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A cross-cultural comparison of Kuwaiti and British citizens' views of e-government interface quality

Adel M. Aladwani *

Department of QM & IS, College of Business Administration, Kuwait University, Kuwait

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ABSTRACT

It is difficult to conceive how Web users from different cultures can be encouraged to reap the benefits of an e-government initiative when its portal is suffering from culture-indifferent interface quality. Thus far, the e-government literature not only has paid scanty attention to web evaluation issues but also has been slow to embarking on cross-cultural research. As an attempt to address this concern, this investigation introduces an augmented approach to analyze cross-cultural website quality. The proposed approach consists of three parts: 1) a qualitative study of the website using content analysis, 2) an empirical evaluation using traditional statistical methods of perceptions of website users, and 3) a "persuasive quality gap" analysis that examines the gap between the composite scores of perceived importance and performance of quality attributes across the studied two cultures. These analyses were used to identify cross-cultural differences between Kuwaiti and British users' perceptions of e-government quality attributes. While the findings showed no significant differences between Kuwaiti and British users in terms of important quality features, the results revealed significant variations between the two groups in terms of perceived performance of quality attributes. Moreover, although the findings showed marginal support for the existence of differences between the two samples in terms of persuasive quality features, a post-hoc analysis of the persuasive quality gap revealed a need to consider not only important and/or high performing characteristics but also persuasive features to fully understand cross-cultural e-government quality variations. The author discusses the implications of these results for e-government design practices and future research.

1. Introduction

It is difficult to conceive how web users from different cultures can be encouraged to reap the benefits of an e-government initiative when its portal is suffering from culture-indifferent interface quality. Failing to convince the users of the compatibility of the interface quality of e-government with their preferences will eventually lead to its practical failure (Aladwani, 2011). Undoubtedly, designing a quality interface for the e-government portal is an overwhelming undertaking on its own. According to a recent survey, 97% of e-government websites suffer from some sort of interface quality problem (reported in Tan & Benbasat, 2009). However, it could become even a more complicated task when the website is supposed to serve users from two or more different national cultures. This is largely so because users from dissimilar cultures view the importance of diverse website interface elements differently (Tsikriktsis, 2002). Unfortunately, the e-government literature not only has paid little attention to web content evaluation (Heeks & Bailur, 2007) but also has been slow on embarking upon cross-cultural research. Governments would appreciate any help from academic/consultation circles to elevate the cultural responsiveness of their websites to match the expectations of a variety of visiting user groups. The present investigation is an attempt in this direction.

Recently, some researchers have tried to understand the different issues involved in designing a quality interface for an e-government gateway within the context of a particular community or country (e.g., Barnes & Vidgen, 2004; Shi, 2007; Tan, Benbasat, & Cenfetelli, 2008; Teo, Srivastava, & Jiang, 2008; Wang & Shih, 2009; Wangpipatwong, Chutimaskul, & Papasratorn, 2009). However, this fruitful stream of research requires increased expansion to cross-examine two or more national cultures simultaneously to become even more rewarding to designers and researchers interested in Web-based public services.

Unfortunately, the scholarly endeavors examining cross-cultural website quality have thus far focused not only on online businesses (e.g., Cyr, 2009; Cyr, Head, & Larios, 2010; Kim & Kuljis, 2010; Singh, Zhao, & Hu, 2005; Yoon, 2009) but also on analyzing either the *importance* or *performance* of interface quality attributes using one research design (e.g., Aladwani, 2003; Barnes & Vidgen, 2004, 2006; Cyr, 2009; Cyr et al., 2010; Kim & Kuljis, 2010; Singh et al., 2005; Verdegem & Verleye, 2009; Wang, 2006; Yoon, 2009). If importance and performance scores are considered together, the scores will be more meaningful than when ratings are analyzed separately

* Corresponding author. Fax: +965 2483 9406.
E-mail address: adel.aladwani@ku.edu.kw.

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(Martilla & James, 1977). Furthermore, Heeks and Bailur (2007, p. 262) called for the utilization of "a broader range of research methods to develop a richer range of data on e-government." Little previous attention from the e-government literature has focused on multi-design studies that simultaneously consider users' quality importance-perceptions and performance-ratings in a cross-cultural setting. Expanding prior research to cover unexplored research methods, national cultures, and/or organizational types offers new insights for interested e-government practitioners and academics alike.

The current investigation informs on the role national culture plays in shaping citizens' views of important and high performing e-government interface quality features by cross-examining these perceptions between Kuwaiti and British users. To achieve this objective, the study adapts Aladwani and Palvia's (2002) interface quality scale to tap users' perceptions of these features and consults Hall's (1976) and Hofstede's (1980) works to analyze relevant cultural issues. In addition, the article builds on the works of Martilla and James (1977) and Gupta and Govindarajan (1984) to introduce the concept of "persuasive quality gap" to pinpoint areas of improvement in a website for an enhanced cultural e-government design by suggesting culturally sensitive guidelines for designers of e-government websites based on a comparative analysis of two culturally diverse groups of users. In sum, this manuscript seeks to address the following three overall questions:

1) Do Kuwaiti and British users perceive the importance of e-government quality attributes differently?
2) Do Kuwaiti and British users rate the performance of e-government quality attributes differently?
3) Is there a significant gap between Kuwaiti and British users' persuasive quality scores?

The remainder of this manuscript is structured as follows. The next section delineates the theoretical background of the current study. Section three describes the research methodology. Section four presents the findings of two studies, a qualitative evaluation and a quantitative study of two versions of an e-government website. Finally, section five discusses the research and managerial implications of these findings.

2. Theoretical background

2.1. Cultural website quality: where we stand?

Over the years, scholars have made some attempts to explore important issues involved in designing a quality interface for an e-government gateway in a given region or country; for example, in China (Shi, 2007), Singapore (Teo et al., 2008), Taiwan (Wang & Shih, 2009), Thailand (Wangpipatwong et al., 2009), UK (Barnes & Vidgen, 2004; Kuzma, 2010), and the USA (Olalere & Lazar, 2011; Tan et al., 2008), among others. The aim of this stream of research is to suggest specific guidelines for a specific country/culture. Although this research is fruitful, it needs increased expansion to cross-examine two or more national cultures simultaneously to become even more rewarding to interested designers and researchers of Web-based public services.

