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The Key Service Feature of M-Government Based on Interactive User Experiences

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ABSTRACT In today's world, the use of mobile communication devices, especially smartphones, has become a matter of necessity. The services available online include travel booking, banking, and shopping, and also government services. Mobile Government (mGovernment) is quickly becoming a useful tool in civic administration. However, there is a considerable discrepancy between the reality of the user interaction experience of mGovernment and the original vision and intended goal of the application. Research on this group of interactive systems has yielded important findings on the user's ability to interact with these systems, yet additional studies are needed that focus on the exact nature of user interactivity and user experience. This paper examines the key interactive features of the online services provided to Saudi residents and citizens by the Saudi Arabian Ministry of Foreign Affairs (MOFA) mGovernment. This paper follows a qualitative experimental approach and employs meta-analysis and multi-criteria decision analysis. It identifies the key attribute of the interactive service features of the mGovernment application based on interactive user experience. It is found that the task accomplishment of the MOFA mGovernment application constitutes the most important criterion of interaction.

INDEX TERMS M-Government, smartphones, government services, interactive feature.

I. INTRODUCTION

The modernization of public administration and services is linked to certain economic activities. Government funds raised through taxes and revenues are used to finance public institutions and administrative agencies. With the rise of online communications, the traditional system of public administration has been modernized and governmental services become more accessible and transparent [1]. The scope of modernized public administration is very wide and covers certain mechanical reforms that have paved the way to a more fully functional public administration. Governments all around the world have begun setting up development strategies to develop modern public administration which includes the lowest government administrative units and the public at large. These new task-oriented services help execute new policies and initiatives that form the basis of modern public administration and government services. For instance, innovative public management ideas have transformed the financial public sector in Australia [2]. This transformation was due to new government regulatory policies focusing on improving the existing operational structure to achieve "cost-efficiency, budget accountability and an improved customer focus in service delivery". Those countries that have reformed their public administration have succeeded in creating a wide range of new public services such as the European countries of the Netherlands, Germany, the United Kingdom, Finland, and Poland) and China and South Korea in South East Asia, in addition to Canada, Brazil and Australia that have also modernized their public administration by improving "service delivery; building public and private sector confidence; and improving operational inefficiency and poor service delivery" [3]. The modernization of the public administration sector brings about various changes in public management and constitutes an efficient way of reorganizing the public sector [4].

In the context of online connectivity and accessibility to public services, mobile devices provide a variety of contextual elements and accomplishment to the feature in the user's experience compared to PCs [5]. Currently e-government services are moving toward mGovernment services while both platforms remain functional. Due to the fact that the number of smartphone users is steadily increasing, government services that are accessible through mobile devices are expected to gain more and more popularity. Statista, an online portal that reports and provides access to statistical data on

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issues relevant to the wider public, recently reported that by 2019 there will be five billion mobile phone users worldwide, half of them using smartphones (Statista, 2019). Given the rapidly increasing use of mobile devices, new methods studying and evaluating user experience should rely on a structured mechanism and focus on the device benefits and limitations [5]. The study of flow within the depth of the mobile interface context for various apps is crucial since flow is associated with positive outcomes [6]. Alshehri and Freeman [5] suggest that the appropriate evaluation technique for mobile user experience should focus on the hardware, operating system and software.

Research on interactive systems has yielded important findings on the users' ability to interact with systems from many angles. Even though new mobile and desktop applications come with varying features, there is still the need to consider the users. Most studies focus on the user requirement on the system features while the type of interactivity and user experience is not given more attention [7]. One of the practical principles of interaction design is that true interactivity is not about clicking on icons or downloading files. It is rather about encouraging communication and exchange of information. The interactive user experience of a particular system is built within scalable and resilient user perceptions. This allows the different interpretation of information through touch and allows users to experience active control from any place at any given time. Various concepts associated with interactive user experience concern with ''the feel'' effect dimension of a given system, the interaction ''gestalts'' related to any system, and the kinesthetic thinking effect on a system [8]. The combination of these elements creates an understanding of user experience related to the interaction design. The interactive user experience combines several other human considerations, in addition to design considerations that allow reliable interaction support of a system.

MGoverment constitutes part of e-government and also includes the delivery of government services to the public. Based on the type of transaction performed, eGovernment functions are categorized into informational, transactional, and operational functions. Informational functions provide access to governmental information through web portals, including online publishing and broadcasting. Transactional functions allow citizens to interact with government agencies online for procurement and payments. Operational functions refer to internal governmental operations that focus on internal efficiency, effective operations and the interoperability across different eGovernment practices at different levels [9]. MGovernment practices in leading countries are discussed in Lee *et al.* [10]. Rossel *et al.* [11] examined the potential drawbacks of mobile eGovernment applications and proposed solutions that are compatible with realistic government activities. The findings indicate that key-priority services of eGovernment should be mapped on the mGovernment domain. In another study, the effectiveness of mGovernment services provided in 19 countries around the world has been measured by way of defining the barriers to its success [12]. Social, organizational and technical types of barriers are identified by the researchers who also provide suggestions for overcoming these barriers. Mobility and wireless connectivity are considered to be the greatest advantage of mGovernment [13]. However, the constraint related to the mobile device size remains an issue.

FIGURE 1. The MOFA service interface.

II. MOFA MOBILE GOVERNMENT

The Ministry of Foreign Affairs mobile application can be found in the Google Play Store. The webpage that contains the exact services provided by MOFA is shown in Figure 1. Members of the public who have recently used the app are able to give their feedback. At the time of study, altogether 4,224 reviews and ratings of the app were retrievable. The major features of the MOFA services consist of the ''Beneficiaries of Service'', ''Place of Service'' and ''Seed rvice Types''. Despite the extensive list of MOFA services provided for small screen mobile devices, there was no clutter of information. The performing tasks on the app direct the users most efficiently and the few links provided assist the user in completing certain priority tasks within a considerably short period of time.

While this study focuses on evaluating the services provided through the MOFA mGovernment application in general, its services are grouped into ''eParticipation'', ''Information'', ''Services'', ''Favorites'', ''Travel Tips'', and ''Nearest Mission''. Under eParticipation are listed ''Opinions'', ''Ideas'', ''Polls'', ''Survey'', and ''Contact Service''. The ''Opinion'' hyperlink tracks the users' shared opinions, while the ''Idea'' link provides an avenue for the public to submit their ideas, vote on the ideas of others, make requests and add comments. The ''Polls'' and ''Survey''

menus collect the users' views on certain topics, and the ''Contact service'' is subdivided into ''About the Kingdom'', ''About the Ministry'', ''Saudi Missions'', ''Foreign Missions'', ''Media Center'', and ''About the Application''. ''About the Kingdom'' provides links to the five other submenus including local history, kings, foreign policy and national holidays.

