USABILITY EVALUATION OF TWITTER MICRO-BLOG USING HEURISTIC APPROACH

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ABSTRACT: The innovations that accompany the introduction of social media as a tool of communication have really set a pace at which several activities are carried out. The social network has attracted so many users across the world. Twitter becoming the second most widely used micro-blog after facebook, as real-time sharing information electronic tool. However, numerous user-interface challenges have been identified in twitter micro blog, ranging from credibility of the information shared on twitter to icons improvement. This paper applies heuristic evaluation techniques on twitter microblog. A web-based e-questionnaire is used as a means of collecting data from different level of users (Novice, Beginner and Professional). Over 100 users filled e-questionnaire to express their user experience which serves as source of data used in this study. The result according to the weighted score values state that the twitter as one example of micro-blog proved to be one of the best social networks, which also show that all information is credible in the platform. The statistical T-Test analysis presents outstanding results that the usability evaluation of twitter platform is of great significant.

KEYWORDS: Micro-blog, Twitter, Statistical T-Test, e-questionnaire, Usability evaluation.

1. INTRODUCTION

The application of tools such as blogs has become an integral part of online culture ([B+13]), it has grown into a substantial communication platform used by everyone ([L+12]). The sharing of information through online social media is an imperative factor of the Real Time Web (RTW) that attract much interest ([NTD10]). Blogs is a contraction of the term weblogs. Blogs has been defined by quite a number of authors as follow: A blog can be articulated as a set of posts comes up with time, and the posts usually deals with the topics that the blog author is showing interest ([P+12]). The generally satisfactory description is that blogs are used for information allotment purposes in any knowledge driven institute. Traditionally, blogs seem to be personalized but nowadays we have blogs for an organization, containing a number of members or a distributed blog owned by a group of people. Blogs allow users to convey their thoughts, remarks, and respond or share with others. Blogs have been considered to be of great significance in rendering an effective public communication and establishing good relationships as easy as possible, although user generated contents are more casual in form, they might reveal the present opinion of distinctive users ([WL11]). Among the most widely used blogs include; Twitter, Facebook, GooglePlus, as well as podcasts and videocasts that are used for individual content transmission.

The success of any product is based mainly on user satisfaction with some interfaces which exist in the product ([E+16]). Usability remains one of the imperative basics to make artifact usable. Furthermore, Usability is one of the essential components that make item usable, the assessment usually is carried out on clients. This gives a direct rouse on how real user in a genuine circumstance utilize the framework practically, usability testing is a method for surveying how much an intuitive framework is simple and pleasant to use with a perspective of distinguishing identifying usability problems or collection of convenience measures/metrics.

Social media have become a household name in information technology today, especially with the presence of micro blogs such as twitter, facebook and linkedln, several authors have been evaluating user interface of micro blogs, nevertheless the need to improve the usability of such micro blogs is ever increasing with the number of users. Therefore, it's necessary to improve on several user interfaces, this paper focus on twitter user interface improvement by carrying out usability evaluation. Thus variance between traditional usability methods and user experiences based on fuzzy logic and heuristic evaluation to assess how well Twitter complies with usability guidelines to unveil unique user experiences is very important ([H+08]). The findings of this study will help in bridging the gaps in user understanding (novice and experienced) for the overall product.

2. RELATED WORK

([ZC17]) in their study uses a compressive evaluation for product by combining the analytic hierarchy process (AHP) and fuzzy evaluation methods for synthesizing performance data and subjective response of the data. The result of the study shows that combination of summative usability testing data is achieved, through average percentage and weighted percentage. Therefore, the study illustrated that using fuzzy evaluation techniques in usability is very important, this leads to the why micro blogs usability needs to be evaluated.

([A+15]) used smartphone application to improve characteristics of usability, that the extent to which a product can be used to achieve specific goal with the effectiveness, efficiency and satisfaction in content of use. The study focus was on elderly people using Morae tool to evaluate the usability of twitter application on the Android platform, while the Morae tool recorded the user behaviour via the Mobizen software and questions were answered in software usability scale (SUS), the result of the study mentioned not only satisfaction in design but also retaining existing users.