Lately, some researchers have contributed to our understanding of cross-cultural website quality issues. For example, Ganguly, Dash, Cyr, and Head (2010) studied the differences between Indians and Westerners' perceptions of the influence of navigational, informational, and visual design elements on trust, risk, and purchase intentions. The authors found that informational and visual design features influence trust only in the Western sample. Sia et al. (2009) studied website-related predictors of users' internet shopping decisions within a cross-cultural context and found that the influence of perceived trust in a portal on intentions to purchase was significant in the Australian sample but not significant in the Hong Kong sample. Ahmed, Mouratidis, and Preston (2008) analyzed Malaysian and British websites belonging to tourism, education, and banking sectors and found considerable differences in cultural values on the studied websites. Sinkovics, Yamin, and Hossinger (2007) examined the websites of 100 German multinational companies operating in the US, UK, and Latin America and found evidence of cultural variability in the websites examined. Noiwan and Norcio (2006) investigated the effects of animated graphic colors on attention and perceived usability of users from the USA and Thailand. They found evidence of the influence of national culture on overall performance, overall retention, and overall self-reports on usability. Wurtz (2005) analyzed various McDonald's websites across the world using Hall's high/low communication context dichotomy of culture and found that the sites differ in a variety of ways. Lo (2005) conducted a study on the cultural impact of the design of e-commerce websites from China and the USA. A study conducted by Singh and Baack (2004) performed a content analysis of 95 American and Mexican websites and found that it is not enough to just translate a website into a local language for developing global websites. Singh, Xhao, and Hu (2003) compared domestic and Chinese versions of websites for 40 U.S. companies and found that the Web is not a culturally neutral medium. Krauss, Loiacono, and Kasouf (2001) studied the cross-cultural differences and similarities of Siemens Corporation's U.S. and German business customers with regards to website quality perceptions. Bourges-Waldegg and Scrivener (2000) assessed the efficacy of an approach for designing a website sensitive to culturally diverse user groups. Marcus and Gould (2000) provided a theoretical discussion of the implications of Hofstede's cultural dimensions for global Web user interface design.

The above overview of past research addressing cultural website quality issues can be extended in a number of ways. First, as prior investigations were carried out in a commercial context, it would be interesting to explore the differences, if any, in website quality in a cross-cultural e-government setting. Given the fact that some studies suggest differences between public and private organizations' assimilation of technology (Aladwani, 2002) and given that there are differences between e-government and e-business websites in terms of quality (Morgeson & Mithas, 2009), it would be reasonable to explore whether these research findings are applicable to a cross-cultural e-government quality context.

Second, past cultural website quality studies employed several research designs in which they highlighted the most important quality features of a website or estimated the website's performance along these features. The current article extends the previous research by conducting an augmented approach involving content analysis, multivariate analysis of variance (MANOVA), and an extension of importance-performance analysis (Martilla & James, 1977), which the author calls a persuasive quality gap to facilitate comparisons across study groups.

The importance-performance grid, according to Martilla and James (1977), is a technique used to measure users' acceptance of certain features/attributes of a studied marketing object. The authors explain that the technique usually asks the users to answer two questions about each feature/attribute: 1) How important is the feature? 2) How good is the performance of the feature? The respondents' mean importance and performance perceptions of the studied attributes are then graphically displayed in a two dimensional grid, which can be divided into four quadrants: 1) concentrate here (high importance-low performance), 2) keep up the good work (high importance-high performance), 3) low priority (low importance-low performance), and 4) possible overkill (low importance-high performance). Mean attribute scores falling in the first quadrant, for example, indicate that things are not going as well as we had hoped, while mean attribute scores falling in the second quadrant indicate that things are going well and in our favor. Using the information in the grid, the researcher or manager can identify strengths and

problematic areas and can make appropriate decisions to foster or counter the situations.

The persuasive quality gap is an extension of the above-described importance-performance grid and the methodology proposed by Gupta and Govindarajan's (1984). The gap can be derived by calculating the difference between persuasive quality scores across the two studied groups/countries (Kuwait and the UK). The persuasive quality score itself represents an index that estimates e-government quality attribute performance weighted by perceived importance of the same. In other words, the persuasive quality score measures citizens' perceptions of the joint effects of e-government quality attribute importance and performance ratings. Every attribute in each of the studied groups has a separate persuasive quality score. The gap can be used as a diagnostic tool to identify issues needing more attention from designers interested in developing a culture-sensitive e-government website. The premise underlying the analysis of the persuasive quality gap is that citizens' perceived interface quality performance cannot be understood without considering their perceived importance of the same. This approach allows for combining the effects of interface quality importance and performance to facilitate a deeper understanding of cultural e-government quality similarities and differences.

2.2. Interface quality measurement

When studying the quality of a given website, a researcher can focus on users' evaluations of the website's user-oriented activities (Kaylor, Deshazo, & Van Eck, 2001) or interface design elements (Aladwani & Palvia, 2002). From the activities or functionalities perspective, government and commercial websites serve different purposes and, thus, must implement – and present to their users – different services or functions (Tan & Benbasat, 2009). Consequently, studying an e-government website from an activity-view requires the use of an instrument designed specifically for such websites. While this approach may be sometimes helpful, it may also hinder the much needed theoretical accumulation in the field. From the interface side, an e-government gateway is similar to any e-commerce website (Stratford & Stratford, 2000) in that it must meet a certain level of technical, content, and aesthetic quality characteristics. Unlike the activities perspective, the interface view is more generic in nature and does not require an instrument designed specifically for evaluating the studied website. Empirical evidence exists supporting the applicability of interface-based quality metrics tested in a commercial context can help in evaluating the interface quality of an e-government portal (Wang, 2006). Accordingly, the focus of the current article is on interface quality elements of the e-government portal.

During the past decade, researchers have made several attempts to develop generic instruments for measuring website interface quality (for a review, see Papadomichelaki and Mentzas's study). The basic premise of these models is that having a quality website is a powerful strategy that can be used to positively affect the visiting/transacting experience of users and, hence, encourage them to do business with the company. For example, Aladwani and Palvia (2002) developed a 25-item instrument to assess user-perceived Web quality (PWQ) based on an extensive literature review and psychometric evaluations. Barnes and Vidgen (2002) examined students' evaluations of Amazon, BOL, and the internet Bookshop websites and suggested a 22-item quality scale, while Palmer (2002) proposed a five-factor scale that includes download delay, interactivity, information/content, organization/navigation, and responsiveness. Recently, Papadomichelaki and Mentzas (2012) proposed a 21-item e-government quality scale that consists of four dimensions: efficiency, trust, reliability, and citizen support. Table 1 summarizes the content of the six major website quality instruments reviewed in this study.

