# DEVELOPING A THEORETICAL MODEL FOR BAHRAINI CITIZEN'S INTENTION TO ADOPT WEB 2.0 IN E-GOVERNMENT OF KINGDOM OF BAHRAIN.

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## ABSTRACT

Most of the governments worldwide using the Internet to deliver services to their citizens. The term e-government become a universal phenomenon. Its focus on serving the citizens in efficient ways, which satisfy their needs. This done through providing government services and information on the Internet which allowed the citizens to communicate with them anytime and anywhere away from the traditional communication channels. As the main goal of e-government is toward more transparent relations with user, most of government adopt web 2.0 technologies to increase their interaction, participation and transparency with their users. Toward this point, this research based on a quantitative research approach where the principle inquire about procedure depends on the aftereffects of a questionnaire. Through the questionnaire, a proposed model was verified so as to differentiate factor affecting Bahraini citizens' Intention to adopt the web 2.0 technologies in e-government of Kingdom of Bahrain. The model created was tested with 313 citizens and it was exposed that three factors (ease of used, usefulness and social influence) have significant effect on intention while the other don't. The outcomes of this research adds to  existing literature with regards to  citizens' Intention to adopt the web 2.0 technologies in e-government services through the developed model, explaining the context of Kingdom of Bahrain that can be utilized to be compared with other similar nations. On the hand the results of this research can help other professionals to use some of our results to find more factors that may affect citizens' Intention to adopt the web 2.0 technologies in e-government services.

**Key Words:** *Web 2.0, Kingdom Of Bahrain, Intention, E-Government, Government 2.0.*

## 1.  INTRODUCTION

People from two decades until now totally rely on Information and communication Technology (ICT) in every things in their life. ICT has changed our daily life in social, economic and culture context. The uptake of the ICT has not been limited to the business sector, public sector also affected by ICT through converting most of its transactions to electronic form which introduce the electronic government "E-government" initiative.

The main goal of e-government is to deliver its services to the citizens in efficient and effective way that meet their expectations (Osimo, 2008). To reach this goal government need to improve the quality of its e-services and developing new ones this can be done through integrating web 2.0 technologies. As Thornton defined government 2.0 as the use of the emerging web 2.0 applications technologies such as social networking to engage citizens as active participant, characterized by two way only interaction [17]. Web 2.0 enable

government to interact with the citizens in easy way. As well as allow its citizens to use and distribute government information. Some of web 2.0 technologies are social networking, widgets, wiki, blogs and Real Simple Syndication (RSS). The main objectives of this paper is to investigate the factors that affect Bahraini citizens' intention to adopt web 2.0 technologies in e-government.

## 2.  E-GOVERNMENT AND WEB 2.0 TECHNOLOGIES

The literature has a verity of e-government definitions, by they all agree on the use of technology by the government to serve its citizens, business and public sector.  The Organization for Economic Co-operation and Development (OECD) defined e-government as "The use of information and communication technologies, and particularly the internet, as a tool to achieve better government" [11]. E-government with its simplest meaning as we comprehend from the different definitions in the

literature the use of information technologies in the government for a more effective and efficient way of providing services.

The main aim of most governments including Bahrain, is to enhance trust, citizen's involvement, transparency and increasing transaction efficiency. In order to achieve some of these aims, Bahrain government has developed a strategy called Economic Vision 2030, where ICT play a main role in it. This could be done by adopting the new web 2.0 technologies [12]. Web 2.0 technologies transform the Web into an effective stage for information interchange in which agreement can be reached and complexities can be simplified. Web 2.0 allows users to build communities for social networking or knowledge sharing. It's an online tool that help the users in the execution of a certain collaborative errands. It's serves as stages or tool to support users in making and sharing information with a wide audience (for example, online directories and Mash up platforms, as well as Web logs). [18]

Web 2.0 is defined as "a perceived second generation of Web development and design that facilitates communications and secures information sharing, interoperability, and collaboration on the World Wide Web" (Harris & Rea, 2009). So as it's preserved from the different definitions web 2.0 can be simply define as is a new way for dynamic sharing information and communicate through different web applications. There are many examples of web 2.0 technologies such as social networking, widgets, wiki, blogs and Real Simple Syndication (RSS). These technologies help its users in sharing web content in easy way than in the past. [8]

The e-government 2.0 terminology is the outcome of governments using different technologies to engage the citizens at the core of the matters by removes boundaries and promotes openness, transparency and user participation. Using the new technologies help government to transfer from government oriented to citizen oriented. Web 2.0 technologies allow users to comment on government work, to report their satisfaction with E-Government services and, most importantly have influence on government actions in the future. Citizens and businesses collaborate with governments in trying to meet user needs and making better services available [15]. The portal for e-government of Bahrain has different interactive features such as forum and blogs. In addition to that most government entities have an account in the social media such as twitter, Instagram and Facebook.

