The State of Online Audio Qur'an and Its Public Perception

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Abstract

The Qur'an has become widely accessible in the internet and is available in audio, text and animated video format. However, the uncertain credibility of most of these online sources makes it hard for users to ascertain the authenticity of the Qur'anic text as appearing on screen. The need to first establish the authenticity of the Qur'anic text as presented on the web justifies a detailed examination of the phenomenon of online audio Qur'an and the way its reliability and usefulness is perceived by users. This study uses quantitative survey research methodology and investigates the state of online audio Qur'an and its perceived impact. The research findings indicate that "trust" and "accuracy" exerts a huge impact on positive perception of the source and content of online audio Qur'an. However, the effect of accuracy and trust on the content and sources of online audio Qur'an are perceived differently whereas the perception of the quality of content of online audio Qur'an is common. Also, the majority of users remain skeptical of the credibility of most of the sources of online Qur'an in almost all formats.

Key words: Online-audio-Qur'an; perception; credibility

1. Introduction

Online audio Qur'an in this present study refers to any copy of the Qur'anic text as retrievable on the internet, in the form of text, audio or "application" that can be downloaded and installed on either mobile device or PC. Websites containing such copies are numerous and make available more than 300 different recitations (Tabbal et al., 2006).

The evaluation of their perceived accuracy and usefulness by users constitutes the focal point of this study. It enables the researcher to develop and validate a new scale that measures user feedback. Perceptions do not always assume viewing objects and visual processes independent of a person's bodily states and abilities (Pylyshyn, 2003). Most users pay immediate attention to the quality of recitation, especially if the reciters are known to them and approve of their *tajweed* (proper pronunciation at a moderate speed during recitation)

(Mirza, 2010). This kind of perception somewhat resembles naive realism since unintentional recitation errors can occur which would not be immediately identifiable as such by the listener.

An astonishing number of Muslims have grown very skeptical of online audio Qur'an representations due to the fact that incomplete and inaccurate Qur'anic texts had been published by spurious website hosts. Although many Muslims know the Qur'an by heart and are thus not easily fooled by such inaccurate versions, other Muslims unfamiliar with Arabic and uninitiated into the classic Islamic sciences may fall easily prey to such deception. The spreading of false and misleading Islamic content online has been answered by more and more Islamic website hosts deliberately citing their references and clearly identifying their sources. Users are thus encouraged to approach online content critically instead of rejecting it altogether by way of generalization. More studies need to be carried out in order to identify the key issues of displaying Islamic content online and how this content is perceived by its users based on their immediate experiences. Information technology has radically altered public perception of many issues and can be used either to educate or to manipulate. Although information on the state of the world's affairs as they are is essential to the development of an informed public (realism), in equal measure is essential accurate information on how things should be (idealism). Unfortunately, most information does not constitute an accurate representation of the world as it is but as it is perceived.

The internet does not only serve as a convenient medium to communicate with others but its widely accessible resources furnish a plethora of self-enhancement tools. This translates for many consciously practicing Muslims into using the internet to visit Islamic content websites which facilitate access to Islamic teachings in the form of the Qur'an, prophetic traditions, the teachings of eminent scholars, etc.

A corrupted or intentionally falsified Qur'anic text displayed online can be easily identified and traced since the authentic wording is well established and known in the Muslim community at large (Ibrahim, et al., 2008). This, however, is more difficult in the case of audio Qur'an. Furthermore, studies on audio Qur'an quality, accuracy, and user perception are sparse. Any publicly accessible Qur'an recital has to be free of errors as it serves as an authoritative reference. Therefore, the provider of audio Qur'an has to ensure that only correct recitations are made accessible online. Although errors in the recitation can be easily overlooked by the listener due to environmental interruptions like noise, attention (Mirza, 2010), yet the fact remains that any audio Qur'an placed in the public domain should be as accurate as possible. This study uses quantitative research methodology to investigate the state of online audio Qur'an and user perception. Following this section introducing the area of the study is section 2 which presents the related work on the audio Qur'an recitation and the techniques involved, section 3 which describes the research methodology, section 4 which summarizes the results of the study, and section 5 which offers the conclusion.

2. Related Works

The key aspect of early translation in perceptive theory dwells is visualization. Viewing objects in one's immediate environment directly involves visual processes which are independent of bodily states and abilities (Pylyshyn, 2003). Such is argued on the ground that "people perceive their environment in terms of affordances or the opportunities it provides for undertaking an action"(Gibson, 1979). The present research is based on this theory relating user perception to affordance and opportunity.