Although Barnes and Vidgen's scale offers valuable insights into key website quality attributes, it raises some important validity questions that must be addressed (Parasuraman et al., 2005). Additionally, despite its high value, Palmer's scale did not capture many of the interface quality attributes. While Papadomichelaki and Mentzas's instrument is also an important attempt, it can benefit from additional attention toward validity issues. For example, one could argue that a "citizen support" item such as "Employees have the knowledge to answer users' questions" is not as much a dimension of e-government interface quality as it is a dimension of staff quality. This is not to say that staff quality is not an important dimension of the general concept of e-government quality, but it simply clarifies that it is not directly related to e-government interface quality. In a similar vein, one could reason that items tapping quick download capabilities indicate e-government efficiency rather than reliability. These reasons led the author to look for a psychometrically valid, adequately tested instrument with a specific focus on measuring interface quality. Therefore, the author adopted a short version of Aladwani and Palvia's generic interface quality instrument that focused on technical, content, and aesthetic dimensions (Aladwani, 2003). Wang (2006) examined the psychometric stability of the full instrument and its original items in an e-government setting using confirmatory factor analysis and found strong evidence of the instrument's overall and scale-level reliability and validity. The instrument used in the present study consists of three of the four scales tested by Wang:

1) Technical quality encompasses such features as security, ease of navigation, ease of accessing the site, search facilities, availability, valid links, speed of page loading, personalization, customization, and interactivity;
2) Content quality includes such characteristics as content usefulness, completeness, clarity, currency, conciseness, and accuracy;
3) Aesthetic quality covers such attributes as attractiveness, organization, proper use of fonts, proper use of colors, and proper use of multimedia.

2.3. Arabic versus British cultures and interface quality

National culture describes the shared way of thinking and behaving unique to a particular human group (G. Hofstede, 1980). These cultural differentiators underwent an extensive examination from scholars with the aid of several frameworks, among which are those suggested by Hall (1976) and Hofstede (1980). Edward Hall introduced the high-low context theory, which divides societies into two groups: high-context cultures and low-context cultures. In high-context cultures, there is less reliance on verbal communications and more dependency on non-verbal cues derived from the situation in which the communication session occurs. In low-context cultures, the society is characterized by having more formalized communication preferences; thus, individuals prefer to convey information in verbal forms, i.e., via words. In his book, Hall considered Western European and North American countries, among others, as low-context cultures, and considered African, Asian, and Middle Eastern countries, among others, as high-context cultures. Moreover, in his seminal works on cross-cultural management, Hofstede (1980) identified four major dimensions of national culture along which societal differences could be explained and understood:

1) Power distance, or the extent to which power is distributed equally;
2) Uncertainty avoidance, or the extent to which people feel threatened by equivocal situations;
3) Individualism/collectivism, or the extent to which people tend to look after themselves and their immediate circles; and
4) Femininity/masculinity, or the extent to which people assign different roles to males and females.

Hall's and Hofstede's research programs have implications for studying the way users in the UK and Kuwait react in a given e-government context. Consider, for example, Hall's characterization

Table 1
The top 5 most-cited website quality instruments.

Study	Interface quality			Service quality
	Technical	Content	Aesthetic	
(Aladwani & Palvia, 2002)	1. Perceived security 2. Ease of navigation 3. Adequate search facilities 4. Availability 5. Valid links 6. Personalization/customization 7. Speed of loading 8. Interactivity 9. Ease of access	1. Usefulness 2. Completeness 3. Clarity 4. Currency 5. Conciseness 6. Accuracy	7. Attractiveness 8. Organization 9. Proper use of fonts 10. Proper use of colors 11. Proper use of multimedia	12. Customer policies 13. Customer service 14. Offered products/services 15. General details 16. Contact details
(Barnes & Vidgen, 2002) [a, b, c]	1. Usability (easy to operate, understandable interaction, easy to navigate, easy to use)	2. Information quality (accurate, believable, timely, relevant, easy to understand, right information detail, appropriate format)	3. Usability Design (attractive, appropriate, creates a positive experience)	4. Service interaction quality – empathy (a sense of community, personalization) 5. Service interaction quality – trust (safe, secure, delivery confidence, good reputation)
(Loiacono, Watson, & Goodhue, 2002) [c]	1. Interactivity 2. Trust 3. Response time 4. Intuitive operations 5. On-line completeness 6. Alternative channels (relative advantage)	7. Informational fit-to-task 8. Ease of understanding	9. Visual appeal 10. Emotional appeal 11. Image of innovativeness	12. Consistent image
(Palmer, 2002) [c]	1. Download delay (access time, display rate) 2. Interactivity (customization, interactivity)	3. Information/content (product information, variety of products)	4. Organization/navigation (organization, sequence, layout, arrangement)	5. Responsiveness (FAQ, feedback)
(Parasuraman, Zeithaml, & Malhotra, 2005) [c]	1. Efficiency (ease of navigation, speed of loading, well organized, etc.) 2. Availability (does not freeze, does not crash, etc.) 3. Privacy (protects information about credit cards, browsing behavior, shopping details)			4. Fulfillment (delivers as promised, quickly, truthfully, etc.) 5. Responsiveness (items returns, guarantees, problems, etc.) 6. Compensation 7. Contact (online customer support, etc.)
(Papadomichelaki & Mentzas, 2012) [c]	1. Efficiency (clear and easy, effective search, organized, customizable, detailed, fresh, and complete) 2. Reliability (speedy download, accessible, in-time service, compatible with browser, etc.) 3. Trust (secure, authentication, archived securely, etc.)			4. Citizen support (employees are sincere, responsive, knowledgeable, and conveying trust)

[a] Barnes & Vidgen considered factors 1 & as part of (usability) and categorized trust under service interaction quality. They deleted 2 items based on Pitt's guidelines.
[b] Convergent, discriminant, and predictive validity tests are missing.
[c] Factor-level details; sample attributes are reported between parenthesis. Mapping factors into interface or service quality categories is the author's suggestion.

Table 2
Hofstede's cultural scores (Arab countries versus UK)[a].

Cultural dimension	Definition	Arab countries score +	Great Britain score +
Uncertainty avoidance	The extent to which people feel vulnerable in ambiguous situations	68	35
Power distance	The extent to which people expect and accept hierarchical order	80	35
Individualism/collectivism	The extent to which a society gives emphasis to the role of the individual	38	89
Masculinity/femininity	The extent to which a society emphasizes masculine values	53	66

[a] Adapted with minor modifications from Hofstede (1993); + Min = 0, Max = 100.

of communication preferences in high and low context cultures. Kuwaitis, as part of a high-context culture, are expected to use indirect communication strategies while the British because they belong to a low-context culture, are expected to prefer a direct communication approach. This implies that Kuwaitis may feel comfortable with an e-government website that is characterized by lengthy descriptions and elongated content, while the Brits may prefer a website with a succinct content. Furthermore, consider the contrast between the national culture of Kuwait (an Arabian Gulf country) and that of a Western European country such as UK, as described by Hofstede's framework and as summarized in Table 2. The table shows that Kuwait scores high on power distance (80 out of 100), which means that people expect and accept an unequal distribution of power. In addition, it scores 38 in the individualism dimension, suggesting that Kuwait is considered a collectivistic society that values extended relationships. As this small Arab country scores 52 on the masculinity/femininity dimension, it is considered a masculine society. Additionally, Kuwait scores 68 on the uncertainty avoidance dimension and thus, it has a high preference for avoiding ambivalent and insecure situations. The table also shows that Britain scores 35 on power distance, which suggests that the British society believes that inequalities among people should be minimized. Britain also scores 89 on the individualism dimension, thus suggesting that the country ranks among the highest of individualist countries. At 66, the UK is considered a masculine society, while at 35 on the uncertainty avoidance dimension, the individuals in this country are comfortable in equivocal situations.