The menu ''About the Ministry'' takes users to more detailed information on MOFA via the submenus ''the Ministry's Vision'', ''Ministers of Foreign Affairs'', and ''Contact Numbers''. Under ''Saudi Missions'' the users are provided with a list of all the countries Saudi Arabia entertains diplomatic ties with, in short the foreign embassies located in the country. The menu ''Foreign Missions'' contains a list of all the countries with Saudi embassies. The menu ''Media Center'' provides a short overview of the national mass media further divided into ''Ministry News'', ''Speeches in International Forums'', ''Press Conferences'', ''Official Speeches of the Custodian of the Two Holy Mosques'', and ''Official Speeches of Ministers''. The last menu is ''About Application'' This menu describes the application itself.

III. RELATED WORK

A number of user-centered studies related to mobile device use and the impact of mobile applications for human endeavor have been conducted so far. Although Human-computer interactions studies provide the criteria for evaluating any computer use, the majority of their findings are related to mobile devices. The studies related to mGovernment deal with the systems in mGovernment, services and service quality in mGovernment and the HCI approach, the majority of them examining the adoption of mGovernment in general.

The present state of the current government services is characterized by the massive acquisition and adoption of mobile devices [14]. MGovernment adoption since 2000 has been reviewed by Hussain and Imran [15]. Walravens [16] examines mGovernment implementation in Belgium. He used a business model in order to support the development and/or adjustment of a mobile development strategy of mGovernment. The findings indicate that laggard position constitutes the key issue in mGovernment implementation. Bal *et al.* [17] investigate the impact of eGovernment practices and differences in terms of their applicability and provide a specific point of view for the mGovernment adoption policy in Malta and Singapore. According to their findings, mGovernment harmonizes the governmental services platform and renders them more transparent to the public. Abdelghaffar and Magdy [18] propose a conceptual model for the adoption by the young generation based on a sample of 100 respondents from Egypt. The finding reveals that awareness significantly influences the youths' intentions to use mGovernment services. Furthermore, perceived usefulness, compatibility, social influence and face-to-face interactions also significantly contribute to the prediction of the intention to use mGovernment.

Saxena [19] adopts the technology acceptance model (TAM) and examines if the TAM variables can influence the mGovernment adoption in India. To a high degree, all the variables of ''Perceived Usefulness'', ''Perceived Ease of Use'', and ''Attitude toward Usage'' significantly influence the adoption of mGovernment. Mandari *et al.* [20] investigate the policy matters related to the implementation of mGovernment in Tanzania based on a sample of 407 respondents. The findings indicate that ''Awareness'', ''Ease of Use'', ''Compatibility'', and ''Visibility'' constitute the key factors influencing the adoption of mGovernment. Ohme [21] proposes a new mGovernment acceptance model and observes that the intention to use mGovernment is significantly influenced by the perceived risks. Shareef *et al.* [22] investigate the intention to adopt mGovernment services and identifies the cultural dimension as the major factor for mGovernment adoption in Bangladesh, Canada, and Germany. Cross-cultural differences are found to impact the citizens' perception of mGovernment adoption.

Saxena [23] investigates the role of ''Perceived Risks'' in adopting mGovernment services in India based on a sample of 311 respondents. The finding reveals a skeptic attitude towards the perceived risks, despite acknowledging that they believe the system is risk-free and safe. Shareef *et al.* [24] used a sample of 362 respondents from Mumbai (India) to investigate the factors influencing the intention to adopt mGovernment services. The findings indicate that ''Perceived Ease of Use'', ''Perceived security'', ''Relative Advantage'', and ''Perceived Empathy'' significantly influence the adoption of mGovernment services.

There were some specific applications of mGovernment already under deployment: Based on the high level of mobile penetration in Jordan, the Jordanian government provides most of its services via mobile apps [25]. Faisal and Talib [26] propose an approach suitable for migrating from eGovernment to mGovernment. They identify 13 factors, among them strategic orientation being the main factor for the adoption and growth of mGovernment channels. The visa renewal process in the United Arab Emirates is conceptualized to a wearable-to-mobile application synced system in Ghazal *et al.* [27]. The finding shows that such a system would be able to ease monitoring any visa status, location as well as the visa renewal application stage.

An advanced mGovernment platform based on a cloud interoperable framework is proposed by Sabarish and Shaji [28]. The concept relies on Service-Oriented Architecture (SOA) and allows accessing a combination of services in a shared infrastructure. Saadi *et al.* [29] investigate the key criteria that influence the usage of the Ministry of Interior (MOI) mGovernment services in the United Arab Emirates based on the Analytic Hierarchy Process (AHP) approach. The finding reveals that ''Ease of Use'' and ''Perceived Security'' are the strongest criteria for the success of mGovernment. Anguelov and Kaschel [30] examine the impact of government services on mobile platforms and find that the adoption of mGovernment is necessary to ensure

government effectiveness and stability. Amailef and Lu [31] propose a mobile-based emergency response system framework aimed at improving interaction between government and citizens in emergency situations. Their study proposes a disaster management system. After reviewing the different approaches of mGovernment implementation [24]–[31] and considering the rapid adoption of mGovernment services as documented in the previously discussed studies [11]–[23], this current paper focuses on the role of the interactive user experience.

IV. RESEARCH METHODOLOGY

The methodology applied in this study focuses on ''basic research'' and ''triangulation of qualitative experiment with multi-decision criteria analysis'' The basic research is concerned with the exploration of the MOFA mGovernment service for Saudi residents and citizens. The user reviews and ratings accessible through Google Play were collected and analyzed. Thereafter, the qualitative experiment and the multi-decision criteria analysis was carried out in order to evaluate the key interaction element. It expected that the designed study employing a triangulating, observational method with qualitative experimentation and multi-decision criteria analysis would yield accurate and relevant findings. It was intended to justify a valid conclusion on the key interaction attributes of MOFA mGovernment.