## 3. BENEFIT OF WEB 2.0 TECHNOLOGIES IN E-GOVERNMENT

The expectations of the benefits brought about by web 2.0 technologies for government are exceedingly high. Some of these benefits are:

- Increase citizens' engagement: web 2.0 has a lot of task that allow people to interact with each other through the internet everywhere and anytime they want which eliminate barriers associated with physical places which sometimes require people to travel from one place to another which will save time and cost. In addition to that online engagement allows citizens to provide their feedback to their government as well as participate in policy making which will improve the relationship between the government and citizens [14].
- Rapid distribution of information: Web 2.0 technologies facilitate to government agencies to publish its information to their users on the Internet instead of the traditional methods postal and static websites. Publishing such information on government web sites and social networks allow fast distribution of information and increase citizen's awareness about any new service. [5]
- Improve transparency: The fundamental aim of any government is to be transparent with its citizens to reach this aim government should provide citizens with information about every things the government is work in it. This can be done by using web 2.0 technologies such as social networking to update its citizens about any new action it will do it and it can get their point of view regarding this action, which was verified in the US government as Buice reported. [6]

## 4. THE PROPOSED MODEL AND HYPOTHESES

This research presents a novel theoretical model which integrate significant factors derived from existing literature on web 2.0 and technology acceptance models. The purpose of theoretical model is to measure citizens' intention to adopt

web 2.0 features in e-government of Bahrain. Figure 1, depicts the proposed model which consist of six keys variable which have a momentous amount of impact Ease of Use, Trust, Availability, Social Influence, Quality and Usefulness. These factors also serve as the main construct in the proposed model that will have a significant effect on citizen's intention to adopt web 2.0 features in e-

government as is shown by various authors [1], [9], [20] and [21].
Both factors Ease of Use and Usefulness is further divided into two more factors Information and web 2.0 characteristics. Finally all the factors Impact the citizens' intention to adopt web 2.0 in e-government either positively or negatively.
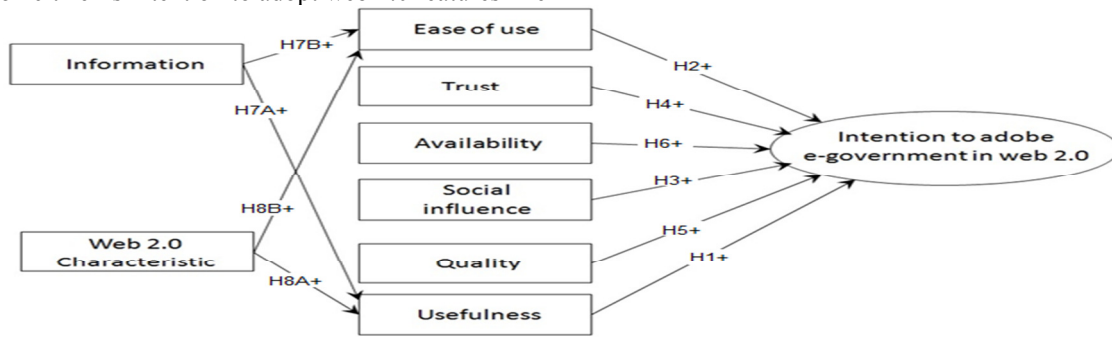


*Figure 1: Research Model*

The following table summarize all the hypotheses based one literature.

*Table 1: Hypothesis Of Bahraini Citizen's Intention To Adopt E- Government In Web 2.0*

| | |
|---|---|
| Hypothesis 1: | Usefulness will have a positive effect on people intention to adobe e-government in web 2.0. |
| Hypothesis 2: | Ease of use will have a positive effect on people intention to adobe e-government in web 2.0. |
| Hypothesis 3: | Social Influence will have a positive effect on people's intention to adobe e-government in web 2.0. |
| Hypothesis 4: | Trust will have a positive effect on people's intention to adobe e-government in web 2.0. |
| Hypothesis 5: | Quality will have a positive effect on people's intention to adobe e-government in web 2.0. |
| Hypothesis 6: | Availability will have a positive effect on people's intention to adobe e-government in web 2.0. |
| Hypothesis 7A: | Information will have a positive effect Usefulness. |
| Hypothesis 7B: | Information will have a positive effect on Ease of use |
| Hypothesis 8A: | Web 2.0 Characteristic will have a positive effect Usefulness |
| Hypothesis 8B: | Web 2.0 Characteristic will have a positive effect Ease of use |