According to Furrer, Liu, and Sudharshan (2000), countries with high power distance attach greater importance to responsiveness, while countries with high uncertainty avoidance and masculinity attach greater importance to tangibles, and those with high individualism attach greater importance to the efficiency of the service. Moreover, according to Donthu and Yoo (1998), users in individualistic cultures demand more specialized attention and care given to them than do users in collectivistic cultures. Table 3 summarizes some of the cultural issues in website design, according to Marcus and Gould (2000), and this table further suggests, for example, that in high power distance countries, users may prefer to access information in a highly structured manner. In contrast, in low power distance countries, users may prefer to access information in a less-structured way. In addition, the table suggests that while the average user in highly masculine countries may appreciate seeing clearer gender roles in the website, the user in highly feminine countries may prefer to see more blurred gender roles. These characterizations of national culture could furnish the necessary knowledge for understanding how to effectively manage users' reactions to e-government quality features.

3. Research methodology

3.1. Research strategy and sampling

The current study adopted a mixed approach to examine users' perceptions of e-government quality in a cross-cultural context in which both qualitative and quantitative research designs were used. To explore these differences between Kuwaiti and British users, the Arabic and English versions of a well-known Kuwaiti e-government website were selected (Figs. 1 and 2). The author first conducted a

Table 3
Implications of national culture for e-government design [a].

Comparison criteria	High power distance	Low power distance
Access to information	Highly structured	Less-highly structured
Emphasis on the social and moral order (e.g., nationalism or religion) and its symbols	Significant/frequent	Minor/infrequent
Focus on expertise, authority, experts, certifications, official stamps, or logos	Strong	Weak
Importance of security and restrictions or barriers to access	Explicit, enforced, frequent restrictions on users	Transparent, integrated, implicit freedom to roam
Locus of attention/prominence given	To leaders	To citizens, customers, or employees
	High uncertainty avoidance	Low uncertainty avoidance
Emphasis of structure	Simplicity	Complexity
Acceptance of wandering and risk	No	Yes
Navigation control	More	Less
Redundant cues	Yes	No
	High individualism	High collectivism
Motivation based on personal achievement	Maximized	Underplayed
Images of success	Materialistic	Social–political
Emphasis on change	What is new and unique	Tradition and history
	High masculinity	High femininity
Clarity of gender roles	Clear	Blurred
Attention gained through	Competition	Poetry & aesthetic and unifying values appeals
Work motivation is on	Mastery and winning	Cooperation, exchange, and support

[a] Adapted, with minor modifications, from Marcus and Gould (2000).

Fig. 1. The Kuwaiti e-government main page — Arabic version.

Fig. 2. The Kuwaiti e-government main page — English version.

brief content analysis of the two websites looking for any possible general variations in their basic design elements. As content analysis is a broad technique that spans the full spectrum of quantitative and qualitative methods, a researcher commonly makes choices as to the scope and complexity of his or her content-analytic investigation (Neuendorf, 2002). In this inquiry, the author opted to use a qualitative content analysis approach to examine the selected Web pages along the interface quality attributes of interest as they relate to this examination.

A survey-based study was also conducted to further address the issues of interest to this research endeavor. A questionnaire that consists of two sections was used. The first section collected information on the respondents' demographic characteristics. The second section asked the respondents to estimate the performance and the perceived importance of e-government quality attributes on the shorter version of Aladwani and Palvia's instrument to address the context of the current study. To capture the respondents' perceptions of important e-government quality attributes, the questions were phrased so that the answer to each question ranges from (1) "Not important" to (7) "Very important", and to capture respondents' ratings of e-government quality performance, the items were phrased so that the answers were anchored around a seven-point scale ranging from (1) "Low performance" to (7) "High performance". To retain uniformity between the Arabic and English instruments, the original (English) version was translated into Arabic by the author and then back-translated into English by two Arabic researchers who were fluent in English. The author of this study then reviewed the back-translation, compared it to the original English version, and made some minor modifications to the wordings of the questions when necessary.

The instrument was administered to a sample of fifty-five Kuwaiti and fifty-three British users who have previous knowledge of the studied e-government website. Usable responses were collected from all participants. The mean age of the respondents in the sample was approximately thirty-two years (standard deviation = 5.05) for the Kuwaiti respondents and thirty-four years (standard deviation = 6.30) for the British participants. Approximately 71% of the Kuwaitis and 59% of the British are male. The mean Web experience score (on a 3 point scale where 1 = low, 2 = moderate, and 3 = high) in the Kuwaiti sample approached 2.05 (standard deviation = 0.68), and in the British sample, it approached 2.21 (standard deviation = 0.77). The study revealed no significant effect of age, gender, or Web experience on the quality attributes between the two samples.

3.2. Persuasive quality scores and gap

This section describes the formulas used to calculate persuasive quality scores and gaps at the attribute level as well as the relative contribution of each attribute's scores to the overall cultural quality gap. The persuasive quality score is an estimate of e-government quality attribute performance weighted by the perceived importance of the same attribute. The persuasive quality gap is the difference between persuasive quality scores across the two studied groups. The relative contribution of a specific persuasive quality score for a given attribute represents the normalized value of the absolute persuasive quality gap. The formulas for Kuwaiti and British users are calculated as follows.

1) Persuasive Quality Score for the Kuwaiti Sample (PQK)
The average of the j-th persuasive quality score for the Kuwaiti group is given by:

$$PQK_j = \frac{\sum_{i=1}^{n}\left(IK_{ij} \times PK_{ij}\right)}{n}$$

Where IK_{ij} is the i-th data point of the j-th quality importance score for the Kuwaiti group, PK_{ij} is the i-th data point of the j-th quality performance score for the Kuwaiti group, and n is the number of data points.

