MEDIA CHARACTERISTICS, NATIONAL CULTURE, AND E-GOVERNMENT SERVICES USAGE: DEVELOPING A MODEL AND SURVEY INSTRUMENT

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Abstract

With the increased use of the Internet across the world, government organisations are investing considerable efforts for introducing various types of online services to individuals. However, despite such efforts, many individuals may still prefer to access those services using the traditional channels (e.g. phone, office visits). To find out why this happens, in this research-in-progress paper, we explore the role of media characteristics in determining individuals’ intention to use e-government initiatives for three different services: information access, transaction completions, and participation in policy formulations. In particular, we propose a model that integrates constructs from TAM, media richness and national cultural theory. We further report the development of a survey instrument based on the model. The model has implications for both theory and practice.

Keywords: e-government, usage intention, media characteristics, instrument development.
1. INTRODUCTION

Globally, governments at all levels are investing considerable resources in e-government initiatives. One specific area that has received academics and practitioners’ attention is e-government services delivery to individuals. As a result, a rich body of e-government literature currently exists which addresses various aspects of e-government services. Services introduced by government organisations can be accessed by individuals using non-internet channels. We argue that the availability of traditional channels (e.g. front desk and phones) plays an important role in determining the media used by individuals to seek services from government organisations. This in turn could affect their intentions to use governmental websites for e-government services. Research investigating behavioural intention towards e-government usage mainly focuses on the factors related to media features such as usefulness and ease of use. According to El-Shinnawy and Markus (1998), media richness along with media features influences the usage of a medium for all communications purposes. We therefore argue that individuals’ use of governmental websites for e-government services is influenced by media richness. In this research-in-progress paper, we thus aim to investigate the effect of both media richness and media features on individuals’ intention to use e-government services provided online. In addition, we seek to examine the influence of national cultural traits on the relationship between individuals’ intention to use e-government services and media feature and richness.

The paper is organised as follows: the background literature is discussed next which is followed by the proposed research model and hypotheses. Then, the research method is briefly discussed. After that, a rigorous survey development process is reported. Finally, the current status of the research project is highlighted.

2. RELATED LITERATURE

2.1 Individuals’ Intention to Use E-Government Services

E-government services: Government agencies generally offer a range of online services to businesses and citizens. According to Lee (2010), examining e-government services maturity level can be built on the notion of three types of services: information access, transaction completion and participation in policy making. Wescott (2001) states that early maturity level of government agencies’ websites only include information accessed by organisations and individuals, that are relevant to organisations’ services and policies. An improved stage of e-government services involves information access as well as two-way communication in which individuals or businesses can complete a transaction (e.g. paying fines or applying for permits) online. Wescott (2001) further affirms that e-government services can reach its maturity by providing participation services in which citizens and residents are able to express their opinions to influence policy making.

Intention to use E-government services: According to Venkatesh, Morris, Gordon, and Davis (2003), acceptance of information systems consists of multiple stages including intention to use and actual usages. A simple definition of intention to use an information system is “the individuals’ interest in using the system for future works” (Wu, Shen, Lin, Greenes, & Bates, 2008). Although intention to use is found to be a strong predictor of actual use of IT applications (Davis, 1985), some studies (e.g. Shareef, Kumar, Kumar, & Dwivedi, 2011) report that adoption is an overall process that involves different human behaviours such as intention to use, actual use and satisfaction. Thus, these different behaviours could be investigated using common shared determinants. In context to e-government, individuals’ intention to use e-government services is generally reported as a single dimension (e.g. Ozkan & Kanat, 2011; Van Dijk, Peters, & Ebbers, 2008). We however argue that behavioural intention towards the usage of each type of services could vary due to two reasons: a) depending on the notion of service, an individual maybe have a need for varying degree of feedback in order to help that person to perform the task involved in accessing the service, and b) the need for feedback maybe culturally influenced. Our view is supported by other scholars. For example, according to Shareef et al. (2011), citizens might have the intention to use governmental websites in the static stage (seeking information) but not interaction stage (conducting transaction) and vice versa.
In order to develop a better understanding of e-government services, the usage of all these types of services needs to be examined.