## 5.  METHODOLOGY

The purpose of this paper is to examine the Intention of citizens towards adoption of web 2.0 technologies in e-government of Bahrain. Furthermore, the sample size has been calculated by using the online sample size calculator to find the number of targeted citizens. The population of Kingdom of Bahrain is 1316000 so our sample size according to the online calculator should be 384.

Hence, to examine the proposed hypothesis a questionnaire (Appendix one) was designed and distributed randomly among a group of citizens the response was 313 citizens. All the questionnaire questions have been taken from other studies appendix two table (4) shows the factors used in the questionnaire and related literature from which they where chosen.  The proposed model is analyzed by using IBM SPSS 22 (Statistical Package for Social Science) which provide the researcher with several

of multiple regression analysis. Table (2) shows the descriptive statistics of the respondents.

*Table (2): Descriptive Statistics Of The Respondents*

| Measure | Value | Frequency | %age |
|---|---|---|---|
| Gender | Male | 96 | 19.2% |
| | Female | 217 | 43.5% |
| Nationality | Bahraini | 290 | 58.1% |
| | Arab | 4 | 0.8% |
| | Asian | 17 | 4.3% |
| | Non-Asian | 2 | 0.4% |
| Age | <= 18 | 66 | 13.2% |
| | 19-25 | 180 | 36.1% |
| | 26-35 | 44 | 8.8% |
| | 36-44 | 19 | 3.8% |
| | 45-55 | 3 | 0.6% |
| Educational | Literate | 8 | 1.6% |
| | Intermediary or less | 4 | 0.8% |
| | Secondary Certificate | 110 | 22% |
| | Bachelor Certificate | 186 | 37.3% |
| | Master degree | 5 | 1% |
| Occupation | Employee | 48 | 9.6% |
| | Unemployed | 23 | 4.6% |
| | Student | 224 | 44.9% |
| | Self employed | 12 | 2.4% |
| | House wife | 6 | 1.2% |
| Governorate | Muharraq Governorate | 36 | 7.2% |
| | North Governorate | 120 | 24% |
| | South Governorate | 46 | 9.2% |
| | Capital Governorate | 111 | 22.2% |

## 6. RESULTS

The results of the structural model are discussed in the following sub sections. The questionnaire included factors from existing studies; therefore a test of its reliability and validity analysis of the Instrument were needed. Validity analysis of the instrument results are shown in the appendix three table (5) displays the factors loading for each item in the distributed questionnaire. [19] Showed that when the components extracted for each factor are

above 0.5 that is mean hypothesis stated in the study.

The alpha of the variable constructs is reported in table (3). The alpha values greater than 0.7 showed that all constructs are acceptable [16]. In our study most of the constructs have value greater than 0.7 which are acceptable, on the other hand the construct "Intention to adopt" have value less than 0.7 which is not acceptable. From the literature we found that "Intention to adopt" is a vital factors in our study so we decided to accept it.

*Table (3): Reliability Of The Factors Of Bahraini Citizen's Intention To Adopt E- Government In Web 2.0*

| Constructs | Cronbach's Alpha |
|---|---|
| Availability | .650 |
| Quality | .787 |
| Trust | .775 |
| Social Influence | .713 |
| Ease of Use | .688 |
| Usefulness | .727 |
| Intention to Adopt | .691 |
| Web 2.0 Characteristic | .728 |
| Information | .619 |

## 7. HYPOTHESIS TESTING

In this study we use regression analysis due to its ability to predict the behavioural interaction of respondents [4]. The outcomes in this study deliver substantial support for some of the hypotheses proposed in the study. Ease of use, Usefulness, Social Influence and Trust are supported to be positively related to citizens' intention to adopt web 2.0 in e-government, while availability and quality are not supported to be related to it. Social Influence is the most important factor in citizens' intention to adopt web 2.0 in e-government ($\beta$= 0.567, P < 0.001). Ease of use is the second important factor ($\beta$= 0.264, P < 0.001). Usefulness is the third important factor ($\beta$= 0.255, P < 0.001), while Quality and Availability has no significant impact in citizens' intention to adopt web 2.0 in e-government.