The internet provides users with the opportunity to listen to audio Qur'an which is downloadable free of charge. Previous studies on online audio Qur'an recognize its impact on people. Crucial here is the search for an automated delimiter that can extract specific units of text or verses from audio Qur'an in order to enable the creation of related applications (Tabbal et al., 2006). This is possible by using open sources such as the Sphinx framework. Consequently, many applications can be derived from it. Studies have already been undertaken in reference to Qur'anic verse recitation, which aim at identifying their various techniques (Ibrahim, et al., 2008). A study evaluating Qur'anic recitation recognition techniques and recognition rates, for example, shows a high rate of recognition using machine learning tools (Ahmad, et al., 2004). Although the existing studies on correct recitation techniques have not included unintentional errors in the recitation, applications have been developed which are able to extract voice features from Qur'an recitation and map them to the stored text in order to check for any mismatch (Mirza, 2010), one of them being *E-hafiz*. This application uses the Mel-Frequency Cepstral Coefficient for the extraction. Another study uses the machine learning technique for checking Qur'anic verse recitation using a *tajweed* rules function. It has shown a high recognition rate in accordance with the established rules of *tajweed* (Ibrahim, et al., 2010). An earlier study by the same authors introduced its rule checking techniques and proposed an algorithm (Ibrahim, et al., 2011). However, most studies on audio Qur'an do not focus on user perceptions and the issue of source credibility. In order to fill this gap, this study is intended to address the aspect of user perception in regard to the credibility of the sources and thus the content accuracy of online audio Qur'an.

3. Variables and Hypothesis Development

The variables are selected based on existing theory and are adopted from previous studies. Consequently, "perception", "trust", "accuracy", and "quality" are selected as the major research variables considered for the evaluation of the user perception of audio Qur'an versions. "Perception" constitutes the dependent variable, whereas all other variables are independent variables. The research outcome establishes the existence or nonexistence of a significant difference between the independent variables and the dependent variable. The research also determines whether the differences among the independent variables affect the dependent variable. This observation is based on the developed hypotheses. The testing of the hypothesis reflects these claims while the outcome of the test allows their generalization. The development of the variables and hypothesis are described in the following subsections.

Perception
One of the main aims of this research is to determine the way in which users perceive online audio Qur'an. Perception as a research variable has been used in previous studies (Schacter, 2011), most commonly the perception of voice or sound (Purnell et al., 1999; Kathryn, 2007). There are many examples of how perception influences the audio experience; the major key issue lies in the understanding of user perception with regard to the subject area in order to represent an identification and interpretation of the environment (Schacter, 2011). In terms of online audio Qur'an, the decision making process is based on the users' opinion and extracted by objectives measures. In consequence, perception refers to "opinion". The objective measures refer to the actual numerical measures obtained by statistically analyzing the users' responses since perception-based measures depend on the opinions of individuals (Dawes, 1999). Perception is based on the way people interpret reality. According to Antonides and Van Raaij (1998), reality can either constitute objective reality or constructed reality. The most important aspect of reality lies in the subjective reality (perception) of people. Consistent with prior research, the following hypothesis can be formulated

H1: Positive perception of the source and content of online audio Qur'an will have a positive and direct impact on the trustworthiness of the source, its accuracy and the quality of its content.

Trust
The users' readiness to rely on online audio Qur'an reflects their trust. Belief is directly associated with trust (Moorman et al., 1992). There should be trust in the source of online audio Qur'an which would not only strengthen the trustworthiness of the source but also its credibility. In testing the trustworthiness of the sources, our understanding of credibility is further defined in terms of experience, reputation, trusted by other people, and their form of presentation or general appearance.

The outcome of previous research on trust indicates that it is a behavioral intention or behavior that reflects reliance and involves vulnerability and uncertainty. This view suggests that without vulnerability trust is unnecessary because outcomes are inconsequential for the trustor (Moorman et al., 1993). The characteristics of trustor and trustee are used in building an organizational model of trust (Mayer et al., 1995), Trust is believed to encourage use and to measure sincerity, caution, effort in establishing a relationship, equality, goal and positive expectations (Mayer et al., 1995). To further explore the consequences of trust in online audio Qur'an, the second hypothesis can be formulated:

H2: There is significant difference between "perception" of online audio Qur'an content and sources with "trust".