([M+13b]) used an ensemble of statistical and heuristic classifiers to predict Twitter users' home locations in the study. Where examine automatic summarization evaluation metrics for the task of micro blog summarization. The study identifies in formativeness and readability as the key aspect that a good micro blog evaluation metric needs.

([M+13a]) in a related development, applied automated analysis and visualization techniques to produce a high level overview of a twitter, using statistical topic modeling for discovering the topic in a collection of document, using binned topic model was the highlight of the study, where a state application of statistical topic modeling was unfolded with a deeper understanding. Cosine similarity metrics was employed for comparative comparison. Several datasets were tested including real time event which made it relatively important to the study a web-based.

([DGR12]) carried out a fuzzy logic approach to quantify usability of MS word 2003 to evaluate the product in which a crisp value was calculated by the deffuzzification process, in the study five attributes were considered which include effectiveness, efficiency, satisfaction, comprehensibility and safety to weight and rate the results, thereby comprising of the values of the usability obtained which product is more suitable to users. This produced the attributes chosen for usability evaluation of micro blogs.

3. METHODOLOGY

The usability evaluation of twitter was carried out using the following process. The e-questionnaire designed to capture response from twitter users based on the combination of five attributes out of the Nielsen's attributes of usability. These attributes include; Learnability (Ease of learning), Efficiency of use, Memorability, Errors (accuracy) and Subjective satisfaction. The e-questionnaire includes the following questions:

- Twitter Social Network is the best available social network
- Creating a Twitter Account is simple to be performed.
- Getting use to a twitter interfaces is a pleasant task.
- All features are useful in twitter social microblog.
- The social media has all functions and capability expected to have.
- The organization of information on the platform is clear and informative.
- Knowing appropriate message is important to twitter platform.
- The platform gives error messages that clearly tell how to fix problems.
- Errors encounter when using this social network is easy to solve.
- All interaction among users difficult in this social network?
- All twitter's tools such as Twitterific and Tweet Deck work always?
- Handling tweet controls are easy task.
- Using the right column layout is essential for all twitter users?
- All information in this social network platform is credible?
- Twitter platform have become a haven for spam and junk.
- All icons (Reply and Retweet) appearing very small and blurred for users?
- Data control is more restricted from public view as compared to other social networks like Facebook and Linkedln

3.2 Structure of Database

The administrator database structure of the proposed usability evaluation is shown in Table 1. The structure for all questions used is discussed in Table 2.

Table 1: Admin Table Structure

Column	Type	Null	Default	Comments	MIME
id	int(11)	No			
user	varchar(20)	No			
pass	varchar(20)	No			

Table 2: Questionnaire database Table Structure

Column	Type	Null	Default	Comments	MIME
id	int(11)	No			
name	varchar(100)	No			
email	varchar(100)	No			
q1	int(11)	No			
q2	int(11)	No			
q3	int(11)	No			
q4	int(11)	No			
q5	int(11)	No			
q6	int(11)	No			
q7	int(11)	No			
q8	int(11)	No			
q9	int(11)	No			
q10	int(11)	No			
q11	int(11)	No			
q12	int(11)	No			
q13	int(11)	No			
q14	int(11)	No			

Table 3: Questionnaire Sample

Question Number	Question
Q1	Twitter Social Network is the best available social network
Q2	Creating a Twitter Account is simple to be performed
Q3	Getting use to a twitter interfaces is a pleasant task
Q4	All features are useful in twitter social micro blog
Q5	The social media has all functions and capability expected to have
Q6	The organization of information on the platform is clear and informative
Q7	Knowing appropriate message is important to twitter platform
Q8	The platform gives error messages that clearly tell how to fix problems
Q9	Errors encounter when using this social network is easy to solve
Q10	All interaction among users difficult in this social network?
Q11	All twitter's tools such as Twitterific and Tweet Deck work always?
Q12	Handling tweet controls are easy task
Q13	Using the right column layout is essential for all twitter users?
Q14	All information in this social network platform is credible?
Q15	Twitter platform have become a haven for spam and junk
Q16	All icons (Reply and Retweet) appearing very small and blurred for users?
Q17	Data control is more restricted from public view as compared to other social networks like Facebook and Linkedln

4. RESULTS AND DISCUSSION

4.1 The Index Page

This is the home page of the application. It is the page which is loaded once the application is lunched. The index page consists of three menus namely: “Rate Experience”, “Usability Result” and “Admin”, as shown in Figure 1.

