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Gender and Web Quality Perceptions

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Abstract

Web presence became inevitable for businesses today particularly dynamic industries such as the financial sector. Identifying how users' appraise website quality properties enable businesses to improve their online processes. This paper investigates gender web quality perceptions within the online banking channel in three markets employing a multidimensional construct measuring four web qualities: technical, general content, special content and appearance. Using confirmatory factor analysis, the four quality variables were tested and validated as a first-order structure. The model run retained well specified items appreciated by respondents: general content quality features of usefulness, clarity, updates and accuracy; appearance quality features of organization, readability, attractiveness and proper use of colors; special content quality features of contact details, history, customer service information and details of products and services; and technical quality features of security, valid links, search facility, download speed and valid service applications. Group analysis results indicate that bank website quality dimensions are perceived similarly among men and women and differences are not present among genders when appraising bank website quality features; however, the estimates indicate that model explanations power is higher for women than men.

Keywords: gender differences, higher-order structure, online banking, web quality perceptions

1. Introduction

An inevitable extension of the business is having a web presences and constructing an effective web site from the users' perspective is important for business strategy and expansion. In the financial sector, the website has become the new sales channel, which enables banks interacting with customer 24/7. Web presence serves several advantages for bankers and customers. Customers are drawn to online channels for convenience and privacy while bankers benefit from cost-saving opportunities among other objectives (Moscato, Altschuller, & Moscato, 2013). Measuring the quality of the web site from the user's perspective enable the business to take action and improve its online processes and add value to clients.

Evidently, technology advancements and applications attract the younger generation more than others. Literature on technology acceptance indicates gender dissimilarity with respect to determinants of usage behavior, perceptions of usability or intention behaviors (Venkatesh, Moriss, & Ackerman, 2000; Moriss & Venkatesh 2000; Venkatesh, Moriss, Davis, & Davis, 2003; Morris, Venkatesh, & Ackerman, 2005).

The current work aim is to investigate whether gender differences exist when appraising online banking web perceived quality. The paper adopts Aladwani and Palvia (2002) model of website design and postulate that website quality is a second order multidimensional construct comprising four dimensions: technical quality, content (general and special) quality and appearance quality.

This paper is organized as follows. First the paper briefly reviews literature on website quality characteristics and gender reported differences within the online context. Next, the design of the study is presented followed by analysis and discussion.

2. Theoretical Grounding

2.1 Research on Website Quality Characteristics

Web design quality is considered a key aspect of e-business strategy (Hernández, Jiménez, & Martín, 2009). A website consists of different design attributes and an effective design impacts the user experience (Chau, Au, & Tam, 2000). Numerous researches have attempted to identify website design characteristics in different domains

and industries (e.g. Liu & Arnett, 2000; Barnes & Vidgen, 2002, Zeithmal, Parasuraman, & Malhotra, 2002; Agarwal & Venkatesh, 2002; Seethamraju, 2004; Blake, Neuendorf, & Valdiserri, 2005; Lee & Lin, 2005; Bauer, Falk, & Hammerschmidt, 2006; Schaupp, Fan, & Belanger 2006; Weathers & Makeinko, 2006; Flavian, Gurrea, & Oru's, 2009; Hasan & Abuelrub, 2011). However, there are various types of websites (James, 2010, p. 125) and to find a consensus around web attribute that ensure effective design quality for all types is difficult to achieve.

In the banking domain, the story is not different, numerous research investigated web site design characteristics considered important in evaluating financial e-service. E-banking quality in general could not be described as a one-dimension customer rating process; instead it represents a multi-dimensional structure composed of partial quality judgment to the diverse e-service categories (Kim & Stoel, 2004; Bauer, Hammerschmidt, & Falk, 2005). In this regard, Bauer et al. (2005) developed a model of e-banking service quality portal comprising three dimensions: *core services* (classic bank products and security/trust); *additional services* (branded financial products: online loans, enjoyment & entertainment, and non-bank services) and *problem-solving services* including transaction support: e.g. convenience of processes, interactivity, information provision, decision support and customer care; and responsiveness: e.g. availability and accessibility, personalization, community, and complaint management. Floh and Treiblmaier (2006) investigated three dimensional antecedents to online banking loyalty namely, *website quality* covering design, structure, and content; *service quality* and *trust; and overall satisfaction.* Findings report a direct/indirect impact of website quality on both satisfaction and trust. Examining consumers' choice between electronic and non-electronic banking, Gan, Clemes, Limsombunchai, and Weng (2006) report service quality dimensions of reliability, assurance, responsiveness and perceived risk factors; user input factors of control, enjoyment, and use intentions to have a positive impact on consumers' likelihood to use electronic banking. Ortega, Mart ńez, and De Hoyos (2007) examined web navigability in Spanish banks and reported three important e-tool groups. First group includes compatibility with any navigator, availability of permanent site menu, homepage buttons, visible labels and new windows for open links. The second group of e-tools comprises availability of site map and translation of website content into several languages. The third group is the least frequently employed e-tools comprising "back to top" buttons and breadcrumbs, which is a tool to inform users where they are located on the site using colors to highlight what is and what is not active. Casalo', Flavia'n, and Guinalı'u (2008) report web usability in terms of understandability, simplicity, structure, content organization, navigation, and control impact users' satisfaction directly and lead to customer loyalty. Using experimental design, Vrechopoulos and Atherinos (2009) investigated how store layout affects consumer behavior in the context of web banking and reported that conventional store layout is not applicable to web banking and emphasized importance of ease of use interface and navigability on the site. Waite, Harrison, and Hunter (2011) identified attributes perceived important by online banking users such as system quality features, security in terms of login and connection, and information quality items; company information about bank and financial services.