Quality
Subjective methods of studying audio quality have gained much popularity in recent years (Zeki et al., 2013). In this research, audio quality is used as a variable which examines how listeners of audio Qur'an identify or perceive certain categories of sound rate changes. This change may be caused by an intentional alteration of the content or as a result of a technical failure (Atoum et al., 2013). Consequently it renders the audio quality output pitiable to the listeners. Previous studies used audio quality as the important variable for measuring how it

influenced perception of audio content (Brian, 2004; Kaoru, 2007). In order to further explore this fact, a third hypothesis can be formulated:

H3: There is a significant difference between "perception" of online audio Qur'an content and sources with "audio quality".

Accuracy

Audio accuracy is considered a key indicator for performance measurement (Herrero, 2005). Poor performance may result from either distortion which produces more or less unsynchronized output or by an intentional alteration (Gonzalez et al., 2003). When listening to audio Qur'an, variations of the original recitation format render that content imprecise to the expected output. In order to understand the degree to which such faults in the correct recitation occur, the variable "audio accuracy" is used. Previous studies rely on accuracy for measuring the degree of performance in many fields (Floyd, 1985). Consistent with prior research, a fourth hypothesis is formulated as below:

H4: There is a significant difference between "perception" of online audio Qur'an content and sources with their "accuracy".

Methodology

Quantitative survey research methodology is selected in this study since it is primarily concerned with the subjective assessment of opinions (Kothari, 2008). This can be used as indicators which help understand the world as perceived from their viewpoint.

Study Population, Sampling and Sample Frame

The population of interest in this study consists of all online audio Qur'an listeners worldwide. The study sample is drawn from various age groups. The sampling technique applied is simple random sampling. The sample frame is anticipated to cover more than 350 individuals.

Instrumentation and Preparation of Data Collection

The instrument for data collection within the research population and sample frame is a questionnaire which is easy to administer and ensures confidentiality (Kelly, 2003). The outlines of the questionnaire are Likert scales agreements types with seven responses ranging from (1) strongly disagree to (7) strongly disagree. The Likert scale assumes an ordinal-level of measurement in which the response categories have rank order but the intervals between them are not presumed equal (Boslaugh, 2008).

Reliability and Internal Consistence

The validation of the questionnaires is undertaken through a pre-test survey. Thereafter, reliability tests are carried out on the items using the Cronbach's alpha measure. The result of this test is presented in Table 1.

Table 1. Reliability Test Result of the Pilot Study Instruments

Variables	Number of cases	Cronbach's alpha
Trust	5	.817
Quality	5	.627
Accuracy	5	.919
Perception	5	.757
	Total 20	

The Cronbach's alpha values range between . 627 and .91 which suggests satisfactory levels of construct reliability.

4. Data Collection

An online survey questionnaire is published and respondents are invited through networking to participate in the survey. Once the first set of the responses has been gathered, the link to the online survey questionnaires is blocked. The altogether 109 responses obtained are deemed sufficient for the preliminary analysis.

5. Data Analysis and Presentation of Results

The method deemed most suitable for our analysis is determined by the hypotheses and characteristics of the data. The aim of this present study is to examine the state of online audio Qur'an and to evaluate the listeners' perceptions of the sources. Two analytical measures were considered, namely descriptive and inferential statistics analysis. The descriptive analysis shows the current state of online audio Qur'an and the users' perceptions of its sources, whereas the inferential analysis indicates the degree of the perceived attributes of the sources of online audio Qur'an. Both analyses are aimed at testing the formulated hypotheses.

6. Descriptive Profile of the Respondents

The demographic profile of the respondents is presented in Table 2. Here, significant differences are observed in the age profile of the respondents. More than 74% of the respondents are aged between 20 to 24 years, whereas less than 10% of them are aged above 34 years. This suggests that young users have responded to this survey with a mean of 1.3945 and standard deviation of .78195. In terms of gender, female users responded more highly with about 60% rate of responses, a mean of 1.5963 and standard deviation of .49290. Huge differences are detectable in the users' marital status as about 87% of the respondents identify themselves as single and only 11% as married, with a mean of 1.8899 and standard deviation of .34263. The mean based on marital stutus was found to be 1.8899 and standard deviation of .34263. More than 75% of the respondents have obtained a Bachelor's degree translating into a mean of 3.0185 and standard deviation of .72320. In summary, the main group of respondents consists of 20 to 24 year-old female singles with a Bachelor's degree.