2) Persuasive quality score for the British sample (PQB)
The average of the j-th persuasive quality score for the British group is given by:

$$PQB_j = \frac{\sum_{i=1}^{n}\left(IB_{ij} \times PB_{ij}\right)}{n}$$

Where IB_{ij} is the i-th data point of the j-th quality importance score for the British group, PB_{ij} is the i-th data point of the j-th quality performance score for the British group, and n is the number of data points.

3) Persuasive quality gap (PQG)
The j-th persuasive quality difference between Kuwaiti and British groups (PQG_j) is given by:

$$PQG_j = PQK_j - PQB_j$$

Where PQK_j is the average of the j-th persuasive quality score for the Kuwaiti group, and PQB_j is the average of the j-th persuasive quality score for the British group.

4) Absolute normalized persuasive quality gap (ANPQG)
The relative contribution of the j-th persuasive quality difference between Kuwaiti and British groups to the overall persuasive quality gap ($ANPQG_j$) is given by:

$$ANPQG_j = \frac{\left|PQK_j - PQB_j\right|}{\sum_{j=1}^{m}\left|PQK_j - PQB_j\right|}$$

Where PQK_j is the average of the j-th persuasive quality score for the Kuwaiti group, PQB_j is the average of the j-th persuasive quality score for the British group, and m is the total number of persuasive quality scores.

5) Normalized persuasive quality gap (NPQG)
The j-th normalized persuasive quality gap between Kuwaiti and British groups scores ($NPQG_j$) is given by:

$$NPQG_j = \frac{PQK_j}{\sum_{j=1}^{m} PQK_j} - \frac{PQB_j}{\sum_{j=1}^{m} PQB_j}$$

$$\text{If } NPQG_j \begin{cases} > 0, & \text{then the gap is in favor of the Kuwaiti group} \\ < 0, & \text{then the gap is in favor of the British group} \\ = 0, & \text{then the gap is neutral} \end{cases}$$

Where PQK_j is the average of the j-th persuasive quality score for the Kuwaiti group, PQB_j is the average of the j-th persuasive quality score for the British group, and m is the total number of persuasive quality scores.

4. Data analysis and results

Summaries of the findings of both studies are presented in this section. A brief content analysis was conducted to identify the general differences between the Arabic and English versions of the e-government website. The goal was to get acquainted with the website's semblance rather than to quantitatively measure website's content. From a technical perspective, little attention to personalization, customization, and interactivity functions has been given in either version. Furthermore, visitors have not been offered mechanisms through which they can control the content or appearance of the websites, which may suggest that the importance in these Web pages is given to the institution rather than to the visitors of these Web pages. In addition, navigation within the Arabic and English pages is highly structured, and the search function is presented in a vague and confusing manner. It is interesting to

Table 4
MANOVA results (importance, performance, and persuasive quality across samples).

			Value	F	Hypothesis df	Error df	Sig.
Component-level test (3 factors)	Importance	Pillai's trace	0.04	1.37	3	104	0.26
		Wilks' lambda	0.96	1.37	3	104	0.26
		Hotelling's trace	0.04	1.37	3	104	0.26
		Roy's largest root	0.04	1.37	3	104	0.26
	Performance	Pillai's trace	0.01	0.51	3	104	0.68
		Wilks' lambda	0.99	0.51	3	104	0.68
		Hotelling's trace	0.02	0.51	3	104	0.68
		Roy's largest root	0.02	0.51	3	104	0.68
Attribute-level test (20 elements)	Importance	Pillai's trace	0.20	1.09	20	87	0.38
		Wilks' lambda	0.80	1.09	20	87	0.38
		Hotelling's trace	0.25	1.09	20	87	0.38
		Roy's largest root	0.25	1.09	20	87	0.38
	Performance	Pillai's trace	0.32	2.07	20	87	0.01
		Wilks' lambda	0.68	2.07	20	87	0.01
		Hotelling's trace	0.48	2.07	20	87	0.01
		Roy's largest root	0.48	2.07	20	87	0.01
Attribute-level test (20 elements)	Persuasive quality	Pillai's trace	0.26	1.50	20	87	0.10
		Wilks' lambda	0.74	1.50	20	87	0.10
		Hotelling's trace	0.35	1.50	20	87	0.10
		Roy's largest root	0.35	1.50	20	87	0.10

note that the main page in each of the two versions of the website has approximately 200 links. Moreover, the differences between the two sites in terms of information content are missing as the English pages are translations of the corresponding Arabic pages. Additionally, in the Arabic version, the symbols of the country occupy approximately 20% of the main page, which suggests the importance of nationalism on this site. In a similar vein, the information chunks in the main page of the Arabic site reflect indirect and laborious communication messages, while the direct and concise messages in the English pages are missing. With respect to aesthetic quality, the main color theme for both sites is white and light yellow, thus indicating a neutral orientation. Furthermore, the site seems to be conservative with respect to multimedia applications, using mainstream communication media to maintain contact with visitors (e.g., SMS, email, and RSS) in both versions. With these overall findings and general understandings in mind, the author embarked upon the second phase of the study, a field survey.

A number of statistical tests were conducted as part of the quantitative study, one of which was MANOVA, a statistical analysis that assesses the variations among means for a number of dependent variables when there are at least two levels (groups) of an independent variable. Table 4 summarizes three MANOVA tests for which the country of the respondents was treated as an independent variable, and the dependent variables were the three main dimensions in the first run, the twenty quality characteristics in the second run, and the twenty persuasive quality characteristics in the third run. It is evident from the table that the component-level test of MANOVA is not significant for both the importance and performance sub-samples ($F_{3,104}$ =, $p > 0.05$). In the attribute-level MANOVA test, while users from the two countries show no significant differences in their evaluation of important components of e-government quality, they differ significantly in their impressions of the performance of all twenty quality attributes ($F_{20,87}$ =, $p < 0.05$). The MANOVA test for persuasive

Table 5
Perceived importance, performance, persuasive quality of e-government across Kuwaiti and British samples.