2.2 Related Theories

2.2.1 Media Characteristics

Different media channels such as online websites and face-to-face are used by individuals to communicate with government organisations to accomplish their tasks. The choice of a certain medium can not only be driven by the media features but also media richness (El-Shinnawy & Markus, 1998). As such, an individual’s intention to use government websites for accessing e-government services could be also influenced by websites features and richness alike. Thus, the influence of media characteristics should be examined to determine individuals’ intention to use various types of online government services. Media features and richness are described below.

**Media features:** The research dominating media features concentrates on certain attributes that might influence the usage of particular channels. Technology Acceptance Model (TAM) is widely applied as a theoretical background for investigating the influence of technologies characteristics on behavioural intention to use new technologies (Davis, 1985). TAM is initially built on ideas derived from the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). In TRA, individuals’ belief is considered as an external variable affecting attitude towards behaviour. Davis (1985) argues that to investigate individuals’ behaviours towards technology usage, researchers should identify measurements of beliefs to be incorporated in their models. Two main factors were identified as measurement of individuals’ belief: perceived usefulness which is defined as the perception that a new system satisfies individuals’ work needs, and perceived ease of use which refers to individuals’ perception that a new system does not require physical and mental effort (Davis, 1985). These two measurements are widely reported as determinants of individuals’ intention to use computer systems.

**Media richness:** Media richness theory proposes that the effectiveness of communication processes between individuals is influenced by media richness and task characteristics (Daft & Lengel, 1986). The ability of one medium to convey messages and deliver better understanding is based on four criteria: immediate feedback, multiple cues, language variety and personal focus (Daft, Lengel, & Trevino, 1987). Several studies suggest that some channels might lead to miscommunication when clarity of an ambiguous situation is required. A particular channel is considered rich when it is able to handle a complex communication process (Daft et al., 1987). Therefore, face-to-face and telephone are considered to be rich channels while written media such as communication through the website are lean (El-Shinnawy & Markus, 1998). Other studies indicate that richer media are not always preferred due to task ambiguity. For example, Saeed, Yang, and Sinnappan (2010) report that studies investigating channel selections for learning process reach different conclusions. While some studies recommend that specific channels are used for a specific task of learning because they are more effective in terms of outcomes, others conclude that outcomes of learning are similar using different media. Thus, individuals’ perception influences their channel selections regardless of the type of tasks. As government services can be delivered through multiple channels, we argue that media richness associated with each channel will influence the extent of using e-government services by individuals.

2.3 National Culture

Existing e-commerce and e-government literature streams acknowledge that culture at the individual, organisational and national levels is an important issue which can affect human behaviour, perception and attitude. Despite such recognition, a widely accepted definition of culture is difficult to find. Culture as shared values is the most dominant view in interpreting culture. According to Leidner and Kayworth (2006), different studies have identified a set of values that exist in every nation but vary in their degrees. One of which is national cultural framework developed by Hofstede (1984). According to him, four dimensions are important to distinguish one culture from another: power distance, uncertainty avoidance, individualism, and masculinity. Hofstede (1991) defines power distance as the unequal distribution of power between members in their nations. Individualism refers to culture that prioritizes the individual’s desires and goals over society’s goals. Uncertainty avoidance simply refers
to the degree of uncertainty and ambiguity perceived by individuals from their communities. Masculinity refers to the clear distinction between genders in terms of social roles.

3. RESEARCH MODEL DEVELOPMENT

Figure 1 illustrates the proposed model. It includes three dependent variables (i.e. intention to use e-government websites for information, intention to use e-government websites for transaction, and intention to use e-government websites for participation), another three independent variables (i.e. ease of use, media richness, and usefulness) and national culture as a moderating variable.

![Research Model Diagram](image)

Figure 1: The proposed research model

Two of the independent variables (shown in the left-hand side of Figure 1) are derived from TAM. TAM however has been criticised for its simplicity (Salovaara & Tamminen, 2009). Some researchers argue that TAM to be too simplistic as it neglects other determinants of system usage such as social and cultural factors (Bagozzi, 2007). We do believe that other factors need to be included. However, this paper only focuses on media features that could be investigated by combining TAM constructs. In addition, several studies (e.g. Fu, Farn, & Chao, 2006; Schaupp, Carter, & McBride, 2010) investigating e-government services usage by individuals indicate that both ease of use and usefulness have major positive influences on behavioural intention to use. Drawing on these arguments, the following hypotheses are developed:

H1a: Ease of use has a positive influence on individuals’ intention to use e-government websites for information purpose.