4.2 The Admin Login Page

This is the login page for the admin. It is the page where the admin inputs his username and password in order to gain access to the admin panel. Figure 2 shows the interface for Admin Login Page.

4.3 The Admin Panel

This is the landing page after admin successfully login to the system. The page shows a list of all the ratings by various users as shown in Figure 3.

4.4 Submission Page

This is the page that comes up after a user have successfully answered all the questions and then made a submission. Figure 4 shows the interface for question submission.

4.5 The Result Page

This is the page that shows the ratting result by all users as shown in Figure 5.

4.6 Statistical Evaluation

Figure 6 shows the weighted rating score for the evaluation of 111 responses received over the internet, the score gives a detailed result of varying users experience with twitter social networking site. It rates the most significant factor which thereby affects the twitter usability in accordance to the weighted point given at each question. The chart shows the level and the strength of significance of each of the factors as it relates to the user usability evaluation of the twitter social networking site. The chart arranges itself from the most significant factor to the less.

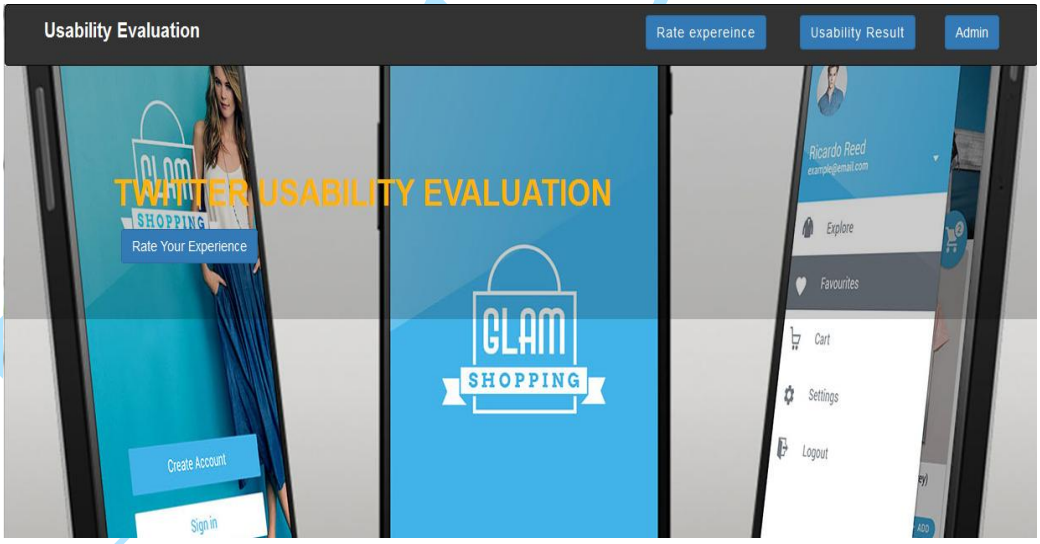


Figure 1: Home page

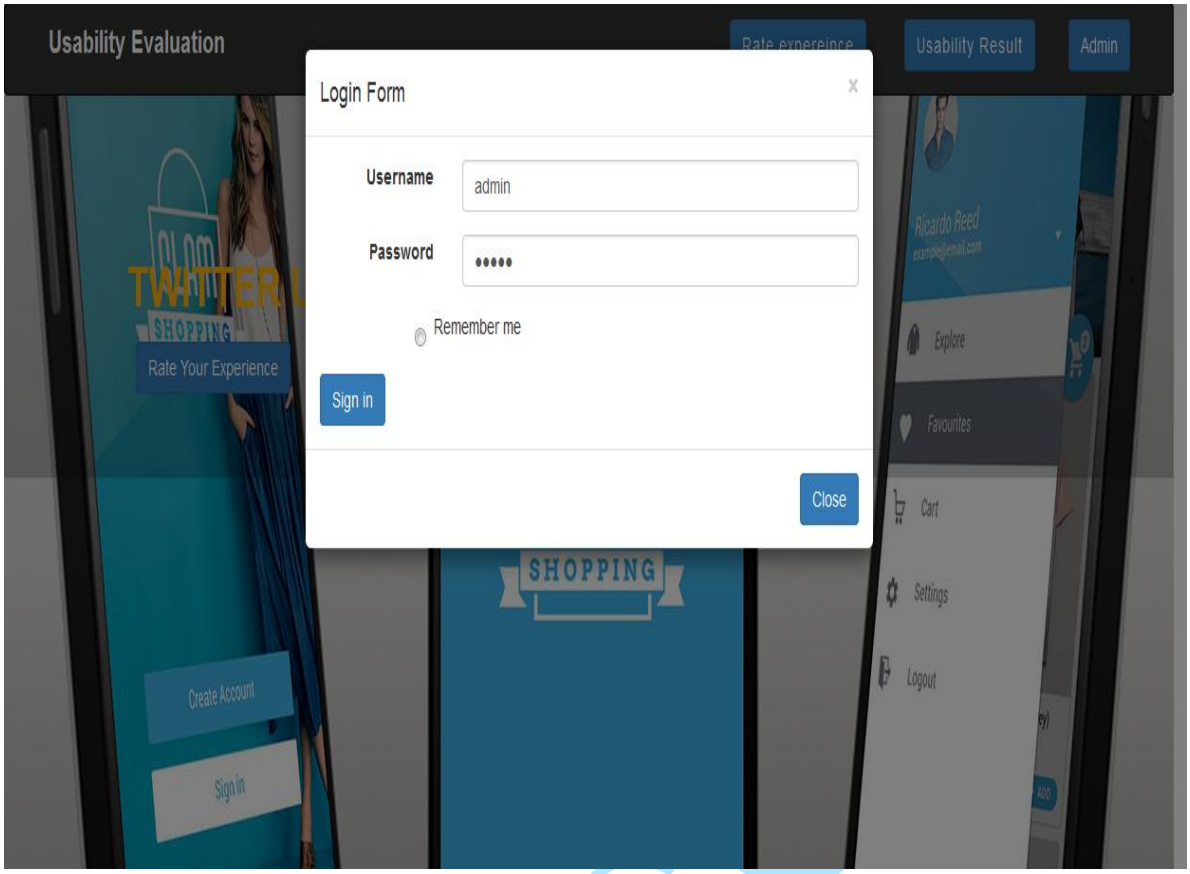
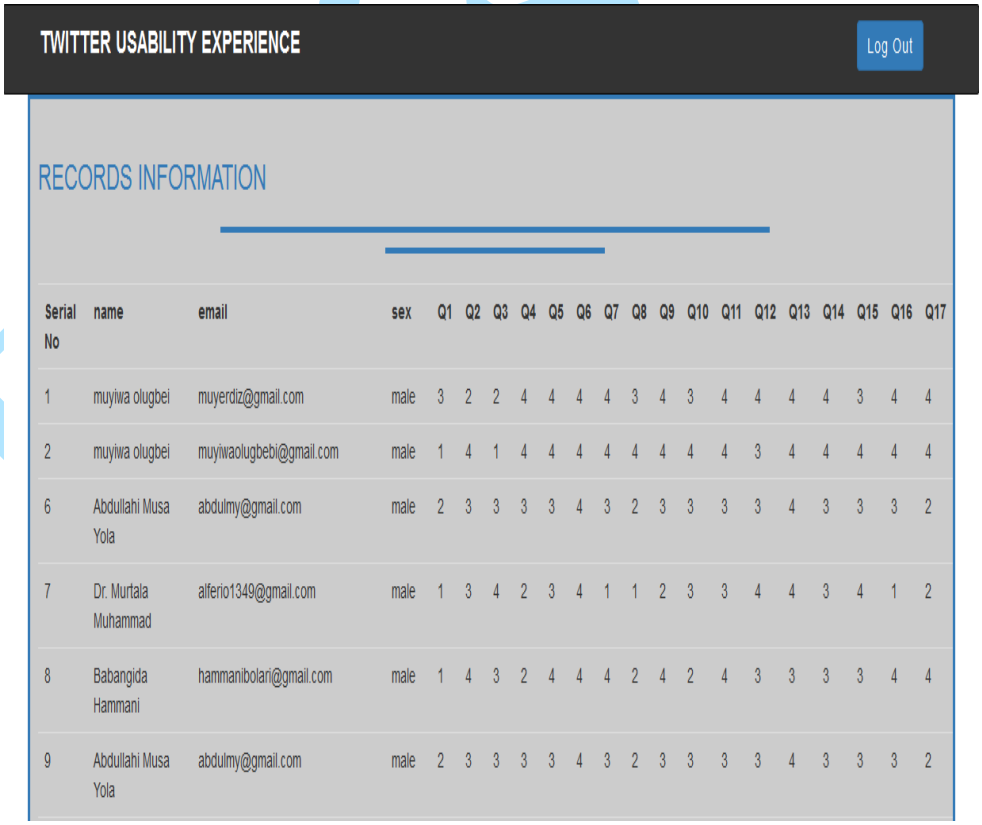