Table 2. Demographic Profile of the Respondents

Demographic Variables	Frequency		Percent	Mean	Standard Deviation
Age	20-24	81	74.3	1.3945	.78195
	25-34	18	16.5		
	35-39	5	4.6		
	> 40	5	4.6		
	Total	109	100.0		
Gender	Male	44	40.4	1.5963	.49290
	Female	65	59.6		
	Total	109	100.0		
Marital Status	Married	13	11.9	1.8899	.34263
	Single	95	87.2		
	Total	108	99.1		
	System	1	.9		
	Total	109	100.0		
Educational Level	HighSchool	7	6.4	3.0185	.72320
	Diploma	3	2.8		
	Bachelor	82	75.2		
	Masters	13	11.9		
	PhD	3	2.8		
	Total	108	99.1		
	System	1	.9		
	Total	109	100.0		

7. Descriptive outline of the responses to online audio Qur'an

The response rate on the ability to read and understand the text of the Qur'an alongside its recitation according to the seven acknowledged readings (*qira'at*) are presented in Table 3. About 90% of the respondents make use of online Qur'an and 67% favor reading Qur'anic text online compared to 32% who prefer listening to audio Qur'an. The mean of the distribution for is 1.0917 and the standard deviation is .29000. Similar to the responses on the use of online audio Qur'an, the favorite online Qur'an format is "text" (67%) rather than audio format (32%). This distribution comes with a mean of 1.6789 and standard deviation of .46906. Despite the fact that most of the respondents select text Qur'an format as their most favorite, only 35% of them profess a high ability to read Arabic text and less than 10% of them profess only a low ability and 67% a moderate one. This distribution has a mean of 2.2315 and standard deviation of .60537. Only 13% of the respondents possess a high ability of understanding Qur'an in Arabic text while another 44% admit a low ability.

About 42.2% of the respondents understand the Arabic text of the Qur'an at a moderate level. This distribution comes with a mean of 1.6972 and a standard deviation of .70059. Significant differences are observed in the respondents' ability of understanding the seven readings (qira'at). More than 56% of the respondents could hardly differentiate them, only 9% of the respondents were highly familiar with them, whereas 37% could do so at a

moderate level. This distribution comes with a mean of 1.5229 and standard deviation of .66104.

Table 3. Response Rate on Online Audio Qur'an

Dimension	Frequency		Percent	Mean	Standard Deviation
Use of online Qur'an	Yes	99	90.8	1.0917	.29000
	No	10	9.2		
	Total	109	100.0		
Favorite online Quran format	Audio	35	32.1	1.6789	.46906
	Text	74	67.9		
	Total	109	100.0		
Ability to read Qur'an in Arabic text	Low	10	9.2	2.2315	.60537
	Medium	63	57.8		
	High	35	32.1		
	Total	108	99.1		
	System	1	.9		
	Total	109	100.0		
Ability to understand Qur'an in Arabic text	Low	48	44.0	1.6972	.70059
	Moderate	46	42.2		
	High	15	13.8		
	Total	109	100.0		
Ability to understand seven Readings of Qur'an	low	62	56.9	1.5229	.66104
	Moderate	37	33.9		
	High	10	9.2		
	Total	109	100.0		

In summary, most users prefer the text version of online Qur'an and their ability to read Arabic and identify the differences in *qira'at* is low.

8. Inferential Statistical Analysis

In order to test the hypotheses formulated in this research, inferential statistic are carried out. The first hypothesis states that "Positive perception of the source and content of online audio Qur'an has a positive and direct impact on trust of the source, accuracy and quality of the content". This has been verified by using correlation analysis (see Table IV). The values of the Pearson's correlation coefficient (r) range from $r = .513$ to $.792$. The highest correlation coefficient is obtained from the relationship between "Trust" and "Accuracy" which shows a strong positive correlation. However, the correlation relationships among all variables are strong and positive. This means that the first hypothesis is validated.

We use analysis of variance, specifically one-way Analysis of Variance (ANOVA) in order to look at how a between-subjects factor meaning a factor that may be associated with perception of online audio Qur'an listeners affects or interacts with the within-subjects factor that is within themselves. Such analysis requires one categorical independent variable and

one continuous variable, the independent variable consisting of any number of groups which are more than one. Furthermore, there have to be assumptions of the normality for the repeated measures sphericity for the within-subjects factor. Such is carried out for the repeated measures, also the assumptions of homogeneity of variance for the between-subjects factor followed by performing a normality test. All data meet with the entire assumptions.