This methodology is necessary due to the degree of variations of interactivity that may depart from the kind that MOFA mGovernment offers and from the users' perception of what the applications do or supposed to do. The only way this research ascertains the facts regarding the interactivity of MOFA mGovernment is through observation, experiment and multi-criteria decision evaluation. Qualitative experiment with multi-decision criteria analysis constitutes a valid approach to evaluate its services. Qualitative experiment means the ''subjective assessment of attitudes, opinions and behavior''. This approach captures what people say and do as indicators of their views on MOFA mGovernment service and attempts to assess them objectively. This inductive method helps gather objective data and identify the attributes of the MOFA mGovernment services.

A. EVALUATION CRITERIA

There are several methods for evaluating interactive user experiences in general [32]–[34] and for mobile devices in particular [35], [36]. The objective is to link the dataset obtained from the evaluation tasks by the evaluation criteria and the analysis of the dataset. Generally mobile interaction evaluation focuses on the key usability criterion. The Analytic Hierarchy Process (AHP) is used as an analytical scheme for evaluating interaction [37]–[39]. AHP is also combined with fuzzy PROMETHEE to evaluate mobile interaction. AHP and TOPSIS are used as methods in fuzzy environment for mobile interaction evaluation. Mobile device user interface, appearance and design, are used as a criterion for AHP evaluation [37]. Similarly, the Culinary Recommendation Mobile app is evaluated by comparing AHP and Hybrid AHP in [38]. Key mobile app stickiness criteria are evaluated in [39].

The evaluation tasks for this current study involve two phases. The first and second phase is to allow participants to login to the MOFA mGovernment site and perform any operation by going to all the links and in order to observe and provide answers to interactive issues based on the items given in the questionnaire. The two evaluation phases were based on the same tasks and criteria except for the difference that the first phase involved gathering user reviews and ratings and the second phase involved responing to the structured interview questions and the multi-criteria decision analysis evaluation.

B. THE EXPERIMENTAL TASKS

The user reviews and ratings from the Google Play Store for MOFA mGovernment were collected and analyzed. Although the Google Play console made available to developers who can view a complete analysis of user ratings and reviews, the outcome of such analysis is the same as the research analysis. This research uses an inspection approach of the user reviews and ratings of MOFA mGovernment. The reason for selecting this approach is that online ratings and reviews yield a direct reflection of users who have used the MOFA mGovernment app at least once. The rating is numeric and the reviews are reflections. The numeric values of the rating will indicate if MOFA is ''Good'' or ''Bad'' while the reviews will indicate the users' perceptions. Previous research has concluded that ''bad ratings are trustworthy regardless of the number of reviews'' [40] since users tend to believe bad ratings. On the other hand, ''good ratings are trustworthy only when they come along with a of criteria of an object or process. The DEMATEL (DEcision-MAking Trial and Evaluation Laboratory) technique was used for the multiple-criteria decision analysis. The reason for selecting this particular technique is due to the fact that it allows for developing and highlighting interrelationship among evaluation criteria in order to determine the best or worst effect [42]. Thus, the interrelations between indicators set for evaluations are determined through this method. The technique establishes interactions among criteria based on the type and severity of interaction ranking, where the highest ranked criteria have the higher priority of being the cause (best criterion) and the criterion that is ranked lower means it receives more influence from other criteria and is assumed to be the affected criterion [43], [44]. The technique is applied by executing the following steps:

Step 1: Designing the strategies for obtaining expert opinion: This research utilizes a questionnaire developed based on the principles of Shneiderman's Eight Golden Rules of Interface Design [41]. These questions were chosen for the closed- ended approach and include multiple choice options according to the Likert scale of the inter scores 0 = ''Hardly ever'', 1 = ''Occasionally'', 2 = ''Sometimes'', 3 = ''Frequently'', and 4 = ''Almost always'' (see Table 1). Each participant was asked to rank the interaction of the MOFA

mGovernment app, specifically the ''services path or all'' aspect of the app after executing certain tasks followed by a structured interview. After responding to the closed-ended questions, the influence of each criterion perceived by the participants was presented as x_{ij}, where i and j result into the cause and effect criteria respectively. Thus, for each participant's response is obtained as $n = 1, 2 \ldots, n$, an $n \times n$ non-negative direct relation matrix is formed by

$$x^y = \left[x_{ij}^y\right]_{n\times n} \tag{1}$$

where y is the number of participation of each participant with $1 \leq y \leq q$ and generated matrix q for $x^1, x^2, \ldots, x^q$ where q is the number of participants. The average aggregated decision matrix for all the participants, $Z = [z_{ij}]$ will be:

$$z_{ij} = 1/q \sum_{i=j}^{q} x_{ij}^y \tag{2}$$

Step 2: Normalization of the direct relation matrix: The normalized direct relations matrix D is calculated by

$$D = \max\left[\frac{1}{\max_{1\leq i\leq n}\sum_{j=1}^{n}\left|m_{ij}\right|}, \frac{1}{\max_{1\leq i\leq n}\sum_{i=1}^{n}\left|m_{ij}\right|}\right] \tag{3}$$

where the result will be that each element in matrix Z will contains a value ranged between [0, 1].

Step 3: Generation of total relation matrix: The total relation matrix T referring to the total influence generated by the participant's response is obtained when the normalized initial direct-relation matrix D is taken to the power of m, where m is the indirect influence D^m and will reflect the effect of the length of m as well as its extends in the relation matrix. Thus, the total relation is the sum of $D + D^2, \ldots, D^\infty$, hence D^m will converge to zero matrix, then the total relation matrix

$$\begin{aligned} T &= D + D^1 + D^2 + D^3 + \ldots + D^\infty \quad \text{is} \\ T &= \lim_{m\to\infty}\left(D + D^2 + D^3 \cdots + D^m\right) = D(I - D)^{-1} \quad \text{thus} \\ T &= D(I - D)^{-1} \end{aligned} \tag{4}$$

where I is an $n \times n$ identity matrix. The effects show that criteria I will have on criteria j, is t_{ij} hence the matrix T reflects the total relationship between each pair of the criteria. However, Lee et al. (2013) argue that the assumption that $\lim_{m\to\infty} D^m = [0]_{n\times n}$ may sometimes not be $\lim_{m\to\infty} D^m \neq [0]_{n\times n}$.