H1b: Ease of use has a positive influence on individuals’ intention to use e-government websites for transaction purpose.

H1c: Ease of use has a positive influence on individuals’ intention to use e-government websites for participation purpose.

H2a: Usefulness has a positive influence on individuals’ intention to use e-government websites for information purpose.

H2b: Usefulness has a positive influence on individuals’ intention to use e-government websites for transaction purpose.

H2c: Usefulness has a positive influence on individuals’ intention to use e-government websites for participation purpose.

Existing e-government research reports that individuals intend to use different communication channels to contact government agencies (Pieterson & Ebbers, 2008). Media features such as ease of use are widely discussed as justifications for the use of different channels for different purposes (Thomas & Streib, 2003). However, the role of media richness in conjunction with media features has
not been adequately examined for individuals’ intention to use government websites for the three types of e-government services. It is more likely that media richness has its impact on individuals’ intention to use government websites for e-government services. This argument is supported by the findings that behavioural intention towards online services such as e-commerce (Brunelle & Lapierre, 2008) and e-learning (Saeed & Sinnenappan, 2009) is influenced by individuals’ perception of media richness. These studies also conclude that media richness influences ease of use and usefulness. Therefore, the following hypotheses are proposed:

H3a: Media richness has a positive influence on individuals’ intention to use e-government websites for information purpose.

H3b: Media richness has a positive influence on individuals’ intention to use e-government websites for transaction purpose.

H3c: Media richness has a positive influence on individuals’ intention to use e-government websites for participation purpose.

H4: Media richness has a positive influence on ease of use and usefulness of e-government websites.

Despite having some criticism of the framework, existing IT discipline continues to use Hofstede’s framework on cultural values. The sustained use and empirical evaluations of Hofstede’s framework by other researchers indicates that this framework can be a reliable theoretical foundation for studying human behaviour (Ford, Connelly, & Meister, 2009). E-government literature however has not explicitly integrated national cultural characteristics with factors that affect the intention to use e-government services. Based on the argument that cultural traits are best examined as factors moderating the relationship between behavioural intention and other independent variables (Yoon, 2009), the four dimensions will be operationalized as moderating factors to explore their effects on individuals’ intention to use e-government services. The following hypotheses are thus developed:

H5: Power distance, Individualism, uncertainty avoidance and masculinity will moderate the relationship between ease of use and individuals’ behavioural intention to use e-government websites.

H6: Power distance, Individualism, uncertainty avoidance and masculinity will moderate the relationship between usefulness and individuals’ behavioural intention to use e-government websites.

H7: Power distance, individualism, uncertainty avoidance and masculinity will moderate the relationship between media richness and individuals’ behavioural intention to use e-government websites.

4. RESEARCH METHODOLOGY

A mixed research method was followed to develop and refine the model. A conceptual analysis was used to derive an initial model from e-government literature analysis which was subsequently refined through an online discussion forum. A total of seven participants (including five academics specialised in e-government research and two government officials working at public sector) were involved in the online discussion forum to comment on the research model. All factors included in the model have received positive comments and supports from these participants and no further changes were required in the research model. The second stage is the development and distribution of the survey based on the model. After the refinement of the model, we have then generated a survey instrument which has undergone two rounds of pre-testing. The development of the survey instrument as well as pre-testing process is described below.