Quality dimensions & attributes		Kuwaiti sample			British sample			Sig. (I)	Sig. (P)	Sig. (PQ)
		I	P	PQ	I	P	PQ			
Technical	Perceived security	5.55	5.35	29.62	5.38	5.47	29.58	0.57	0.75	0.87
	Ease of navigation	5.13	5.24	26.95	5.36	5.13	27.60	0.12	0.45	0.82
	Search facilities	5.20	5.33	26.02	4.87	5.04	26.15	0.22	0.02*	0.73
	Availability	5.44	5.35	28.96	5.09	5.42	27.62	0.11	0.88	0.34
	Valid links	4.78	4.84	23.15	4.96	5.09	25.32	0.27	0.18	0.15
	Personalization	4.75	4.42	21.00	4.57	4.85	22.08	0.40	0.07	0.50
	Speed of page loading	5.07	4.67	23.78	4.92	5.13	25.04	0.67	0.04*	0.27
	Interactivity	4.58	4.47	20.47	4.60	4.57	21.00	0.69	0.73	0.62
	Ease of accessing the site	4.71	4.75	22.13	4.98	4.89	24.19	0.17	0.57	0.12
Content	Usefulness	4.96	4.75	23.33	4.91	4.75	23.77	0.96	0.98	0.98
	Completeness	4.69	4.64	21.38	5.00	4.42	22.06	0.10	0.26	0.69
	Clarity	4.69	4.78	22.35	4.72	4.40	20.89	0.71	0.02*	0.32
	Currency	4.40	4.31	18.67	4.45	4.47	20.02	0.47	0.47	0.22
	Conciseness	5.05	4.58	22.96	5.00	4.94	24.89	0.93	0.15	0.27
	Accuracy	4.51	4.53	20.22	4.49	4.55	20.64	0.67	0.67	0.99
Aesthetic	Attractiveness	4.38	4.42	19.27	4.57	4.62	21.40	0.31	0.27	0.17
	Organization	4.13	4.18	17.36	4.47	4.34	19.47	0.07	0.41	0.15
	Fonts	4.33	4.49	19.45	4.79	4.91	23.51	0.01*	0.04*	0.00*
	Colors	4.09	4.31	17.49	4.55	4.34	19.83	0.02*	0.82	0.04*
	Multimedia	4.09	4.07	16.42	4.38	3.98	17.57	0.21	0.66	0.30

* $p < .05$; I = importance; P = performance; PQ = persuasive quality.

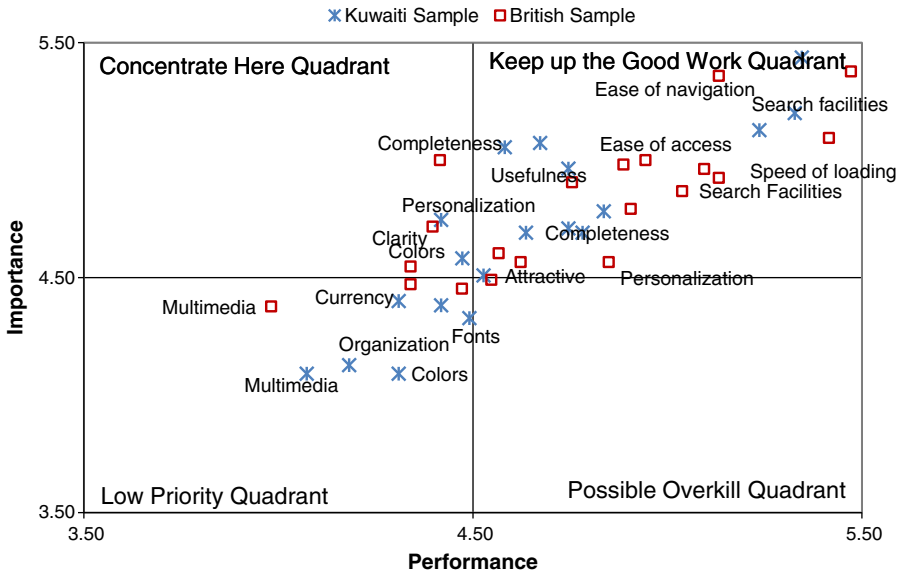

Fig. 3. Importance-performance grid (Kuwaitis versus British users).

quality is not significant. To further explore these differences, the author examined e-government quality differences one attribute at a time. Frequently, a series of ANOVA tests are used to explore these differences; however, following this strategy with many response variables may cause family wise Type I errors to inflate (Harris, 1993). Instead, the author used the Mann–Whitney U test to compare the means of the two groups, as reported in Table 5. In terms of performance variations between the two samples, the table reveals significant perception dissimilarities between Kuwaiti and British users along "Search facilities," "Speed of page loading," "Content Clarity," and "Proper use of fonts". Table 5 also indicates that the two groups of respondents generally agree with regard to the importance of the majority of e-government quality features. A couple of significant differences, assuming a level of significance of .05, can be found in "Proper use of fonts" and "Proper use of colors" items. Interestingly, based on the table, Kuwaitis rate the importance of these features lower than do the British, whereas British users' rate the performance of the website higher than Kuwaiti users on most e-government quality attributes.

The above characterization of importance and performance quality perceptions can be more helpful if accompanied with guidelines demonstrating the fit between the two variables. Fig. 3 depicts the importance-performance grid, which shows that Kuwaiti and British users believe that the Arabic and English websites are performing well with respect to most quality attributes. Nonetheless, Kuwaiti users believe that some of the rated quality attributes in the studied Arabic website fall under the other three quadrants, especially under the "Low Priority" quadrant, e.g., "Currency," "Proper use of colors," "Proper use of fonts," "Website organization," and "Proper use of multimedia". Similarly, the figure reveals that British users view some of the quality attributes of the studied English site as needing more attention, i.e., the "Concentrate Here" quadrant, e.g., "Completeness," "Clarity," and "Proper use of colors." Only a couple of quality attributes, i.e., "Proper use of multimedia" and "Currency" fall under the "Low Priority" category, according to British users' scores.

Finally, the author analyzed persuasive quality scores for the two groups of respondents. Table 5 lists persuasive quality scores of the studied e-government pages and summarized the results of

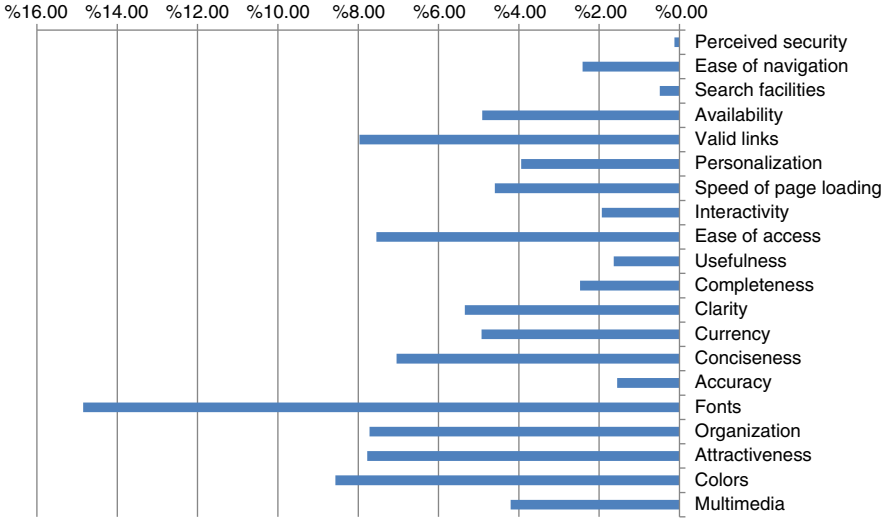

Fig. 4. Which interface quality attribute contributed more to the persuasive quality gap?