Figure 2: Admin Login Page



Serial No	name	email	sex	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	muyiwa olugbei	muyerdiz@gmail.com	male	3	2	2	4	4	4	4	3	4	3	4	4	4	4	3	4	4
2	muyiwa olugbei	muyiwaolugbebi@gmail.com	male	1	4	1	4	4	4	4	4	4	4	4	3	4	4	4	4	4
6	Abdullahi Musa Yola	abdulmy@gmail.com	male	2	3	3	3	3	4	3	2	3	3	3	3	4	3	3	3	2
7	Dr. Murtala Muhammad	alferio1349@gmail.com	male	1	3	4	2	3	4	1	1	2	3	3	4	4	3	4	1	2
8	Babangida Hammani	hammanibolari@gmail.com	male	1	4	3	2	4	4	4	2	4	2	4	3	3	3	3	4	4
9	Abdullahi Musa Yola	abdulmy@gmail.com	male	2	3	3	3	3	4	3	2	3	3	3	3	4	3	3	3	2

Figure 3: Records of Information

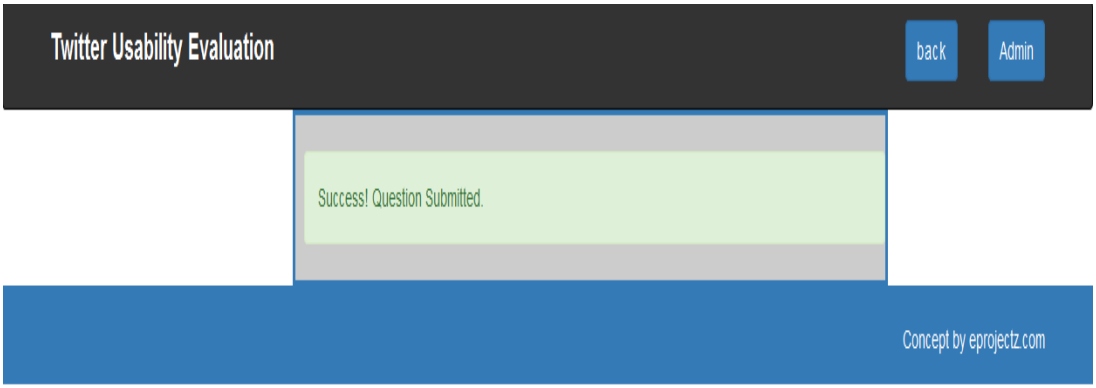


Figure 4: Question submission page

TWITTER USABILITY RATING RESULTS BY USERS

S/N	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	312	354	323	327	307	318	311	267	269	274	285	287	288	244	310	266	327