5. SURVEY INSTRUMENT DEVELOPMENT

Conducting a successful data collection using a survey questionnaire begins with a good design of the survey instrument. Compared to other relevant issues such as identifying a representative sample size,
survey design is an important step for the survey development process which has major impacts on improving the results of the survey questionnaire (F. Fowler, 1998). A high quality survey design is important to sustain respondents’ willingness to complete it. The quality of survey development includes the ability of researchers to form questions that can be both understood by participants as well as valuable to give them information they need (Baker, 1999). Due to the common view that questionnaire design is vital for any survey, social science scholars have developed guidelines and strategies to assess researchers to build their surveys. For example, Chow (2005) suggests that a proper questionnaire must include four parts: the preamble, the background data part, the questionnaire proposer and instructions. The preamble is a statement that explains the purpose and aim the researchers want to achieve by collecting data. The background information section includes a set of questions to identify participants’ demographic characteristics. Chow (2005) asserts it is important to not to ask questions that are sensitive or unethical. This section should be developed with a cautious and questions need to be chosen carefully. The third part of the survey is the questionnaire proper. Although this section might include open-ended questions, questionnaires in general organised in the form of structured questions using different measures scales to answer them. The last part of the questionnaire is other necessary instructions in some surveys. Chow (2005) states that an example of instruction is a statement given after a Yes-No question to either continuing the questionnaire in sequence or jumping to another section based on a specific answer given by respondents. Drawing on the suggestions by (Chow, 2005), the survey instrument developed for this research includes three parts: the preamble, the background information, and the questionnaire proper.

The preamble section includes both the aim of the survey and the structure of the survey stated in two short statements to encourage participants to read them. In addition, a note that all responses will be kept confidential is highlighted to eliminate any concerns by participants. The background information section involves about participants’ demographic characteristics such as age and gender and their experiences in using the Internet and online government services. The questionnaire proper consists of questions relevant to the dependent and independent factors. Closed-ended questions required fixed answers based on a fixed scale are used. Unlike open-ended questions, closed-ended questions are more suitable for a survey because they are easy to answer and don’t require follow-up questions that only can be done via interviews (F. J. Fowler, 2009). The closed-ended questions are represented by developing a set of statements (items) identified from relevant literature sources. The items operationalize all variables in the research model. It is vital that the items are clear and easy to understand so that participants do not have any confusion. Thus, items were chosen carefully and reworded to suit our research objectives. As the survey will be disturbed with the cooperation of local councils, items were modified to investigate individuals’ intention towards municipal websites. Table 1 shows all items identified for each variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Item (literature source)</th>
</tr>
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<tbody>
<tr>
<td>Usefulness (U)</td>
<td>U1: I think municipal websites would provide a valuable service for me (Carter, 2008).</td>
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<td></td>
<td>U2: I believe that municipal websites would enhance my effectiveness in using government services (Carter, 2008).</td>
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<tr>
<td></td>
<td>U3: I would find municipal websites useful to me (Carter, 2008).</td>
</tr>
<tr>
<td>Ease of Use (EU)</td>
<td>EU1: I believe that learning to interact with municipal websites would be easy for me (Carter, 2008)</td>
</tr>
<tr>
<td></td>
<td>EU2: I believe that interacting with municipal websites would be a clear process (Carter, 2008)</td>
</tr>
<tr>
<td></td>
<td>EU3: I believe that it would be easy for me to become skilful at using municipal websites (Carter, 2008)</td>
</tr>
<tr>
<td>Media richness (M)</td>
<td>M1: Municipal website allows me to communicate with municipals quickly (Lai &amp; Chang, 2011).</td>
</tr>
<tr>
<td></td>
<td>M2: Municipal website allows me to choose contents depending on demand</td>
</tr>
</tbody>
</table>
Variable | Item (literature source)
---|---
| (Lai & Chang, 2011).
M3: Municipal website includes contents such as voice and video (Lai & Chang, 2011)
M4: Municipal website allows me to use varied language (Lai & Chang, 2011).

Intention to use government websites for information (I) | I would use local government websites for seeking information on services provided by local government (Layne & Lee, 2001).
I would use local government websites for finding details on people working in local government departments (Layne & Lee, 2001).
I would use local council websites for finding information on policies of local government (Layne & Lee, 2001).
I would use local council websites for downloading forms (Layne & Lee, 2001).
I would use local council websites for finding government reports (Layne & Lee, 2001).

Intention to use government websites for transaction (T) | I would use local council websites for making payment (Layne & Lee, 2001).
I would use local council websites for completing online forms (Layne & Lee, 2001).
I would use local council websites for tracking my applications/queries (Layne & Lee, 2001).