Step 4: Generating the rows and columns of matrix: The rows and columns matrix are $n\times1$ and $1\times n$ representation of rows and columns vectors of the total relation matrix. If the sum of rows and the sum of columns of matrix T are represented by vectors r and c respectively, where

$$\begin{aligned} \mathbf{r} = [r_i]_{n\times1} &= \left(\sum_{j=1}^{n} t_{ij}\right)_{\mathrm{n}\times1} \quad \text{and} \\ \mathrm{c} = \left[c_j\right]_{1\times n} &= \left(\sum_{j=1}^{n} t_{ij}\right)_{1\times\mathrm{n}} \end{aligned} \tag{5}$$

then the sum S of r_i and c_j will represent the effects of criteria i on j and if $j = I$ and the sum S will show the total effects given and received by criteria i, whereas the difference shows the net effect by criteria i contributing to the system. However, when it is positive, criteria i is a net cause, whereas when is negative, criteria i is a net receiver.

Step 5: Set a threshold value (α) to generate an interaction diagram: high number of reviews'' [40]. The outcome of this evaluation certainly shed more light on the perceived usefulness and perceived issues related to MOFA mGovernment. The remaining part of the first phase involved an experimental observation and response to structured interview questions based on the feedback of the participant observations. The participants were given a mobile device with access to the MOFA mGovernment app and were asked to browse and perform tasks provided under ''services''. Thereafter, open-ended questions that required detailed feedback of their physical observations was presented to them as responses. The questionnaire was developed based on the principles of Shneiderman's Eight Golden Rules of Interface Design [41].

C. THE MULTIPLE-CRITERIA DECISION ANALYSIS

Multiple-criteria decision analysis constitutes an in-depth evaluation that uses multiple and conflicting criteria to understand the cause and effect or the best and worst effect

The threshold value (α) is generated by

$$\alpha = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} t_{ij}}{N} \tag{6}$$

where N is the number of elements in the matrix that will be computed by the average of the elements in matrix T in order to extract some minor effects were necessary. This means that those effects below the threshold value will not be selected for presentation of the impact relationships.

Step 6: Construct the relationship diagram for the cause and effect: The relationship diagram is drawn based on the result of the calculation of the previous stages. Thus, the cause and effect are mapped out to all coordinate sets of the sum the rows and columns which indicate the interactions among the criteria and provide information to judge which are the most important criteria and how they influence others.

D. SAMPLING AND PROFILING OF THE PARTICIPANTS

This study adopts a simple random sampling technique for selecting the participants of the experiments and convenient sampling technique for the users reviews and ratings of MOFA mGovernment. This evaluation recognizes the fact that sample size should be drawn from those individuals who are more likely to provide insight and understanding of the MOFA mGovernment services provided. Critical to this evaluation are the ''experts''. In this research the key issue constitutes the interaction with the mobile device while using the MOFA mGovernment app.

A total of 36 individuals agreed to participate in either one or both phases of the evaluation. The first phase was

undertaken by all the 36 participants and the second phase only by three participants. The majority of the participants evaluated between four and six MOFA mGovernment app services. As a result, a complete compilation of the second phase involved mixing the evaluated results of all the participants until 36 complete evaluation results were reached. The demographic background information of the participants identifies six females and 30 males. About 45 percent of them belong to the age group of 35 to 44 years which is the largest age group, followed by 14 percent for the age groups of 15 to 24 and 45 to 54. Only two participants belong to the age group of 55 and above. All the participants are users of the MOFA mGovernment app and 53 percent are PhD holders and experts in the area of mobile interaction study. About 41 percent have more than 10 years of working experience in a mobile app design related area of mobile interface development. More than 70 percent of them evaluate mobile interface design regularly. With this background, this study considers the majority of the participants as experts in mobile interaction related issues. This indicates that the participants' general ability to participate in this evaluation is met, the participation of experts in the evaluation being one of the key requirements.

E. VARIABLES AND EVALUATION CRITERIA

In the previous section has been outlined the details of the participants' involvement in this MOFA mGovernment app evaluation study. In order to ensure that the variables (criteria) used for this evaluation are credible indicators that will truly reflect the state of the app interaction experience, Shneiderman's Eight Golden Rules of Interface Design were adopted. The variables were formulated by identifying the key subjects in each of the rules and modify them to extract the app interaction experience. Eight criteria were framed as the criteria suitable for evaluation by DEMATE that are as follows: ''Consistency'', ''Sequence'', ''Feedback'', ''Task Accomplishment'', ''Error Handling/Prevention'', ''Navigation'', ''Customization'', and ''Visual Display''. DEMATEL was expected to reveal the best key criteria for the MOFA mGovernment app interaction experience.

The operational definitions of the criteria used for this study are presented in Table 1 below.

TABLE 1. Evaluation criteria.

Criteria	Construct
Consistency	Indicates how the interaction with MOFA mGovernment strives for consistency in action sequences, layout, terminology, and command use.
Sequence	Indicates how the interaction with MOFA mGovernment enables frequent users to use shortcuts such as abbreviations, special key sequences and macros to perform regular and familiar actions faster.
Feedback	Indicates how the interaction with MOFA mGovernment offers informative feedback for every user action and at a level appropriate to the magnitude of the action.
Task Accomplishment	Indicates how the interaction with MOFA mGovernment yields closure so that the users know when they have accomplished a task.
Error Handling/Prevention	Indicates how the interaction with MOFA mGovernment ensures error prevention and simple error handling so that, ideally, users are prevented from making mistakes and, if they do, they are offered clear and informative instructions.
Navigation	Indicates how the interaction with MOFA mGovernment permits easy reversals of actions in order to relieve anxiety and encourage exploration.
Customization	Indicates how the interaction with MOFA mGovernment supports the internal locus of control so that the user is in control of the system, which responds to his actions.
Visual Display	Indicates how the interaction with MOFA mGovernment reduces the short term memory load by keeping displays simple, consolidating multiple page displays and providing time to learn action sequences.

V. ANALYSIS AND PRESENTATION OF RESULTS

The selection of the appropriate method of analysis is determined by the research objective, namely to examine the key service features of MOFA mGovernment based on the interactive user experiences. The generated characteristics of the data (subjective assessment) covers two aspects, firstly users reviews and rating interviews and secondly multi-criteria decision responses. This type of analysis requires the aggregation of the user perceptions that will leverage the complex techniques needed to manage multiple criteria relationships.

A. ANALYSIS OF THE USERS REVIEWS AND RATING

The MOFA mGovernment user reviews and ratings were gathered. The rating covers a five-star range in order of decreasing quality. Five stars indicate the very best quality and one star reflects a poor quality product. This is similar to ''Sustainability Tracking, Assessment & Rating System (STARS)'' used in various systems to evaluate the quality of user ratings. However, it is arguable whether users are indeed enjoying quality products [45], [46]. However, in terms of research it reflects the relationship between the user and the quality of a product [46].