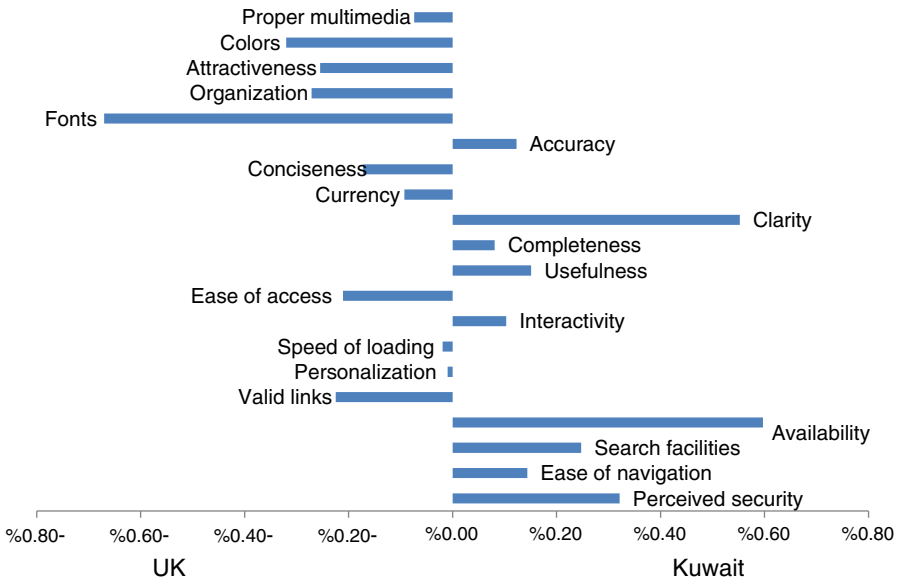

Fig. 5. Which country contributed more to the persuasive quality gap?

comparing the same across Kuwaiti and British samples. The table shows that only "Proper use of fonts" and "Proper use of colors" scores were significantly different between the two groups as the values of both variables were higher in the British group than in the Kuwaiti group.

Moreover, the results of the calculations of formula 4 are reported in Fig. 4. The figure highlights e-government interface quality attributes contributing most to the persuasive quality gap. As previously explained, the results reflect the absolute normalized value of the persuasive quality gap. The figure shows that the maximum relative contribution score to the persuasive quality gap between Kuwaiti and British users was that of "Proper use of fonts" (~15%) and the minimum was that of "Perceived security" (~0.1%). The figure also reveals that most of the contribution to the persuasive quality gap between the two samples is derived from aesthetic quality attributes (~43%).

Fig. 5 shows the degree to which the relative contribution of the persuasive quality gap is attributed to each group of respondents (formula 5). Stated differently, the figure specifies which country contributed more to the persuasive quality gap. Overall, the figure indicates that British participants are more persuaded by the quality of aesthetic attributes, while Kuwaiti respondents are more persuaded by the quality of the technical attributes and content clarity. It is worth noting that Table 5 shows that most of the technical quality values were higher in the British group than in the Kuwaiti group, though the same values are higher in the Kuwaiti sample when the values are normalized, as shown in Fig. 5.

5. Concluding thoughts

This manuscript reports on the findings of a multi-design investigation that aims to understand the connection between national culture and users' perceptions of e-government interface quality. The analyses of data gathered from a content analysis, field survey, and statistical modeling reveal a few interesting results with regard to the interface quality of e-government in a cross-cultural setting.

The first study employed content analysis and revealed a few cross-cultural variations between the Arabic and English versions of the studied website. As explained elsewhere, the aim of this analysis was to be familiar with the website's overall content and appearance. The qualitative content analysis study revealed that the emphasis of both Arabic and English pages focuses more on nationalism and its symbols, such as the Kuwaiti flag, and on highly structured menus, and extensive links. From a national cultural perspective, these design choices reflect that high power distance, uncertainty avoidance, and collectivism have significant influence, as per the findings reported in past research (Aladwani, 2003; Marcus & Gould, 2000) and the cultural assertions of Hofstede. Together, these findings highlight the fact that website designers exerted little effort to develop a website that serves users from Kuwait and the UK that establishes a high quality and more receptive e-government portal.

The second investigation used a survey-based study to examine participants' perceptions of important, high performing, and persuasive e-government quality attributes. The first interesting finding of this field study is that there were no major differences between how Kuwaiti and British users perceive the importance of the studied e-government quality attributes. This result contradicts that of Tsikriktsis (2002), who found a relationship between national culture and users' ratings of importance of website quality. The finding may be attributed to the difference between the two studies in the type of the examined website or in the surrogate used to tap national culture. Tsikriktsis's study was conducted within an e-commerce setting using Hofstede's dimensions to measure culture, while the present investigation focused on e-government using participants' country of origin as an indicator of culture. Alternatively, the result may indirectly reflect the stability of the employed quality scale across the two cultures. Although the author did not test for the validity of the instrument due to a sample size limitation, the comparable importance scores of the two groups along with the support from validity tests reported in several studies coming from different cultures (Al-Qeisi, 2009; Bliemel & Hassanein, 2006; Chang & Chen, 2008; Wang, 2006) backs this assertion.

Moreover, the findings show that there were significant differences between Kuwaiti and British users' perceptions of the performance of the studied e-government portal. The data showed variations between Kuwaiti and British user perceptions of the performance of speed of page loading, search facilities, content clarity, and proper use of fonts. More specifically, Kuwaiti users rated highly the performance of search facilities and content clarity, while British users valued more the website fonts and the speed of page loading. These results may be a result of the cultural differentiators found in the two versions of the examined website. As described earlier, the emphasis on the

Arabic pages occurs more frequently on highly structured menus and expansive content. This design orientation fits well with communication preferences of Kuwaitis as presented by Hall. Furthermore, the simple fonts and loading speed of the website convulses the communication style of the Brits, thus leading them to rate the performance of website fonts and speed higher than the Kuwaitis. These design features may explain the differences between Kuwaiti and British users' performance ratings of the studied e-government portal.

