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Utilizing Technology Acceptance Model in Technical and Usability Evaluation of The Developed Tourism SMEs Social Media Analytics Tool

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Abstract

The tourism sector is among the most profitable sectors with a high contribution to the world economy. The majority of tourism organisations are operated as small and medium-sized enterprises (SMEs). These tourism SMEs adopted the use of ICT in their businesses. Social media analytics (SMA) is the process of evaluating and analysing social media data and getting insight from it for business decision-making. In this study, the social media analytics tool was developed based on tourism SMEs managers and owner's requirements. The aim of this study is to utilise technology acceptance model (TAM) to evaluate the developed social media analytics tool for tourism SMEs. The social media analytics tool was developed based on tourism SMEs requirements and followed TAM construct of perceive ease of use and perceive usefulness. The developed tool was hosted and participants were invited to conduct the evaluation process. 10 ICT personnel conducted the technical evaluation of the system while 15 end users of the system participated in usability evaluation. The findings show that the majority of the technical evaluation participants were satisfied with the technical aspect of the developed social media analytics tool. Usability evaluation results show that the participants were satisfied with the ease of use of the tool, the interfaces of the tool and they all agreed that the developed system modules are useful to tourism SMEs and they will recommend the tool to other SMEs managers and owners. The study recommends the use of TAM model in developing and evaluation of the developed IT systems. The technical evaluation aspect seems to be few; hence the study recommends on the future versions of the tools the technical evaluation aspect to be increased during evaluation.

Keywords: Tourism, Social media analytics, SMEs, Evaluation

1. INTRODUCTION

Tourism sector is among the major profitable sectors with a high contribution to the world economy [1]. In Tanzania the tourism sector is the major sector which contributes much to the national economy it leads in providing foreign exchange, employment and income generation [2]. Majority of tourism organisations are operated as small and medium size enterprises (SMEs) [3]. These tourism SMEs

adopted the usage of ICT in their business process, among the ICT usage adopted is the application of social media [4]; [5].

Social media analytics (SMA) is the process of evaluating and analysing social media data and getting insight from it for business decision making [6].SMA helps SMEs to gather customer insight on customer needs and preference, to measure efficiency of organisation promotions and receive customer feedback [7]. Several tools are available to perform SMA, there are tools which come with social media platforms like analytics and twitter analyser. Other tools like Google analytics are used to measure traffic, brand mentions, and company mentions [8]. Organisations find it difficult to select the SMA tool which gives intelligence that is in line with social media analytics metrics they need to find insight about [7]; [9]. The social media analytics tool was developed, the social media analytics tool was developed based on tourism SMEs managers and owner's requirements to help tourism managers to find insight to the metrics which relate to their business process.

Technology acceptance model (TAM) is used by scholar to evaluate the developed systems, using its constructs such as perceived usefulness which determine user's belief that a system improves their performance and perceived ease of use which explains user's perception of the effort required to learn and use the system. TAM has clearly defined concepts which will provide insight into why users may or may not adopt a system, in the other hand will help to improve the overall effectiveness of the system. In this study the model was deployed to evaluate the technical and usability of social media analytics tool developed. Several studies use the TAM model in development and evaluation of information systems. [10] applied the usage of TAM to evaluate the developed e-daftar in Malaysia. [11]evaluate the knowledge management system by using TAM.

The study aims to apply the TAM model in the technical and usability evaluation process performed on the tourism SMEs social media analytics tool, which was developed based on the tourism SMEs managers and owners' requirements, by using TAM. To ensure user satisfaction of any developed system the evaluation process is to be performed [12]. The evaluation process is a procedure which contains a set of defined activities for collecting usage as well as end user interaction with a product on how the user requirements and technical requirements are met [13].

The study flow involves the following stages: defining the research problem and aim, this stage involves conducted a thorough literature review to identify gaps and areas of interest. This stage articulated a clear and concise research problem statement and formulated specific research question. Identifying the research methodology; in this stage the research methodologies were evaluated based on the nature of the research problem and objectives. The most appropriate

methodology and justified were chosen. Data collection, this stage involves developing data collection instruments based on the chosen methodology. Recruited participants and collected data through selected channels. Data analysis, in this stage transcription and organisation of qualitative data is done through appropriate agreed analytical techniques. Results and discussion, this stage summarise the main findings of the study and present them in a clear format. Also, it interpreted the findings and discussed their significance and implication. Conclusion and recommendations stage drew conclusions based on the findings, summarizing the key insights and their implications. It offers recommendations for future research directions or practical interventions based on the study's findings and limitations.