In this current study, at the beginning of March 2019, 2,958 five star ratings were recorded, 431 four star ratings, 277 three star ratings, 189 two star ratings, and 369 one star ratings. This suggests that the quality of the MOFA mGovernment app is high and users are satisfied with it. Since good or even excellent ratings alone are not a reliable indicator of quality without a high number of reviews [40], the user reviews were also evaluated. The number of reviews was also very high, yet not everyone that submitted a rating also reviewed the app. However, everyone who reviewed the app also submitted a rating.

The reviews indicate many contrasting views. The submitted reviews were categorized into themes. The six themes that emerged are as follows: ''*Errors*'', ''*Failure*'',

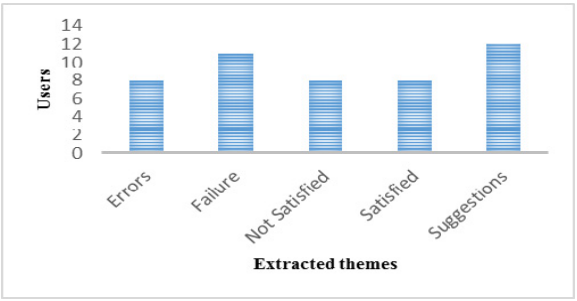

FIGURE 2. MOFA mGovernment review reports.

''*Not Satisfied*'', ''*Satisfied*'', ''*Suggestions*'', and ''*Questions*'' The summary of the review reports of MOFA mGovernment is presented in Figure 2. The total number of the reviews is higher than the total number of ratings. Therefore, the rating is considered as trustworthy [40]. In this case the reviews shed more light on the quality of the MOFA mGovernment. Out of the 47 reviews extracted in March 2019, only three users asked questions. This is the part that received the lowest response rate. The highest response rate was achieved under ''*Suggestions*'' indicating the users' ease to provide a value feedback as they found the application useful to them. In terms of satisfaction with the app, eight users were satisfied and another eight users were not satisfied while nine users reported failures and eight users reported errors. It should be noted here that even when users are satisfied, they may still decide to report some errors and make suggestions.

The user views collected under ''*Error*'' reveal that some users understood some errors while others did not. One user submitted, ''*After you complete all the data required to register your travel details and your place of residence in case for emergencies so that the embassy can reach you and you write the pin code you receive through SMS, it will show 'error- try again'*''. In this case, the user was able to access the service provided, there was no report of any interaction failure, yet the entire task failed due to error. Another user reported, ''*I'm applying for Family Visit Visa, entered the* iqamah *number, expiry date and visa number, pressed next, and 'error' appeared ('Please confirm and enter all mandatory fields') There are only three fields on this page which I already filled. I don't understand what happened. Please help*.'' This situation relates to the interaction experience where the system expects an input and the user cannot find any way of providing that input. Another user reported, *''Sometimes it's not working and not going to the webpage, please fix this, it's showing 'error'. Thank you.''* Although this statement is not very specific, it applies to the entire MOFA mGovernment app services. Another user reported, ''*I'm trying to download the app but I can't …It always shows 'error'…Why is it like that? Please help me download it.*'' This case shows that the user is unable to interact with the MOFA mGovernment app and that accessibility is an issue.

In respect to ''*Failure*'', the reviews form a pattern that indicates everyone who participated uses the MOFA mGovernment app. While one user stated that the app was ''*Not working after updating to latest version*'', someone else elaborated, ''*I'm facing a problem applying for a family visa. When I enter my* iqamah *number and its expiry date in step 1, it's not going any further and shows 'Please make sure health and completion of mandatory fields'. I don't understand what's the problem.*'' This clearly shows that the system cannot complete the user task. Another respondent reported, *''Completed my registration, the app crashed, sorry, delete.*'' This review is similar to the previous reviews in that there is an incomplete task as a result of system failure. Another user wrote, ''*I'm not able to proceed, it stops in between.*'' Similar to ''*Closed automatically, it closed while searching! Also in visa status, check, the page is incomplete! Please fix it ASAP''*. This situation suggests that the user interacted with the system and was unable to finish the task. Another user reported, ''*It does not work. I wanted to check my visa status but it doesn't work without the passcode which never appears*.'' This is a clear case of the system's inability to function correctly. An angry user complained that the MOFA mGovernment was a *''Bad app, a useless app. Can't scroll pages down and up, some pages don't work''*. On a similar note, another user stated, ''*It keeps crashing. It crashed multiple times on multiple menus, so I've uninstalled it. The app looks decent with the content it provides, though*''. One user remarked, ''*NON FUNCTIONAL. I've tried to apply for a family visit visa but it doesn't proceed beyond the third page. Please make sure that your application actually works.*'' Another reviewer concluded, ''*Great app but I can't see the image code picture??? As a result I can't check the status of my visa application.*''

There are many similar suggestions made by some users under the theme ''Not Satisfied'' such as ''*Not user friendly, bad, can't get anywhere, tried to use it for passport upload but didn't get through.*'', ''*It's frozen and not doing anything!*'', ''*It seems it's not compatible with some versions of Android*'' or ''*It's not working with Android or iPhone.*'' Other users express their disappointment with the app by stating, ''*I really hope this app would meet most of these user's expectations*'' and ''*It's very slow working for visit visas''*. These are the direct revelations made by the app's users that indicate their overall displeasure with the app. The users' general satisfaction with the MOFA mGovernment was collected under the theme ''*Satisfied*''. Among the positive reviews are, ''*It's great and very helpful and also easy to use*'', ''Best app'', ''*Good, very helpful for foreigners*'' and ''*Good app, nice application. You can get services from MOFA everywhere, anytime*''.

The last theme that was extracted is ''*Suggestions*'' where the users could share their own ideas related to the MOFA mGovernment. Among the received responses were ''*Feedback app design good but you can make it simpler and easier*'', ''*Please make sure you make a functional application*'', ''*I really hope this app would meet most of these user's expectations*'', ''*Please add English language or can we can switch to English with the current version*'' and ''*If it's updated with other language options, it would me more useful.*''

B. PRESENTATION AND ANALYSIS OF THE INTERVIEW RESULTS

After presenting the analysis of the users reviews and ratings of the MOFA mGovernment app, the result of the follow-up structured interview using the same criteria of the Schneiderman's Eight Golden Rules of Interface Design, is presented in this section. The participants' responses indicated that the interaction with MOFA mGovernment strived for consistency in the action sequences. This is reflected in such responses as "*I've found the interaction with many services straightforward"*. In respect to the views on the usefulness of the services it provided for residents, nine of the participants thought they were precise and relevant in the sense that one single link led to the list of respective services and details without unnecessary graphics. This allowed the users to choose services directly, even though some of them found that they were presently offline and failed to initiate the process. Other services that were evaluated were those that provided applications for permits on exporting vehicles. However, here also the users were unable to complete their application.