Table 4. Correlation Analysis Result

		Trust	Quality	Accuracy	Perception
Trust	Pearson Correlation	1	.586**	.792**	.625**
	Sig. (2-tailed)		.000	.000	.000
	N	109	106	103	105
Quality	Pearson Correlation	.586**	1	.727**	.513**
	Sig. (2-tailed)	.000		.000	.000
	N	106	106	100	103
Accuracy	Pearson Correlation	.792**	.727**	1	.643**
	Sig. (2-tailed)	.000	.000		.000
	N	103	100	103	100
Perception	Pearson Correlation	.625**	.513**	.643**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	105	103	100	105

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

A one-way between subjects ANOVA was conducted to compare the effect of "trust", "accuracy", and "quality" on user perceptions of online audio Qur'an sources and contents. The result shows an F value of $F(3.419) = 11.873$, $p < .001$, indicating a significant level of mean score. This shows that the effect of "trust", "accuracy", "quality" on users perceptions of online audio Qur'an sources and contents are not the same. In order to choose the factor with the most effect on perception, the difference between each of the four variables ("trust", "accuracy", "quality", and "perceptions") need to be ascertained which is done by performing a post hoc test. The mean difference between the sets of variables is shown in Table 5.

The post hoc test is used to determine if the mean difference between populations or treatments is statistically significant. This analysis is also used for the hypothesis testing. The result of these analyses determines the effect of the variables on user perception of sources and contents of online audio Qur'an. In Table 5, Group 1 represents "Trust", Group 2 represents "Quality", Group 3 "Accuracy", and Group 4 "Perception". Comparing group 1 to Group 4, the significant value is .000. This indicates there are statistical significant differences between them at the mean difference of 3.21634. This result suggests that the effect of trusting the content and sources of online audio Qur'an are perceived differently. Hence, this supports the second hypothesis **(H2)**. However, Comparing Group 2 to Group 4, the significant value is .691 meaning there is no statistical difference between the two groups at the mean difference of .28203. This implies that the users perceive the quality of the contents of online audio Qur'an in the same way. Therefore, the third hypothesis **(H3)** is not supported since there are no significant differences between the tested groups. Comparing Group 3 to Group 4, the significant value is .000. This indicates that there are also no

statistical significant differences between the two groups at the mean difference of 3.02145. Thus, the effects of accuracy of the content and sources of online audio Qur'an are perceived differently which supports the fourth hypothesis **(H4)**.

Table 5. Post hoc Test Result

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	2.93431*	.70275	.000	1.5530	4.3157
	3.00	.19489	.70792	.783	-1.1966	1.5864
	4.00	3.21634*	.70444	.000	1.8317	4.6010
2.00	1.00	-2.93431*	.70275	.000	-4.3157	-1.5530
	3.00	-2.73942*	.71277	.000	-4.1405	-1.3384
	4.00	.28203	.70932	.691	-1.1122	1.6763
3.00	1.00	-.19489	.70792	.783	-1.5864	1.1966
	2.00	2.73942*	.71277	.000	1.3384	4.1405
	4.00	3.02145*	.71444	.000	1.6171	4.4258
4.00	1.00	-3.21634*	.70444	.000	-4.6010	-1.8317
	2.00	-.28203	.70932	.691	-1.6763	1.1122
	3.00	-3.02145*	.71444	.000	-4.4258	-1.6171

*. The mean difference is significant at the 0.05 level.

9. Conclusion

This research examines the current state of online audio Qur'an and develops a new scale that measures the user perception of online audio Qur'an. The internet has become an important source not only for audio versions of the Qur'an, but numerous text and even animated video recitation formats are provided by various online sources. In order to determine the users' perceptions on these sources and their contents, a quantitative survey is undertaken using both descriptive and inferential statistics. The outcome of the study shows that the internet has indeed become an influential source for Islamic resources.

Numerous websites provide access to audio Qur'an content and have become popular among Muslim listeners worldwide. However, a considerable number of users remain skeptical in regard to the credibility of these online sources in general and of audio Qur'an formats in particular, despite them being easily accessible online.

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