Figure 5: Rating Results Page

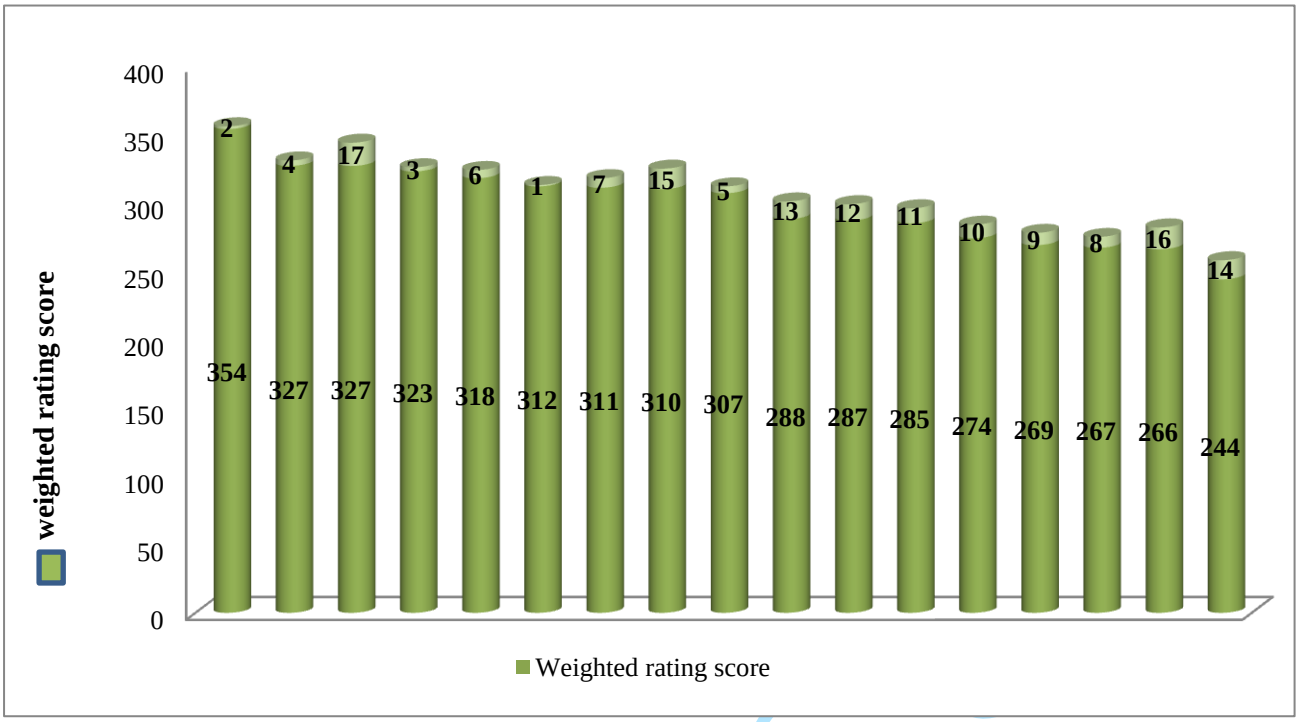


Figure 6: Chart Representation

4.7 Two Samples of T-test Analysis

The result obtained by the test shows that the test was statistically significant as result of the P-Value being smaller than the 0.05 standard value the P-value obtained is 4.90296E-17, this therefore amounts to the fact that there is statistical significant between the questions and the factors of the twitter usability evaluation as shown in Table 4.

Table 4: Statistical Significance Table

Statistical Method	Factors	Score
Mean	9	294.7647059
Variance	25.5	808.1911765
Observations	17	17
Pearson Correlation	-0.520695776	
Hypothesized Mean Difference	0	
Df	16	
t Stat	-37.57630425	
P(T<=t) one-tail	2.45148E-17	
t Critical one-tail	1.745883676	
P(T<=t) two-tail	4.90296E-17	
t Critical two-tail	2.119905299	

5. CONCLUSION

The twitter social network platform is an online news and social networking service where users post and interact with messages, "tweets", restricted to 140 characters. Registered users can post tweets, but those who are unregistered can only read them. Users access Twitter through its website interface, SMS or a mobile device app. Usability evaluation of twitter social media platform experimental results showed some demanding factors responsible for user experience in this platform, thus high weighted factors were discovered and identified by users in the cause of usability evaluation. These factors indicated that twitter social network is the best platform, which was followed by the factor that emphasized that all features are useful in twitter and data control is more restricted from users. Finally, statistical analysis using two sample of Ttest analysis of usability of evaluation of twitter is statistically significant between questions and the factors of twitter usability evaluation due to the fact that P-value is less than 0.05.

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