Two participants appraised the interactions in the case of completing electronic applications to issue airport passes for diplomats and renewal and found the layout to be clear and straightforward in regard to the service options of the MOFA mGovernment app which provided only the necessary information. They found the sequence of pages user-friendly and logical and that each page contained relevant information while the task instructions for each service were formulated clearly. As there was no navigation by graphic links or icons, the participant simply needed to follow the sequence of events as laid out, from the beginning of a task to the end. As one participant put it, "O*nce you get to a page, it leads to the next page. This is so easy, for a mobile app"*.

Although the interaction with the MOFA mGovernment app is enabled through a serial sequence of display, some issues were raised by the participants such as "*It's hard for me to understand the shortcuts in the services under place, types, and beneficiaries"* meaning that the "*Services*" options had only one way in and one way out, which is actually a two step-way in and out. On each front page, there is no shortcut to the inner page, and the participant understood that the services shown only contained guides or forms that required the users to enter some details for the service provided, for example, in the service for payments of health certificate fees for a work visa or residency visa (*iqamah*). The service for suspended diplomats and insurance of a final exit visa of residence permit for foreign diplomats had no shortcut link on the first page. But in the service for *hajj* visas, there was a shortcut to the conditions which differed from that starting the service link.

Some services options did not actually show most of the content and had no shortcuts, although they contained detailed instructions. There were no creative displays, and the information presented contained only a list of services and no shortcuts linked pages or parts up or down from one point to the other. This a response of a respondent on the interaction sequence. Another respondent stated, "*There are no abbreviations or special key sequences and macros.... Obviously, a poor interaction app as far as user interaction is concerned"*.

In respect to the interview responses on the informative feedback-based interaction experience, a respondent shared, "*The service for* hajj *visa gives an informative feedback based on the list of conditions*". Even though every first page of each service provides a list of conditions, for pilgrimage the conditions are crucial and were provided within two steps. The other links to permit applications for exporting vehicles, airport passes for diplomats and administrative personnel, renewal, and issuing permits for ships were directly linked via two steps, and the sequence was not deep and produced feedback immediately, as acknowledged by one participant. In general, the sequence of events executed one step with feedback followed by the next step and feedback. It did not go deeper as necessary in order to end the service function. One participant observed that "*most of the interaction patterns are static"*.

The task accomplishment of the MOFA mGovernment app yielded closure, indicating that the users could complete the tasks. One user remarked on the options of finding the link of the services that "*it ends at a page of the last service page*". Another participant stated that the interaction with the app should require dialog that separated closure at the end of the performing task. However, the page ended with the content details. Furthermore, once a page was closed, all the other pages associated with it were closed as well. The details of service related to the Ministry were given in chronological order. One page contained a description of the service offered and then ended, and there was no dialog that was set separate for closure.

Good interaction with an app can reflect the quality of the design. In any design practice, investigating the error cases is crucial. This study interview result on the MOFA mGovernment's ability to exercise error prevention and simple error handling produced valuable insights. One participant observed, "*This is the worst part of the mobile app. Most of the services, failed to load and there is no error prevention or error handling. Especially in the services of verification*". Another participant remarked, "*There is absolutely no any means of error prevention*". This was especially obvious to the users when pages crashed or did not even load. The interaction did not provide any means of preventing mistakes nor did it give any instructions to enable recovery of lost or crashed pages.

The interaction navigation with the MOFA mGovernment app based on the participant responses shows that there are no easy reversals of actions. Its pages are provided with detailed information on the services they provided and clear instructions are given, hence they can be described as static. The pages on handgun carry permits, insurance applications, driver's licenses and the like are static even though easily accessed in two steps. Another participant noted that "*the*

pages are static and lack dynamic interactions, then I think it is easier for reversal of action''. Although a page can be dynamic and at the same time provide an easy reversal of action, this mobile app pages only provide information and once the text details end, there is no reverse option to return to the previous page.

The participants noted this lack of customization options in performing the tasks. One of them stated, ''*There is no means for customizing or improving any part of the mobile app*''. There should be an internal control option to amend the information typed in certain fields before submitting the form. Such an option would be useful for visit visa applications, insurance of a final exit visas, and visas for foreign student visas. One participant commented, ''Y*ou cannot make a great deal of anything considering adjustment or modifications. There is no provision for controlling any part of the mobile application*''.

Regarding the loading and display of a page or multiple pages, one participant noted, ''*This is exactly what the whole interaction with the MOFA mobile app provides''*. Information on the services was given in form of static text in sequenced application forms. Detailed information is provided and the conditions clearly stated, followed by the application procedures. The services dealing with submitting applications to the Ministry of Foreign Affairs, visas, permits, document verification were arranged in simple, consolidating multiple page to one page displays. Other services like passport issuance or renewal through e-payment service details were displayed on a simple page and a link attached to the Enjaz Company. Since the information presented on the pages was static, the combinations of the tasks of the entire services provided in a page yielded only short term memory and simply display.

C. ANALYSIS OF THE KEY INTERACTION CRITERIA

The preceding two subsections provide the detailed analysis and presentation of results of the MOFA mGovernment user reviews and ratings followed by the result of the follow-up structured interview. This section presents the result of the multi-criteria decision analysis intended to uncover the key interaction criteria for the app by using the DEMATEL technique. After describing the technique in section four and collecting the questionnaire data based on the principles of Shneiderman's Eight Golden Rules of Interface Design, the data were coded as follows: ''Consistency'' (CD), ''Sequence'' (SE), ''Feedback'' (FE), ''Task Accomplishment'' (TA), ''Error Handling/Prevention'' (ER), ''Navigation'' (NA), ''Customization'' (CS), and ''Visual Display'' (VD). The analysis of the DEMATEL is presented in the following steps:

Step 1: The average matrix of the collected data was first analyzed. This average matrix Z is calculated using equation 2, hence is the initial direct relation matrix formed by averaging the 36 participants answer matrices. The result is the matrix Z, as shown at the bottom of this page.