Intention to use government websites for participation (P) | I would use local council websites to make comments on policies (Layne & Lee, 2001).
I would use local council websites to participate in online surveys (Layne & Lee, 2001).
I would use local council websites for voting (Layne & Lee, 2001).

| Table 1: Items developed from relevant literature sources

6. QUESTIONNAIRE PRE-TEST

Baker (1999) describes two stages of pre-test: preliminary pre-test and formal pre-test. Preliminary pre-test is to identify any questions that are difficult to understand. Baker (1999) states that “preliminary pre-test might be done with friends or acquaintances who agree to take the questionnaire” (p. 210). The formal pre-test is conducted before the distribution of the survey. Baker (1999) asserts that it should be as similar as the final questionnaire distribution. At this stage of pre-test, the objectives are to identify specific items in the survey that are skipped, items that have the same answers, and open-ended questions that are answered vaguely. For this research project, we have therefore performed both preliminary and formal pre-tests. For preliminary pre-test, seven individuals who possess a higher degree and have some research experience are chosen. The choice of seven participants is considered adequate according to Bickman and Rog (1998) who suggested the number to be between 5 and 20. For the formal pre-test, a sample size of about 20-70 is recommended (Czaja, 1998).

The preliminary pre-test was conducted by recruiting seven participants who are PhD candidates and graduated postgraduate students. They were chosen because they are familiar with similar research projects that involve data collection using surveys. One to one pre-test was performed in which each participant was asked to look at the questionnaire and provide his/her comments about the clarity of items as well as the survey structure and design. Although the structure of the survey seems to not
accommodate many changes, four items were rewarded based on participants’ suggestions. The modified items are shown in Table 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Rephrased item</th>
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<tr>
<td>(U2) I believe that local council websites would enhance my effectiveness in using government services.</td>
<td>I believe that using local council websites meets its expected benefits.</td>
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<tr>
<td>(EU2) I believe that interacting with local council websites would be a clear process.</td>
<td>I believe that interacting with local council websites would be/ is a clear action.</td>
</tr>
<tr>
<td>(EU3) I believe that it would be easy for me to become skilful at using local council websites.</td>
<td>I believe that it would be easy for me to use local council websites.</td>
</tr>
<tr>
<td>(M1) I believe it is important that local council websites allow me to communicate with local council quickly.</td>
<td>I believe it is important that local council websites allow quick communication.</td>
</tr>
</tbody>
</table>

Table 2: Modified items after the preliminary pre-test

The formal pre-test was conducted in a leading university in Australia. A total of 30 participants involving students and employees completed the survey questionnaire. No particular patterns such as skipping items were noticed. Thus, the survey resulted from the preliminary test was considered acceptable.

As we seek to evaluate the model (Figure 1) across two different cultural contexts (Australia and Saudi Arabia), the final survey questionnaire was translated. Back translation technique suggested by McKay et al. (1996) is used for this purpose. It is described by Bernard and Bernard (2012) as the technique in which the survey questionnaire is translated from the source to target language by a bilingual person. Then, another bilingual person translates the questionnaire back to the source language. Both versions of the survey need to be matched. If they are different, researchers need to work with the people who translated the survey and try to solve any problems.

7. CURRENT STATUS

A survey has just been administrated in a large city in Saudi Arabia. A total of six local councils participated in the research project and helped us in distributing the survey through their offices. After explaining the purpose of the survey, participants were allowed to take the survey home, complete it and then return it in their next visits to the councils. A total of 270 survey responses were received. At this stage, we are entering the data collected from the Saudi case into SPSS software. In the meantime, contacts have been established with local councils in Australia to facilitate the distribution of the survey among residents and citizens.

8. CONCLUSION

In this research-in-progress paper, we have proposed a model that integrates both media features and media richness to understand how behavioural intention of individuals (in a cross cultural context) differs towards accessing three broad types of e-government services. Based on the model, a survey instrument has been derived which was then refined through pre-testing. The final survey instrument was distributed among a group of 500 residents in a large city of Saudi Arabia. We are now currently entering data in SPSS based on 270 completed survey responses. We believe that the findings of this research project (once data analysis is completed) are expected to contribute to e-government research by determining the effect of media richness on behavioural intention. The results of data analysis are also expected to aid government organisations in both Australia and Saudi Arabia to better understand their residents’ perceptions of e-government services. This research project therefore is important for decision makers in both governments to evaluate and refine the online services.
9. REFERENCES


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