data at 0.001 and 0.05 levels and their corresponding star correlations are discussed. The result of the major question, E1 will be used to further support the possibility that mobile application in terms of application of rendering-based augmented reality. Based on the analysis results via spss, 2-tailed tests showed that the target variables are well related. More so, more people suggests that an updated mobile application is recommended for providing tourists with tourism guide conveniently.

Introduction
Augmented reality (AR) is a useful visualization technique in a field of computer research deals with the combination of real-world and computer-generated data (virtual reality) (Donggang, 2009). Information technology-supported tourism services and platforms have made it easier for individual travellers to plan and manage their trips (Chul et al, 2016).The rapid development of virtual reality (VR) technology offers opportunities for a widespread consumption of VR tourism content (Lis et al, 2017). A mobile augmented reality (MAR) travel guide would provide necessary virtual guide for tourists to have a glance before real life experience (Panos et al, 2015).

Literature Review
The tourism sector is one of the world's most important economic sectors.The increasingpopularity of mobile devices presents an opportunity for developing innovative mobile tourism

services for tourism-related organizations that could increase market share and enhance theperceived quality of information and services by tourists (Dion et al, 2010). AR is a visualization technique that superimposes computer generated data, such as text, video, graphics, GPS data and other multimedia formats, on top of the real- world view, as captured from the camera of a computer, a mobile phone or other devices(Chris et al, 2012).Augmented reality (AR), which superimposes virtual information on real scenes, has provided good solutions for on-site tour guides. In contrast to the conventional types of tour guides, AR-based tour guides enable tourists to have intuitive and realistic experiences by overlaying virtual contents on cultural heritagessites(Byung-Kuk et al, 2011).Scientists proved that visualization is the best way for memorization, because through an image, students are able to get many ideas than reading or listening (Terrence, 2016). Therefore, AR could be applicable for learning by incorporating it in the curriculum of high learning schools beside tourism.In recent years, the growth of the Internet and communications networks for mobile phones have led to the development of services to provide tourism information via mobile information devices at tourist sites (Hidemi et al, 2015).In a case were a tourist area is poor in terms of internet connectivity, there will be need for proposing a topology for improving the connectivity. These could begin with a preplan for a better topology (Datukun et al, 2016a; Datukun et al, 2016b). Improving network performance is necessary in any organization (Datukun et al, 2017). This include tourist centres for freely and conveniently connecting virtual tourism. With the increasing levels of deployment of various forms of high-speed (or broadband) services within today's

Internet, there is new impetus to find some usable answers that allow both providers and users to place some objective benchmarks against the service offerings. Furthermore, with the lift in access speed with broadband services, there is an associated expectation on the part of the end user or service customer about the performance of the Internet service. It should be "better" in some fashion, where "better" relates to the performance of the network and the service profile that is offered to network applications. And not only is there an expectation of "better" performance, it should be measurable (Onwudebelu et al, 2014).This will help in browser-based management information system provided for administrative users in virtual AR.

Methodology

A process flow for the architecture was presentedtowards developing a mobile application for tourists in Sri Lanka (Kodippili and Sellappan, 2018). As part of this project, a questionnaire was distributed for exploring the possibility of applying the application. This paper begins with questionnaire administration to stake holders and tourists. The data collected is then analyzed with SPSS software for descriptive analysis and significance levels. Appendix presents the questionnaire administered.

Data Analysis

Spearman's rho statistical analysis gives the correlation coefficient with the corresponding significant value, "sig. (2-tailed)". This analysis provides the "*" and "**" level of significance in terms of the correlation coefficient and significance level. The "*" coefficients are significant at 0.05 level of significance while that of "**" are significant at 0.001 level. Coefficients without either "*" or "**" shows no level of significance at all. These correlation coefficients are used to evaluate the association between rank-order variables and non-parametric alternative to persons. In Table 1,the significance at 0.001 level includesthe relationship between A1 and A2, A3 and A2, A2 and B1, A2 and E1, A3 and B1, A3 and D1, A4 and D1, A4 and D2, B1 and B3 and C1 and C3. Others atsignificant level of 0.05 includes the relationship between A1 and D3, A2 and B3, A4 and B1. All the significant values are bolden in Table 1 accordingly.