Step 2: The normalized initial direct-relation matrix D is calculated using equation 3. In regular DEMATEL, the calculation involves finding the maximum of the row sum, and the maximum of the column sums and dividing the result by the average matrix initial direct relation matrix Z. Unfortunately, this technique is prone to indistinctness, where $\lim_{m\to\infty} D^m$ might not converge to null matrix $[0]_{n\times n}$. As a result, the total relation matrix T where $T = D + D^1 + D^2 + D^3 + \ldots + D^\infty$ will not converge and when $\lim_{m\to\infty} D^m$ does not converge to the null matrix, DEMATEL becomes infeasible. In order to address this issue, a revised DEMATEL to matrix Z is applied where ε is added to the maximum value of the row or column sum of matrix Z. In our case we added $\varepsilon = 0.0001$ in order to avoid infeasibility and ensure that for any cases $\lim_{m\to\infty} D^m$ converge to null matrix $[0]_{n\times n.}$ We obtained D as shown at the bottom of this page.

Step 3: In this step we calculated the total relation matrix T using equation 4 in order to show the total causes and effects of the relationship among the criteria. The result is the

$$Z = \begin{bmatrix} 0 & 2.4167 & 2.9444 & 2.6389 & 2.4444 & 2.75 & 2.3611 & 2.5556 \\ 2.2222 & 0 & 2.5556 & 2.1111 & 2.4167 & 2.5833 & 2.6944 & 2.5833 \\ 2.5833 & 2.3056 & 0 & 2.3056 & 2.75 & 2.4167 & 2.2778 & 2.3889 \\ 2.4444 & 2.2778 & 2.3333 & 0 & 2.5833 & 2.6111 & 2.3056 & 2.4167 \\ 2.6389 & 2.4444 & 2.5833 & 2.8611 & 0 & 2.5 & 2.5 & 2.6111 \\ 2.5556 & 2.3056 & 2.7778 & 2.8333 & 2.6111 & 0 & 2.25 & 2.4167 \\ 2.3611 & 2.4722 & 2.4722 & 2.6389 & 2.6111 & 2.5556 & 0 & 2.5278 \\ 2.3056 & 2.6389 & 2.5833 & 2.7778 & 2.3611 & 2.75 & 2.0556 & 0 \end{bmatrix}$$

$$D = \begin{bmatrix} 0 & 0.1324 & 0.1613 & 0.1446 & 0.1339 & 0.1507 & 0.1294 & 0.14 \\ 0.1218 & 0 & 0.14 & 0.1157 & 0.1324 & 0.1415 & 0.1476 & 0.1415 \\ 0.1415 & 0.1263 & 0 & 0.1263 & 0.1507 & 0.1324 & 0.1248 & 0.1309 \\ 0.1339 & 0.1248 & 0.1278 & 0 & 0.1415 & 0.1431 & 0.1263 & 0.1324 \\ 0.1446 & 0.1339 & 0.1415 & 0.1568 & 0 & 0.137 & 0.137 & 0.1431 \\ 0.14 & 0.1263 & 0.1522 & 0.1552 & 0.1431 & 0 & 0.1233 & 0.1324 \\ 0.1294 & 0.1355 & 0.1355 & 0.1446 & 0.1431 & 0.14 & 0 & 0.1385 \\ 0.1263 & 0.1446 & 0.1415 & 0.1522 & 0.1294 & 0.1507 & 0.1126 & 0 \end{bmatrix}$$

matrix T, as shown at the bottom of this page. The threshold value was obtained using equation 4, which is the average of elements in matrix T, .194.9762/64 = **3.0465**03125, therefore, only those values above the threshold were considered in the interrelationships impact assessment.

TABLE 2. Information quality total relation matrix criteria.

	CD	CS	SE	FE	TA	ER	VD	NA
CD	2.9643	3.0369	**3.2721**	**3.2487**	**3.1822**	**3.2502**	2.9703	**3.1405**
CS	2.938	2.7877	**3.1133**	**3.0847**	3.0417	**3.1015**	2.8549	3.0047
SE	2.9359	2.8822	2.972	**3.0744**	3.0374	**3.0759**	2.8201	2.9785
FE	2.9208	2.872	**3.0756**	2.9527	3.0209	**3.0745**	2.8124	2.9703
TA	**3.0952**	3.043	**3.2618**	**3.2633**	**3.0688**	**3.2449**	2.9809	**3.1478**
ER	3.0356	2.9814	**3.2105**	**3.2027**	**3.1359**	**3.065**	2.916	**3.0821**
VD	3.0118	2.9736	**3.1813**	**3.1785**	**3.12**	**3.1718**	2.7915	**3.0714**
NA	2.9827	2.9542	**3.1579**	**3.1559**	**3.0818**	**3.1519**	2.8673	2.9224

The total impact relations (see Table 2) based on the threshold value indicated that Consistency (CD) directly impacted Sequences (SE) at 3.2721, which is the highest impact relation within those criteria. It also impacted Feedback (FE) at 3.2487, Task Accomplishment (TA) at 3.1822, Error Handling/Prevention (ER) at 3.2502 and Navigation (NA) at 3.1405. Customization (CS) impacted Sequence (SE) at 3.1133, Feedback (FE) at 3.0847 and Error Handling/ Prevention (ER) at 3.1015. Sequence (SE) and Feedback (FE) impacted two criteria, and only Task Accomplishment (TA) and Error Handling/Prevention (ER) impacted each other at 3.0688 and 3.065 respectively. Visual Display (VD) directly impacted five other criteria whereas Navigation (NA) impacted four criteria. The entire impact relationship is presented in Table 2 below.

The list of the criteria in order of importance are TA > ER > SE > CD > FE > NA > VD > CS based on $(r + c)$ values that indicate how important the criteria are in relation. In respect to the interaction with the MOFA app, Task Accomplishment (TA) constitutes the most important sub- criterion with the highest $(r + c)$ value, whereas Customization (CS) is the least important (see Table 2). $(r - c)$ values compared to $(r + c)$ values showing the level of the direct impact of criterion on other criteria can be positive or negative. If it is positive it functions as a cause and if it is negative it is affected (see Table 3). Thus, Consistency (CD), Customization (CS), Task Accomplishment (TA) and Visual Display (VD) are the positive ''causal'' criteria while Sequence (SE), Feedback (FE), Error Handling/Prevention (ER) and Navigation (NA)

TABLE 3. Information quality cause and effect criteria.

	r	c	$r + c$	$r - c$	effect
Consistency [CD]	25.0652	23.8843	48.9495	1.1809	Cause
Customization [CS]	23.9265	23.531	47.4575	0.3955	Cause
Sequences [SE]	23.7764	25.2445	49.0209	-1.4681	Affected
Feedback [FE]	23.6992	25.1609	48.8601	-1.4617	Affected
Task [TA]	25.1057	24.6887	49.7944	0.417	Cause
Error [ER]	24.6292	25.1357	49.7649	-0.5065	Affected
Visual [VD]	24.4999	23.0134	47.5133	1.4865	Cause
Navigations [NA]	24.2741	24.3177	48.5918	-0.0436	Affected

are negative, which means that they are the ''affected'' criteria (see Table 3).