The combined influence of importance and performance or persuasive quality scores may reveal more interesting findings at the attributes-level than either importance or performance values when considered separately. This paper offered a fresh and deeper look at not only important and high performing attributes but also persuasive quality attributes. For example, although "colors" and "fonts" of the analyzed Arabic website are considered as low priority for Kuwaiti users (hence, theoretically, they would deserve less attention of designers), these features have been shown to contribute significantly to the actual cultural quality gap, as reflected by the persuasive quality score. The data showed that 43% of the persuasive quality gap between the two cultures is the result of aesthetic elements including fonts and colors; the highest contribution of these is that of fonts, which accounts for 15% of the overall gap. Interestingly, the fonts and colors persuasive quality scores of the Brits are higher than those of the Kuwaitis.

Furthermore, it is interesting to note the relative contributions of technical and aesthetic interface elements to the persuasive quality gap. It has been shown that users from Kuwait diligently consider technical attributes (and to some extent content clarity) more than they consider other features; and users from a culture similar to the UK's are more attentive to intangible/empathy attributes than to any other features. These findings can be explained in light of the suggestions of national culture theories. According to Hofstede's classification of national cultures (Table 2), Kuwaitis are characterized as having high uncertainty avoidance, while the British are characterized as having low uncertainty avoidance. As per the suggestions of the cultural theory, Kuwaitis are less accepting of risk than the Brits. Consequently, the British, unlike the Kuwaitis, are expected to tolerate an increased level of technical problems, e.g., website unavailability, instability, etc. These results corroborate Furrer et al.'s (2000) suggestions that countries with high power distance and high uncertainty avoidance attach greater importance on tangible features of the website. In a similar vein, the Brits attention to intangible attributes is consistent with the general suggestions of past research (Donthu & Yoo, 1998). As part of an individualistic society, British users are expected to be influenced by the website's care (less care) for intangible features. Additionally, finding that Kuwaitis are more persuaded with content clarity than the Brits is consistent with Hall's cultural theory which categorizes Kuwait as a high-context culture and the UK as a low-context culture. Kuwaitis have a preference for using indirect communication strategies; conversely the British people prefer a direct communication approach. Accordingly, Kuwaitis feel more comfortable with an e-government website providing a clear and thorough descriptions and content; contrary to the Brits who tolerate a website with a less clear content. Overall, the results confirm the general findings of prior empirical research addressing the effect of national culture on quality perceptions (Cyr et al., 2010; Furrer et al., 2000; Ganguly et al., 2010).

5.1. Contribution to practice

The practical implications of these findings are clear. Today, public organizations work in open computing environments, and in such work environments, technical, content, and aesthetic quality features become important elements of the e-government website, hence, deserving the attention of governments interested in going online. Evidently, the Web revolution has encouraged numerous governments to launch their websites to connect with their constituents-at-large, whether they are native-citizens or expatriates. Nonetheless, as can be evidenced from the findings of the current article, it is not possible to develop a successful e-government website while ignoring one of its main contributing factors, national culture. The present paper can offer guidance to administrators seeking to improve the quality of their e-government websites to align well with the preferences of the widest array of citizens who require ever-higher quality levels of the same. It has been demonstrated that it is important that designers highlight technical quality features of the website for Kuwaiti users to gain their positive reaction toward the website, while the aesthetic quality features are important to British users to induce their pro-website attitudes. An e-government website with the slightest problems in availability or difficulty to interact with may cause Kuwaiti users to feel nervous. Similarly, content quality of the e-government website is vital for attracting citizens. It is difficult to encourage Kuwaiti citizens to visit an e-government portal if the site provides the users with unclear descriptions or with insufficient content. Moreover, aesthetic quality is important for e-government success because it is difficult to create favorable visitor attitudes toward a website that uses inappropriate fonts, unattractive color schemes or inconsistent styles. British users have been shown to be very sensitive to these quality features; hence, website designers need to instill their pages with functionalities that permit such users to change the aesthetics of the pages as seen fit by them.

It has been shown that it is not enough for the developers of public portals to focus on technical, content, and aesthetic quality elements to successfully influence favorable visitors' attitudes and behaviors; the role of national culture has to be taken into their consideration. When a government strives to implement a successful website, it is crucial for its professional staff to understand the key role that national culture plays in shaping the e-government design elements. Otherwise, its online services may suffer because the website ignored the culturally based preferences of the users. To help interested administrators and developers with this challenge, the author introduced the persuasive quality tool. By using this tool, e-government designers can more accurately capture the perceived quality of the portal as described or evaluated by its users, and the derived relative importance of each interface quality attribute offers a great deal of information to the designers who strive to improve the website. The designers could place greater emphasis on weak design areas that deserve more attention and reduce their depleted efforts on design areas that do not need extensive attention.

5.2. Contribution to theory

The current investigation contributes to the e-government quality theory by assessing the extent to which some of the guidelines, which have been proposed by similar research conducted in developed countries, can be applied in developing nations. In the present investigation, the author argued that these e-government quality variations could be due to cultural reasons. It has been shown that the studied e-government quality attributes may not be regarded as equally important by all users throughout different areas of the world. The study has also introduced the concept of "persuasive quality", which is a derivative construct from e-government quality importance and performance. The new approach provided a method to estimate the relative contribution of each e-government quality attribute to the cross-cultural quality gap, as rated by the users. It has been shown that the fit between perceived importance and performance of the website offers an additional (not a substitution) method to measure e-government quality that augments earlier evaluation methods.

5.3. Limitations and future research

The present investigation could be extended in a number of ways. First, because the relationship between national culture and e-government quality was explored using the Arabic and English versions of an e-government website, there is an opportunity to examine the same link with multiple samples from multiple countries to increase the external validity of the findings. Second, a closely related limitation to the previous one is the fact that the English version of the studied website is a translation of the Arabic page, thus resulting in a possible absence of content variation required for effective content analysis of the website. In the future, there is a need to study websites from different countries, varying in their content and presentation to allow for a richer cross-cultural investigation. Third, there may be a need for additional inquiries to examine the connection between the variables analyzed in this study and certain important outcome variables such as e-government use, satisfaction, and loyalty, just to name a few. Fourth, this study explored the relationship between implicit national culture and e-government interface quality. In future research endeavors, it is possible to extend this study using explicit national culture measures and non-interface quality instruments. Finally, users' perceptions of e-government quality may not change much in the short term, but in the long term, the outcome may be different. The current investigation did not address this possibility. In the future, there may be a need to evaluate cross-cultural e-government quality over time through a panel study.

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Adel M. Aladwani is a Professor of Information Systems at Kuwait University. He received his doctoral degree from Southern Illinois University at Carbondale. His publications have appeared in several leading Information Systems journals such as *Journal of Management Information Systems*, *European Journal of Information Systems*, *Information Systems Journal*, *Information & Management*, *The DATABASE for Advances in Information Systems*, and several other scholarly journals. He is presently serving as a member of the editorial review board or a referee for a number of Information Systems journals. His current research interests focus on website quality, the performance of IT projects, and social media.