A1 to E1 are variables assigned to the questions for survey questionnaire in the appendix. It describes the level of significance of relationship between pair of questions. The main variable to be measured in this spearman's rho result is that E1 and A2 significantly related based on what would improve tourism in Sri Lanka in terms of the recommending age group. Others include D1 and D2, for travelling to other countries and how many; C2 and D3, for partial satisfaction with current tourist service guide and comparatively suggesting upgrade from what exist in other countries tourist might have been.

Table 1: Spearman's rho (2-tailed)

	A1	A2	A3	A4	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1
A1	1.000 . 300	**-.162**** **.005** 300	.018 .751 300	.039 .506 300	.064 .267 300	-.018 .750 300	.062 .282 300	-.007 .901 300	.097 .093 300	.096 .096 300	-.047 .421 300	-.073 .208 300	**.129*** **.026** 300	-.085 .140 300
A2	**-.162**** **.005** 300	1.000 . 300	**-.292**** **.000** 300	.050 .388 300	**.196**** **.001** 300	-.012 .838 300	**.135*** **.020** 300	-.063 .278 300	-.062 .283 300	.082 .157 300	-.062 .281 300	-.010 .859 300	.041 .480 300	**.263**** **.000** 300
A3	.018 .751 300	**-.292**** **.000** 300	1.000 . 300	-.001 .992 300	**-.149**** **.010** 300	.033 .572 300	**.131*** **.023** 300	.040 .492 300	.013 .823 300	-.058 .314 300	**.150**** **.009** 300	**.141*** **.015** 300	.109 .059 300	-.043 .462 300
A4	.039 .506 300	.050 .388 300	-.001 .992 300	1.000 . 300	**.125*** **.031** 300	-.035 .543 300	.053 .357 300	.111 .055 300	.011 .852 300	-.018 .762 300	**-.582**** **.000** 300	**-.456**** **.000** 300	-.075 .197 300	.017 .772 300
B1	.064 .267 300	**.196**** **.001** 300	**-.149**** **.010** 300	**.125*** **.031** 300	1.000 . 300	.006 .920 300	**.213**** **.000** 300	.049 .399 300	-.062 .287 300	.024 .684 300	-.035 .546 300	-.054 .348 300	-.053 .361 300	.096 .098 300
B2	-.018 .750 300	-.012 .838 300	.033 .572 300	-.035 .543 300	.006 .920 300	1.000 . 300	.084 .145 300	.147* .011 300	.014 .812 300	.014 .806 300	.035 .551 300	.026 .648 300	.078 .177 300	.083 .153 300
B3	.062 .282 300	**.135*** **.020** 300	**.131*** **.023** 300	.053 .357 300	**.213**** **.000** 300	.084 .145 300	1.000 . 300	.031 .591 300	.080 .166 300	.006 .914 300	-.036 .539 300	-.047 .418 300	.031 .592 300	.113 .050 300
	-.007	-.063	.040	.111	.049	**.147***	.031	1.000	-.026	**.172****	.031	.041	.037	.046

C1	.901	.278	.492	.055	.399	**.011**	.591	.	.648	.003	.599	.478	.522	.431
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
C2	.097	-.062	.013	.011	-.062	.014	.080	-.026	1.000	-.006	-.050	-.042	**.123***	-.113
	.093	.283	.823	.852	.287	.812	.166	.648	.	.916	.390	.465	**.034**	.051
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
C3	.096	.082	-.058	-.018	.024	.014	.006	**.172**	-.006	1.000	.117*	.127*	-.118*	.065
	.096	.157	.314	.762	.684	.806	.914	**.003**	.916	.	.042	.028	.040	.262
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
D1	-.047	-.062	**.150****	-.582**	-.035	.035	-.036	.031	-.050	**.117***	1.000	**.880****	.045	.005
	.421	.281	**.009**	**.000**	.546	.551	.539	.599	.390	**.042**	.	**.000**	.438	.935
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
D2	-.073	-.010	**.141***	-.456**	-.054	.026	-.047	.041	-.042	.127*	.880**	1.000	.032	.028
	.208	.859	**.015**	**.000**	.348	.648	.418	.478	.465	.028	.000	.	.580	.624
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
D3	**.129***	.041	.109	-.075	-.053	.078	.031	.037	**.123***	-.118*	.045	.032	1.000	.010
	.026	.480	.059	.197	.361	.177	.592	.522	**.034**	.040	.438	.580	.	.862
	300	300	300	300	300	300	300	300	300	300	300	300	300	300
E1	-.085	**.263****	-.043	.017	.096	.083	.113	.046	-.113	.065	.005	.028	.010	1.000
	.140	**.000**	.462	.772	.098	.153	.050	.431	.051	.262	.935	.624	.862	.
	300	300	300	300	300	300	300	300	300	300	300	300	300	300