## 8. DISCUSSION

The use of web 2.0 technologies in government services is a vital issue as its removes boundaries, promotes openness and increase transparency which lead to increase citizens engagement with e-government services. Therefore, understanding the factors that affect the citizens' intention to adopt

web 2.0 in e-government is an important issue for achieving government goals.

This research constructed a model that presented eight factors that affect Bahraini citizens' Intention to adopt the web 2.0 technologies in e-government including both directly and indirectly. The direct effect was from six factors including Ease of use, Trust, Availability, Social Influence and Quality. The findings of this study confirm that as the following factors (Usefulness, Ease of use, Trust and Social influence) increase the intention to adopt web 2.0 in e-government. In addition to that the study found positive affect of ease of use in citizens' intention to adopt web 2.0 in e-government, these findings are reliable with the research findings by [7] who reported that ease of use of e-government services are positively connected towards citizens' intention to use online services. Similar to [10] it was found that both Ease of use and Usefulness have a strong influence on user intention to use e-government services in the Gambia. Moreover it was found that both social influence and trust have a constructive impact in the adoption of web 2.0 in e-government which mean that when Bahraini citizens trust the service provided by the government they will use it over again. As well as they are easily influenced by other people positive or negative message regarding the services they used.

Literature indicate that perceived trust is an important factor that effect the users' intention to use e-government services in positive way, which was similar to the findings of the research [13]. Social influence correspondingly plays an important role when it comes to intention to adopt web 2.0 technologies in e-government services, as it directly affects the behavioural intention of the users [20].

The study on the other hand, did not find a significant correlation between quality and intention to adopt web 2.0 technologies in e-government services as opposed to the proposed hypothesis. This means that quality does not have a significant impact when it comes to intention to adopt web 2.0 technologies in e-government services which is a very critical outcomes as it inconsistent with [13] findings that quality effect citizens' satisfaction which effects there adoption of e-government services . As we know that every person has a standard level of quality if this level is not met than the person will reject that thing that does not met his/her quality standards. In addition

to that the findings mirror the suggestion of [3] that even though the e-government services are available all the time there actual use will not be 100%. The results show as that Bahraini citizens will use e-government services regardless their quality and availability as long as it provide them with what they want.

For the indirect factors including information and web 2.0 characteristics, the results approved that information and web 2.0 characteristics has a positive effect on usefulness and ease of use. As mentioned by Kumar [9] an appropriate e-services content lead to easier use of the services.

## 9. CONCLUSION

Currently, the public sector highly invest in using web 2.0 technologies to increase the interaction with their citizens. This research was examining the factors that have an influence over adoption of web 2.0 in the Kingdom of Bahrain e-government. A research model was proposed by combining different factors from the literature the factors undertaken were (Ease of use, Usefulness, Availability, Trust, Quality and social influence). These variables had a relationship with dependent variable "citizens' intention to adopt web 2.0 in e-government". Towards the achievement of the objectives a quantitative method was conducted.

The finding of the study were agreed with previous studies that we conducted in the literature review. The finding revealed that the six factors have a significant relation with citizens' intention to adopt web 2.0 in e-government. It was also found that other people experience influence Bahraini citizens to use e-government services. The analysis showed that Bahraini citizens are not concern about the quality and availability of e-government services they will use it as long as it provide them with what they want.

As there are numerous different factors that influence Intention to adopt web 2.0 technologies in e-government services it is proposed to incorporate some other factors such as security, digital literacy and users' attitude towards using technology. The model for measuring citizens' intention to adopt web 2.0 technologies in e-government services was based on a single case study in Kingdom of Bahrain. It can also be apply in other gulf countries.

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**Appendix One: The Questionnaire:**

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This questionnaire is a part of a university of Bahrain students senior project which about: Bahraini citizen Adoption of e-government in web2.0.  It will try to measure the Bahraini citizen's level of adoption of e-government in web2.0. Your participation in this questionnaire is greatly appreciated; all answers that you provided will be anonymous and kept confidential**.**

Thank you for your precious time to fill out the following questionnaire.