Of particular relevance to this line of research is the website quality multidimensional construct developed by Aladwani and Palvia (2002) comprising four dimensions of online design quality: technical quality, general content, especial content, and appearance quality.

2.1.1 Technical Quality

Technical quality, also referred to as website performance, is a holistic way of looking at the *site* and gauging if all the pieces and parts are working together to create a good technical experience for the site visitors (King, 2008, p. 346). Assessment of website technical quality is based on software quality or standards and in methods focused on usability or functionality (Cao, Zhang, & Seydel, 2005; Rocha, 2012). According to Adwani and Palvia's model, this dimension measures website design quality facets of security of online transactions, ease of navigation, search facilities, site availability, valid links, personalization, speed of page loading, interactivity and ease of access (Aladwani, 2006).

2.1.2 General Content Quality

Content quality or information quality is, traditionally, the most important criterion for a website. Content is still king online (Strauss & Frost, 2012, p. 40); it is the reason why users visit the website and it is the most utilized attribute in web quality assessment (Aladwani, 2006). In the banking domain, customers are increasingly utilizing online content or informational content to make financial decisions (Waite & Harrison, 2002), which magnifies the need for useful, complete, clear, current, concise, and accurate web content in general.

2.1.3 Special Content Quality

This dimension is also of equal importance. The specific content covers a company's offer information; the range

of products designed to meet different customer groups. It also uses history and general information about the company to communicate credibility, experience and scale of operations. The special content also covers customer support tools and customer related policies.

2.1.4 Appearance Quality

Quality attributes related to website appearance or aesthetics have been employed in various studies. Attributes of this quality dimension include web site attractiveness: the use of colors and proper font for readability in addition to multimedia and site organization or layout. Users may differ in emphasis applied to this aspect of web design based on type of website or tasks performed on the site.

Previous research validated the multidimensional construct indicating a higher order structure (Seethamraju, 2004; AlQeisi & Al-Abdallah, 2013; AlQeisi, Dennis, Alamanos, & Jayawardhena, 2014).

2.2 Gender and Website Design

Literature on differences between men and women with respect to e-behavior is expanding. Examining the effects of gender on attitude towards website design, Simon and Peppas (2005) report that males have positive attitude with regard to internet than their female counterparts. Cyr and Bonanni (2005) report differences between genders regarding ability to trust information presented on Sony website with women less trusting than men and demanding more information about the product and greater privacy. Navigation and organization of the site were not as appealing to women compared to men and in visual design, women were more attracted to colors on the site while men by interactive and flashy aspects. Floh and Treiblmaire (2006) report men's estimates of web quality to be significantly lower than women's and that their satisfaction with e-banking is explained more by service quality. In educational website design, Hsu (2006) report no differences among male and female graduate students with respect to three web design characteristics: color value, navigation button placement, and navigation mode. Both genders showed preference for dark color, no preference for navigation button placement on the site and both prefer linear navigation mode. Alternatively, Pearson and Pearson (2008) report women strongly emphasize ease of use and navigation in assessing website usability whereas men emphasize download speed. Moss and Gunn (2009) report gender differences among Oxford students' personally designed homepages in respect to three attributes: navigation issues, language, and visual issues. Females show tendency for high consistency and larger content in respect to navigation issues. On the language scale, males show more tendencies to use expert and formal language, while females show more tendencies to use abbreviations, and self-denigration. On the visual scale, females use more colors and non-regular less conventional typography. Finally, both genders show preference to website aesthetics generated by people of their own gender, although men like pictures typifying the female production aesthetics.

Although these studies reveal gender differences, they lack specific details on how the online banking users perceived the overall design of the website.

3. Methodology

In order to investigate gender perceived web quality differences and validate the multidimensionality of the web design quality construct, the 25 item scale measuring the four web quality dimensions is first tested and validated using confirmatory factor analysis (CFA) followed by multi-group analysis on the first –order level. Based on the of first-order analysis, the higher-order structure is tested and group analysis is run to check if differences among gender groups exist.