2. METHODS

2.1. System structure

The developed tourism SMEs social media analytics tool has deployed the CUP methodology [14] to develop the tool. Three major blocks of the system represent the capture, understanding and process activities to be performed. The first block is capture where the social media data are extracted and stored. In this study the social media data from was extracted by using Graph API. The next block is understood, this is where the analytics is performed using different analytics techniques and different metrics are giving insight of the social media data. In this block the activities involved are counting the number of likes/dislikes of the page, performing sentiment analysis of the comments and posts, locating the geographical location of page visitors, and performing prediction analysis. The last block is a presentation where the output of the analytics is shared out in visualisation and other formats.

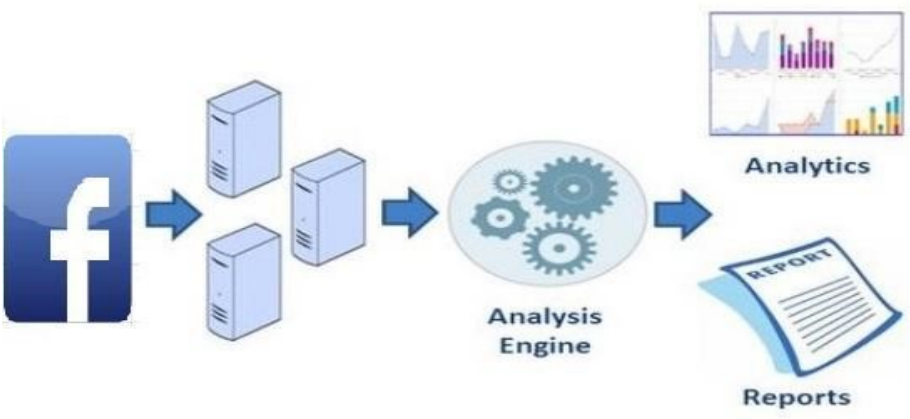

Figure 1. Social media analytics tool system structure

2.2. Evaluation method

In this study, quantitative data was collected by using questionnaires. The purposive sampling technique was applied to select participants, purposive technique is used to find participants who have knowledge of the topic of study. In this study, those tourism SMEs that are performing SMA were selected, as well as ICT experts who are developers and system analysts. The Likert scale semi structured questionnaires were distributed to participants to fill them after using the system. The collected questionnaires were recorded in excel and the analysis was performed using Python. The system was hosted at 162.215.213.148 the participants were given five (5) days to test and use the system. 10 ICT experts were used to perform technical evaluation and 15 final users of the system were used to perform usability evaluation by testing the system functional requirements.

3. RESULTS AND DISCUSSION

3.1 Participants' demography

The participants were 10 ICT experts and 15 final users of the system. Out of 10 ICT experts 2 were females and 8 males. 3 ICT experts have bachelor degrees, 6 Master's degree and 1 PhD both aged between 25 to 40. 3 Final user evaluators were female, 1 master's degree and remaining 14 they have bachelor's degree both aged between 25 to 41. All evaluators were regular users of the computer systems and social media, all participants received basic training to use the system.

3.2 Technical evaluation results

The technical evaluation was used to evaluate the performance of the developed system, operating system compatibility and system security. The evaluators filled the questionnaires with five Likert scales: very satisfied, satisfied, neutral, unsatisfied, and very unsatisfied. The performance evaluation results show that 70% mentioned that they are very satisfied with the system prototype performance and the remaining 30% mentioned that they are just satisfied with the performance of the developed system.

Operating system compatibility evaluation results show that 60% of the evaluators mentioned they are very satisfied, 20% mentioned satisfied and the remaining 20% they are neutral with the operating system compatibility with the developed social media analytics tool. The system security evaluation results show that 50% mentioned that they are very satisfied with the security of the system, 20% said they are satisfied and 30% were neutral with the system prototype security. Figure 2 summarises the technical evaluation results.