Notes that:

a)  E-Government: is electronically to do government transactions.
b)  Web2.0: is using social media in doing government transaction.
c)  E-Government 2.0: It combines Web 2.0 and E-government.

| Demographic: | | | | | |
|---|---|---|---|---|---|
| **Nationality** | ○  Bahraini | ○  Arab | ○  Asian | ○  Western | ○  Others |
| **Sex** | ○  Male | ○  Female | | | |
| **Age** | ○  <=18 | ○  19-25 | ○  26-35 | ○  36-45 | ○  46-55 |
| | ○  Above 55 | | | | |
| **Education level** | ○  Illiterate | ○  Intermediately or less | ○  Secondary certificate | ○  Bachelor certificate | ○  Master degree |
| | ○  PhD or higher | | | | |
| **occupation** | ○  Self employed | ○  Employed | ○  Student | ○  Housewife | ○  Unemployed |
| **Resident of** | ○  Capital governorate | ○  Northern governorate | ○  Southern governorate | ○  Muharraq governorate | |

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| **Availability:** | | | | | |
| 1. All the E-government 2.0 services are available at any time. | | | | | |
| 2. There are no messages that say "Only runs on Internet Explorer". | | | | | |
| 3. E-government 2.0 work in all platforms (In computers, a platform: is an underlying computer system on which application programs can run e.g. windows and Mac OS X). | | | | | |
| **Quality:** | | | | | |
| 1. I think the E-government 2.0 is offered at a good quality level. | | | | | |
| 2. The overall quality of E-government 2.0 meets my quality requirements. | | | | | |
| 3. The quality of the services of E-government 2.0 is good in comparison to the quality of the traditional services government (Face to face). | | | | | |
| 4. I am pleased of overall quality of e-service provided by E-government 2.0. | | | | | |
| **Trust:** | | | | | |
| 1. I trust E-government 2.0. | | | | | |
| 2. I think E-government 2.0 can be trusted to carry out my online transaction faithfully. | | | | | |
| 3. I think the E-government 2.0 does not share my personal information with others. | | | | | |
| 4. I think the E-government 2.0 protects information related to my transaction with my credit card. | | | | | |
| **Social Influence:** | | | | | |
| 1. People who are important to me think that I should use the E-government 2.0. | | | | | |
| 2. I would use the E-government 2.0 if my friends use it. | | | | | |
| 3. I have intentions to use the E-government 2.0 because people are using it. | | | | | |
| 4. I am using the E-government 2.0 because of the people using it. | | | | | |
| **Ease of Use:** | | | | | |
| 1. It is easy to use E-government 2.0. | | | | | |
| 2. The E-government 2.0provides multi language considering global development. | | | | | |
| 3. I believe that the E-government 2.0is easy to use. | | | | | |
| 4. I would find it easier to talk face to face with someone rather than use online services in E-government 2.0. | | | | | |

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| | | | | | |
|---|---|---|---|---|---|
| 5. It is easy to navigate within E-government 2.0. | | | | | |
| **Usefulness:** | | | | | |
| 1. Using the E-government 2.0 would enable me to accomplish tasks more quickly. | | | | | |
| 2. Using the E-government 2.0 would enhance my effectiveness of doing the task. | | | | | |
| 3. If I use the E-government 2.0, I will spend less time on routine tasks. | | | | | |
| 4. I would find theE-government 2.0 useful to achieve my requirements. | | | | | |
| **Information :** | | | | | |
| 1. The E-government 2.0 services provide information precisely according to my need. | | | | | |
| 2. The information on E-government 2.0 services is free from error. | | | | | |
| 3. The information on E-government 2.0 services is up to date. | | | | | |
| 4. The information on E-government 2.0 services is sufficient for the task at hand and easy to understand. | | | | | |
| **Intention:** | | | | | |
| 1. I expect to try using e-government 2.0 | | | | | |
| 2. I intent to use e-government 2.0 in the near the future | | | | | |
| **Web 2.0 characteristics:** | | | | | |
| 1. I think the E-government 2.0 provides me a profile page (Profile pagewhich contains personal and work information that you'd like to share with your friends). | | | | | |
| 2. I think the E-government 2.0 uses friending (Friending is the act of adding someone to a list of "friends" on a social networking service). | | | | | |
| 3. I think the E-government 2.0 uses Internet forum (Internet forum: is a discussion area on a website. Website members can post discussions and read and respond to posts by other forum members). | | | | | |
| 4. I think the E-government 2.0 allow uploading. | | | | | |