VI. DISCUSSION

This study utilized three different approaches, namely users review and rating, qualitative interview and multi-criteria decision analysis in order to examine the key service features of the MOFA mGovernment app based on interactive user experience. The user review and rating is important as it allows for a better understanding of the rating approach mapped to the reviews. The five star rating in decreasing rank order showed that the majority of the users rated the MOFA M-Government app to be of the very best quality. This means that those users that were already using the app were satisfied with it. Since this user rating alone did not automatically mean that the MOFA M-Government app quality was indeed very good, a user review was necessary to complement the data. In order to produce a more objective result, the good rating has to be complemented with good reviews [40]. Hence, the user reviews were gathered and analyzed and the outcome was categorized into ''Error'', ''Failure'', ''Not Satisfied'', ''Satisfied'' and ''Suggestions''. It was found that most errors were related to the interaction tasks at the end of particular tasks. The users also reported various kinds of failures, most of them related to the inability of the system to complete the assigned task. They were also not satisfied with some interaction modalities and did not consider the app to be user-friendly and rather slow. On the other hand, a number of the users were satisfied with the app. They found that it allowed the public to access and enjoy MOFA services anywhere and anytime although some users would have appreciated the app would include an additional English language option.

$$T = \begin{bmatrix} 2.9643 & 3.0369 & 3.2721 & 3.2487 & 3.1822 & 3.2502 & 2.9703 & 3.1405 \\ 2.938 & 2.7877 & 3.1133 & 3.0847 & 3.0417 & 3.1015 & 2.8549 & 3.0047 \\ 2.9359 & 2.8822 & 2.072 & 3.0744 & 3.0374 & 3.0759 & 2.8201 & 2.9785 \\ 2.9208 & 2.872 & 3.0756 & 2.9527 & 3.0209 & 3.0745 & 2.8124 & 2.9703 \\ 3.0952 & 3.043 & 3.2618 & 3.2633 & 3.0688 & 3.2449 & 2.9809 & 3.1478 \\ 3.0356 & 2.9814 & 3.2105 & 3.2027 & 3.1359 & 3.065 & 2.916 & 3.0821 \\ 3.0118 & 2.9736 & 3.1813 & 3.1785 & 3.12 & 3.1718 & 2.7915 & 3.0714 \\ 2.9827 & 2.9542 & 3.1579 & 3.1559 & 3.0818 & 3.1519 & 2.8673 & 2.9224 \end{bmatrix}$$

The findings from the follow-up structured interview after the analyzing the user reviews and rating were based on Schneiderman's Eight Golden Rules. The themes that were used revealed some important results. It was discovered that the MOFA mGovernment app sequence of interaction was consistent. The informative feedback consists of the list of conditions, especially for pilgrimage. Previous studies have criticized the inequality of service and interaction and the task accomplishment usually found in mobile apps such as Tair and Abu-Shanab [47] who examined the challenges and opportunities of mGovernment. Their findings confirm that mobile services in general pose a considerable challenge. Another study also examined the service quality dimensions of 20 available mGovernment services and focused on interaction quality, environment quality, information quality, system quality, network quality, and outcome quality [48]. In terms of improving the service quality of mGovernment, Alsaadi *et al.* [49] carried out a focus group study on the United Arab Emirate (UAE) Ministry of Interior (MOI) mGovernment in order to examine the key service quality controlling variable(s). The focus groups consisted of ten users of the UAE MOI. The findings of the study identified ''real time'' synchronous operations as the key attribute to the service quality. A similar research approach was used covering the Gulf Cooperation Council (GCC) member countries completed by Alsaadi *et al.* [50] who identified Quality-Function-Deployment (QFD) as the ideal mGovernment service quality element. It is certain that the services mGovernments provide are affected by the interaction with the mobile version. That is, interaction is directly related to the tasks provided and most errors are related to crashing and the inability to upload. The navigation within the MOFA mGovernment app shows that there are no easy reversals of actions. Furthermore, the user interviews have confirmed the lack of customization options when performing tasks.

The result from multi-criteria decision analysis using DEMATEL has indicated that the app's Task Accomplishment (TA) constitutes the most important criterion of interaction with the services provided. In summary, the findings can be applied to similar interactive systems since the user's ability to interact with a system depends on the nature of interactivity for the services provided. This is consistent with the findings of other studies. Balsa-Barreiro [1] examined the attractiveness of mGovernment using a sample of 289 German citizens. The outcome of the study revealed that the perceived interface design constitutes the key factor for the attractiveness of such mGovernment services. Wu *et al.* [52] also examined the usability and user aspects of mGovernment applications and services and found that user interface design issues were highly significant for their success. The Thai Office of the Public Sector Development Commission (OPDC) has recently introduced mGovernment, yet certain issues related to software usage seems to adversely affect its performance [53]. The research findings generated in our study are aimed at filling the gap in the existing research focusing on the aspect of user interaction by identifying Task Accomplishment as the key attribute of mGovernment.

VII. CONCLUSION

This study has examined the user interaction feature of the Saudi MOFA mGovernment application. The motivation for conducting this study lies with the fact that many services related to public administration are moving towards mobile apps. Thanks to the newly available mGovernment services the public can enjoy many basic services by using smartphones. MGovernment is quickly becoming the standard platform for public services. Therefore, research studies focusing on this particular area of technology are crucial. This study identifies the user interaction key attribute of the MOFA mGovernment app. It is aimed at solving the problem of discrepancy between the user interaction experience and the application use. Qualitative subjective experiment, user review and rating as well as meta-analysis in combination with multi-criteria decision analysis (DEMATEL) were used. The review and rating results were analyzed. The overall rating was very good. The review finding was categorized into error, failure, not satisfied, satisfied and suggestions. Furthermore, the key interactive user feature of the services of mGovernment has been identified as ''Task Accomplishment'' meaning that the completion of tasks constitutes the most important criterion of interaction with the services the MOFA mGovernment app provides.

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