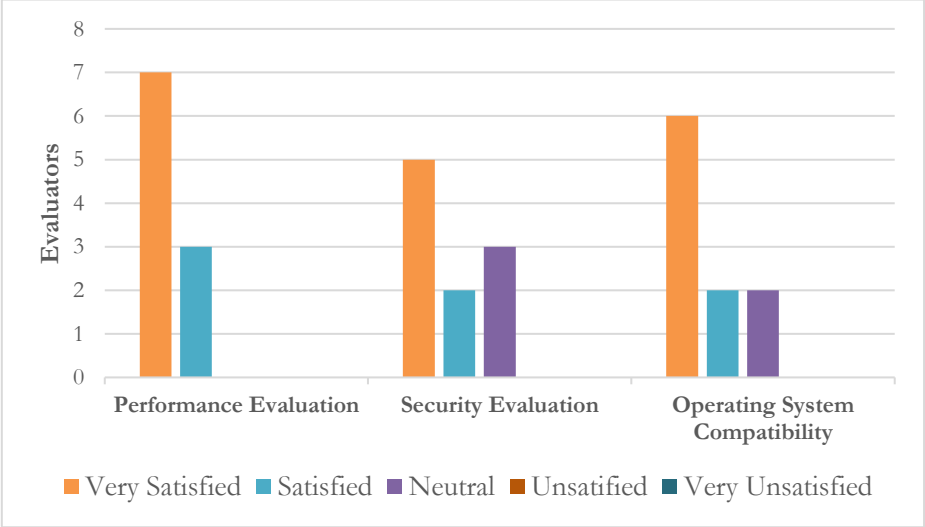

Figure 2. Technical evaluation results

3.3 Usability evaluation results

The end users of the developed system evaluated the system in five different aspects namely, the ease of use, attractiveness of the system interfaces, navigation of the system components, the usefulness of the developed system to tourism SMEs and the willingness to recommend to other tourism SMEs managers and owners. The participants filled the questionnaire with five Likert scales: Strongly agree, agree, neutral, strongly disagree and agree on every aspect of evaluation.

The easy-to-use evaluation results are, 86.66% mentioned strongly agree, 13.33% were neutral with easy to use the developed system. 73.33% of the participants strongly agreed that the system interfaces are attractive while 20% mentioned agree and 6.66% were neutral with the system interface attractiveness. The evaluation results on the navigation of the developed system were, 86.66% strongly agree that the system is easy to navigate, 6.66% mentioned agree and the remaining 6.66% were neutral.

93.33% of the participants mentioned strongly agree that the developed social media analytics tool is useful for tourism SMEs and 6.66% mentioned agree that the tool is useful for tourism SMEs. On the recommendation to other SMEs managers and owners all participants 100% mentioned strongly agree that they will recommend the developed social media analytics tool to other managers and owners of the tourism SMEs. Table 1 below shows the summary of the usability evaluation results.

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Table 1. Usability evaluation results

Statement	Response	Frequency
"The social media analytics tool is easy to use"	Strongly	13(86.66%)
	agree	2(13.33%)
	Agree	0(0%)
	Neutral	
"The social media analytics tool interfaces are attractive"	Strongly	11(73.33%)
	agree	3(20%)
	Agree	1(6.66%)
	Neutral	
"The social media analytics tool components are easy to navigate"	Strongly	13(86.66%)
	agree	1(6.66%)
	Agree	1(6.66%)
	Neutral	
"The overall social media analytics tool modules are useful for tourism small and medium size enterprises"	Strongly	14(93.33)
	agree	1(6.66%)
	Agree	0(0%)
	Neutral	
"I will recommend the social media analytics tool to other tourism SMEs owners/managers"	Strongly	15(100%)
	agree	0(0%)
	Agree	0(0%)
	Neutral	

3.4 Discussion

The study performs technical and usability of the developed social media analytics tool using TAM. TAM is useful in developing the information systems and evaluating it based on its construct, the TAM construct on perceived for usefulness and perceived ease of use was used to evaluate the usability and technical aspect of the developed social media analytics tool. The study findings reveal that TAM is suitable for evaluating the developed systems as it is easy to use and very understandable to evaluators. 25 participants involved in evaluation, 10 ICT experts who perform technical evaluation and 15 end users from tourism SMEs who perform usability evaluation. 100% of the evaluators mentioned to be satisfied with the system's performance. The developed system operating system compatibility evaluation showed that 80% of the evaluators were satisfied with the operating system compatibility. More than 70% of the security evaluation agreed that the system security is satisfied. The overall technical evaluation results show that the evaluators were satisfied with technical aspects of the developed social media analytics tool.

The social media analytics tool usability evaluation results show that more than 86% of the evaluators agreed that the system is easy to use, about 93% mentioned

that the system interface is attractive. All participants of the usability evaluation 100% agreed that the system modules are useful to tourism SMEs, and they will recommend other tourism SMEs managers and owners to use the developed social media analytics tool.

4. CONCLUSION

The aim of this study is to utilize TAM in evaluation of the developed social media analytics tool. The system evaluation is performed to ensure the satisfaction of the system and to identify the areas which need some improvement by using TAM. The technical evaluation of the system shows that most of the participants agreed that the technical areas like performance, security and operating system compatibility are satisfactory for usage. The usability part of the evaluation was examined, and the participants agreed that the system is easy to use, system interface are attractive, the system is easy to navigate, system is useful for tourism SMEs and all the participants agreed that they will recommend the developed social media analytics tool to be used by other tourism SMEs managers and owners. The future work is to deploy the developed system and perform the evaluation process with many users and technical personnel. The study managerial implication is to show the necessity of the system evaluation process and the application of TAM model in development of IT systems and evaluation. The study recommends the use of TAM model in evaluation of the developed systems which use TAM construct of perceived usefulness and perceived ease of use.

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