* correlation is significant at the 0.05 level (2-tailed)

** correlation is significant at the 0.01 level (2-tailed)

In Figure 1, more respondents have been to few other countries other that Sri Lanka and this would help in telling if Sri Lanka is good enough compare to other countries they might have being. For those that have only gone to Sri Lanka, they may not know what to compare with.
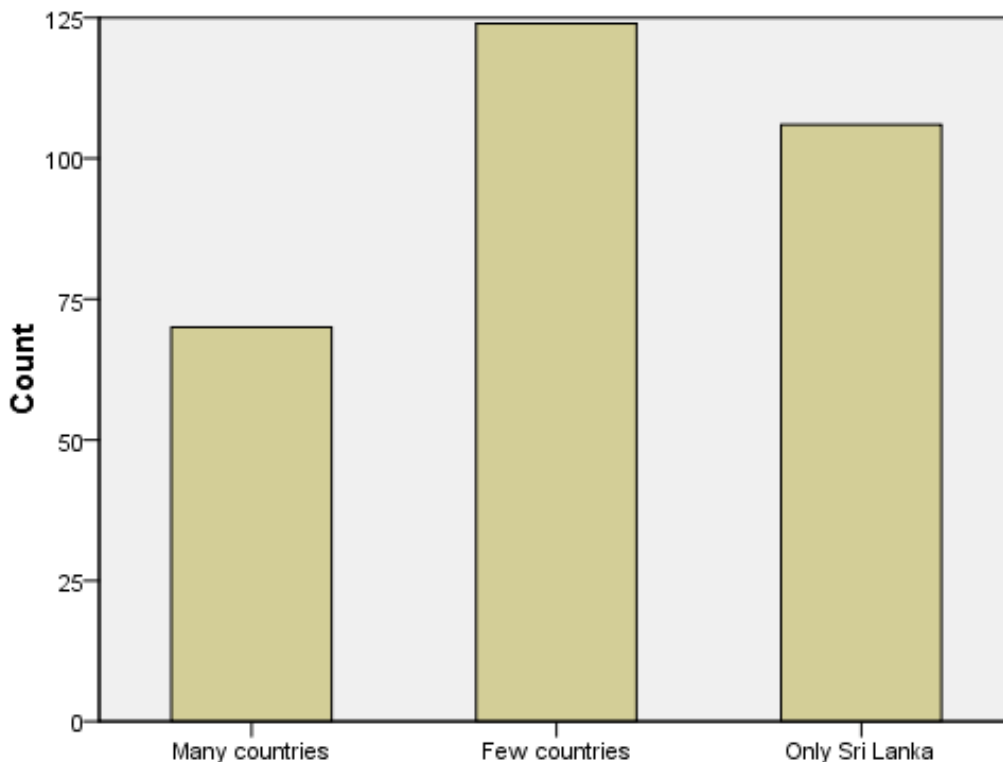

Figure 1: How many countries have you travelled for tourism?

Figure 2 confirms that those who have being in few other countries in Figure 1 could compare and tell of the position of Sri Lanka in terms of Tourist guides.
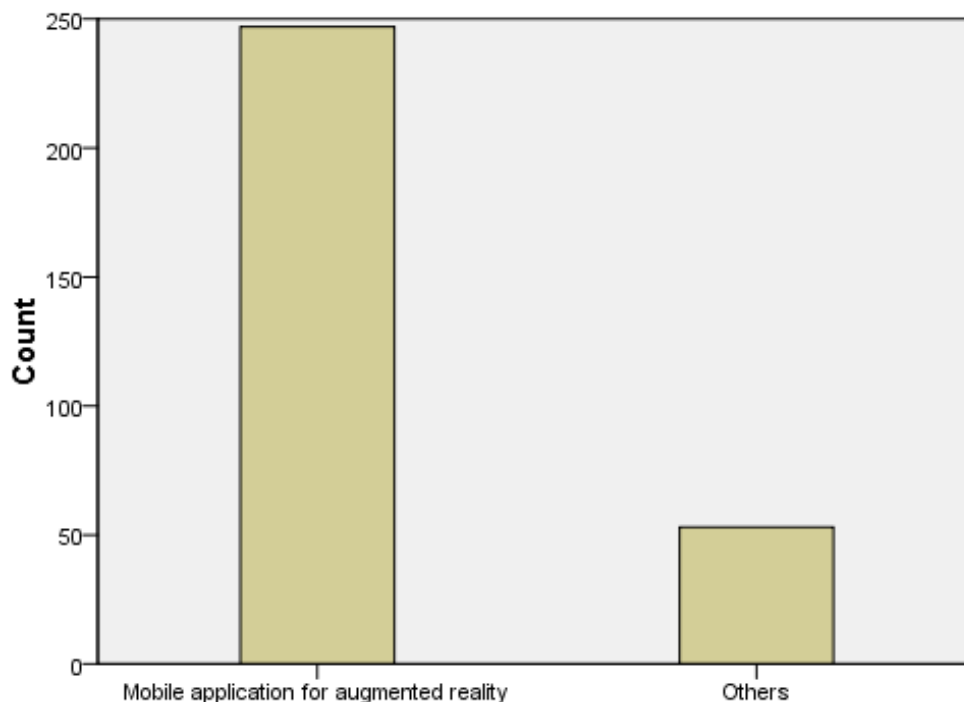