**Appendix Two:**

*Table 4: Factor's Questions From Different Studies.*

|  | **The Factor** | **The Questions** | **Reference** |
|---|---|---|---|
| **1** | Availability | All the E-government 2.0 services are available at any time. | [4] |
|  |  | There are no messages that say "Only runs on Internet Explorer". | – |
|  |  | E-government 2.0 work in all platforms (In computers, a platform: is an underlying computer system on which application programs can run e.g. windows and Mac OS X). | – |
| **2** | Quality | I think the E-government 2.0 is offered at a good quality level. | [4] |
|  |  | The overall quality of E-government 2.0 meets my quality requirements. | – |
|  |  | The quality of the services of E-government 2.0 is good in comparison to the quality of the traditional services government (Face to face). | – |
|  |  | I am pleased of overall quality of e-service provided by E-government 2.0. | – |
| **3** | Ease of use | It is easy to use E-government 2.0. | [13] |
|  |  | The E-government 2.0provides multi language considering global development. |  |
|  |  | I believe that the E-government 2.0is easy to use. | [4] |
|  |  | I would find it easier to talk face to face with someone rather than use online services in E-government 2.0. |  |
|  |  | It is easy to navigate within E-government 2.0. | – |
| **4** | Usefulness | Using the E-government 2.0 would enable me to accomplish tasks more quickly. | [4] |
|  |  | Using the E-government 2.0 would enhance my effectiveness of doing the task. |  |
|  |  | If I use the E-government 2.0, I will spend less time on routine tasks. |  |
|  |  | I would find the E-government 2.0 useful to achieve my requirements. |  |
| **5** | Trust | I trust E-government 2.0. | [7] |
|  |  | I think E-government 2.0 can be trusted to carry out my online transaction faithfully. |  |
|  |  | I think the E-government 2.0 does not share my personal information with others. |  |
|  |  | I think the E-government 2.0 protects information related to my transaction with my credit card. | [13] |

| 6 | Information | The E-government 2.0 services provide information precisely according to my need. | [13] |
| | | The information on E-government 2.0 services is free from error. | |
| | | The information on E-government 2.0 services is up to date. | |
| | | The information on E-government 2.0 services is sufficient for the task at hand and easy to understand. | |
| 7 | Social influence | People who are important to me think that I should use the E-government 2.0. | [4] |
| | | I would use the E-government 2.0 if my friends use it. | |
| | | I have intentions to use the E-government 2.0 because people are using it. | – |
| | | I am using the E-government 2.0 because of the people using it. | |
| 8 | Web 2.0 Characteristic | I think the E-government 2.0 provides me a profile page (Profile page which contains personal and work information that you'd like to share with your friends). | - |
| | | I think the E-government 2.0 uses friending (Friending is the act of adding someone to a list of "friends" on a social networking service). | – |
| | | I think the E-government 2.0 uses Internet forum (Internet forum: is a discussion area on a website. Website members can post discussions and read and respond to posts by other forum members). | - |
| | | I think the E-government 2.0 allow uploading. | - |
| 9 | Intention | I expect to try using e-government 2.0 | |
| | | I intent to use e-government 2.0 in the near the future | [2] |

**Appendix Three:**

*Table (5): Validity Test Of The Questionnaire Items.*

| Item | Availability | Quality | Trust | Social influence | Ease of use | Usefulness | Information | Web 2.0 characteristic |
|------|------|------|------|------|------|------|------|------|
| A1 | .774 | | | | | | | |
| A2 | .698 | | | | | | | |
| A3 | .834 | | | | | | | |
| Q1 | | .828 | | | | | | |
| Q2 | | .775 | | | | | | |
| Q3 | | .752 | | | | | | |
| Q4 | | .772 | | | | | | |
| T1 | | | .797 | | | | | |
| T2 | | | .808 | | | | | |
| T3 | | | .741 | | | | | |
| T4 | | | .747 | | | | | |
| S1 | | | | .625 | | | | |
| S2 | | | | .755 | | | | |
| S3 | | | | .777 | | | | |
| S4 | | | | .774 | | | | |
| E1 | | | | | .594 | | | |
| E2 | | | | | .620 | | | |
| E3 | | | | | .694 | | | |
| E4 | | | | | .814 | | | |
| E5 | | | | | .600 | | | |
| U1 | | | | | | .855 | | |
| U2 | | | | | | .772 | | |
| U3 | | | | | | .678 | | |
| U4 | | | | | | .673 | | |
| IN1 | | | | | | | .649 | |
| IN2 | | | | | | | .711 | |
| IN3 | | | | | | | .781 | |
| IN4 | | | | | | | .739 | |
| C1 | | | | | | | | .687 |
| C2 | | | | | | | | .769 |
| C3 | | | | | | | | .763 |
| C4 | | | | | | | | .747 |