Figure 2: Compare to other countries what technology would improve tourism in Sri Lanka?

Conclusion

In as much as the this analysis shows that relevant relationship between variables are significant and that that majority of the target customers, tourists in Sri Lanka were of the opinion that mobile application for augmented reality is good, this project can proceed. Hence, we could conclude that this mobile application development for improving tourists' guide in Sri Lanka is necessary. As such the next paper will be concern with results of the application's prototype.

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Appendix

QUESTIONNAIRE FOR TOURISTS IN SRI LANKA

Sri Lanka being a popular tourist destination entertains a large number of tourists each year. Due to the lack of up to date information and navigation support, tourists are not able to visit all the attractions during a stay. This research focuses on discovering a solution to improve this situation providing technological convenience to the visitors. As a**tourist** in Sri Lanka kindly fill this questionnaire in participation for this research survey. Your participation will not include information that reveals your identity and will not be used against you in any way. All data will be used EXCLUSIVELY for the needs of the present research. Thank you for your participation in anticipation.

A1 What is your gender?
1. ☐Male 2. ☐Female

A2 What is your age group?

1. ☐18 and below years 2. ☐19-29 years 3. ☐30-49 years 4. 50-69 years 5. Above 70 years

A3 Whatisyourcurrentoccupation?
1. ☐Civil Servant 2. ☐Business owner 3. ☐Farmer 4. Trader 5. Student 6. None of the above

A4 Inwhich region are you from?
1 ☐Asia 2. ☐Europe 3. ☐America 4. ☐Australia 5. ☐Middle East 6. ☐Africa 7. ☐Others

B1 How didyou get informationaboutthisdestination?
1. ☐Travel agency 2. ☐Travel guide 3. ☐Internet 4. ☐Magazine 5. ☐Others

B2 AreyouSatisfied with the mode of getting information about this destination?
1. ☐Extremely satisfied 2. ☐Very satisfied 3. ☐Somewhat satisfied4. ☐Not satisfied

B3 Which electronic device would you use to find the tourist destinations and necessary information about it?
1. ☐Computer 2. ☐Laptop 3. ☐Tab4. ☐Mobile Phone 5. ☐Other

C1 What tourist guide services are you provided here?
1 ☐Mobile app for augmented reality 2. ☐Touring guide booklets 3. ☐On-board maps 4. ☐Others

C2 Are you satisfied with the current tourist Guide Services?
1. ☐Extremely satisfied 2. ☐Very satisfied 3. ☐Somewhat satisfied 4. ☐Not satisfied

C3 Are you satisfied with the current technical infrastructure providingtourist information about Sri Lanka?
1.☐Extremely satisfied 2.☐Very satisfied 3. ☐Somewhat satisfied4. ☐Not satisfied

D1 Have you been to other countries for tourism?
1. ☐Yes 2. ☐No

D2 How many countries have you travelled for tourism?
1.☐Many 2. ☐Few 3. ☐Only Sri Lanka

D3 Comparing to other countries what technology would improve tourism industry in Sri lanka?
1. ☐Mobile applications for augmented reality 2. ☐Others

E1 What do you think would improve tourism in Sri Lanka?
1. ☐Updated mobile apps for customers' awareness 2. ☐Get more staff to take customers around