3.1 Sampling and Data Collection

A survey instrument is constructed to test users' perception of website design quality dimensions in banking sector. Survey categories included the four dimensions of design quality (Appendix) based on Aladwani and Palvia (2002) model. Responses were solicited through online and offline survey in three Arab world countries (AlQeisi, Dennis, Hegazy, & Abbad, 2015). A combined file of all samples is tested for univariate and multivariate normality plus outliers using AMOS 18 software and following Byrne guidelines (2010, pp. 104-106), which resulted in 621 responses of which 218 are females and 403 males. The samples demographics (Table 1) show proximity or low discrepancy among the two groups' demographics.

Table 1. Sample descriptive

Descriptive	Females		Males	
	Frequency	percent	Frequency	percent
Age				
25 years and less	44	20	71	18
26-35 years	115	53	176	44
36- 46 years	45	21	116	28
47-57 years	12	5	31	8
58 years and more	2	1	9	2
Education				
High school and less	23	11	42	10
Bachelor	121	55	212	53
Masters	46	21	90	22
Doctorate	20	9	47	12
Others	8	4	12	3
Internet banking experience				
Less than 6 months	37	17	59	15
6- 12 months	78	36	120	30
13 -18 months	34	16	69	17
19-24 months	18	8	37	9
More than 24 months	51	23	118	29

3.2 Data Analysis

To evaluate the factorial validity of the web design quality construct, it is necessary to first posit and then test a theoretically derived model that describes the latent structure. This research adopts the previously establish web quality model (Aladwani & Palvia, 2002; Aladwani, 2006), which comprises 25 items scale of web quality described by the four latent constructs of technical, general content, special content and appearance quality. In order to gauge gender differences, we run confirmatory factor analysis on respondent-centered data set. First, we test the first order measurement model.

3.2.1 First-order Measurement Model

We posit a first order structure specified based on Byrne (2010) guidelines: (1) the model includes the identified four factors as first-order factors; (2) the four factors are correlated; (3) the four factors are one level away from the observed variables; (4) each observed variable has a nonzero loading on its designated factor and zero loadings on other factors; and (5) the measurement error terms associated with the observed variables are uncorrelated.

The first-order measurement model showed a reasonable model fit; however, some items were found to be inappropriate by the CFA. Misrepresented items that did not appear in the final factorial construct are: ease of navigation and ease of access (technical quality) which have high covariance with other items in the same factor; complete and accurate content (general content quality) which have high covariance with other items from technical quality; customer policies e.g. privacy and reconciliation (special content quality) which have high covariance with another item in the same factor, and finally, adequate use of multimedia item from appearance quality factor that have variance extracted of 0.470 (lower than the 0.5 threshold).

The final model after modification resulted in 18 endogenous variables (Figure 1) with acceptable model fit indices: χ^2= 400. 223 df =129 with a ratio of χ^2/df = 3.104, CFI = 0.968, RMSEA = 0.058, and SRMR = 0.035. Estimates show all factor loadings and variances extracted are above 0.5. Reliability coefficients are acceptable as well: technical quality 0.886; general content quality 0.901; special content quality 0.881 and appearance 0.920.

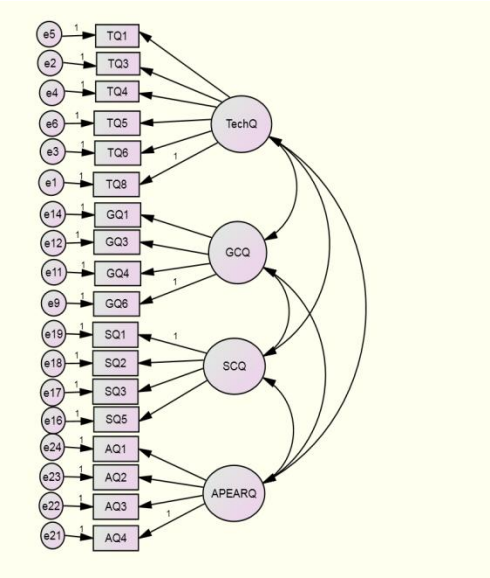

Figure 1. First order- base measurement model

3.2.2 Multi-Group Analysis

The base model fitted each gender group well as indicated by model estimates (Table 2) and by the fit statistics (Table 3). The configural model for both groups presented a good model fit indices as well (Table 3) allowing for running group analysis for both gender groups simultaneously. The multi-group analysis results show gender groups to be invariant based on readings of $\Delta CFI < 0.01$ in addition to the non-significant result of $\Delta \chi^2$ readings on the measurement weights and structural coveriances (Table 4). Although the measurement residual were significant, most researcher stop at the structural weights level of investigation and assume that examining residual invariant is more stringent than necessary (Byrne & Stewart, 2006; Byrne, 2004, 2010).

Table 2. Factor loadings, variance extracted, and reliability readings for gender first-order groups

Items	Males				Females			
	TQ	GCQ	SCQ	AQ	TQ	GCQ	SCQ	AQ
TQ1	.681				.721			
TQ3	.736				.791			
TQ4	.799				.795			
TQ5	.752				.746			
TQ6	.771				.717			
TQ8	.738				.818			
GQ1		.851				.857		
GQ3		.845				.829		
GQ4		.800				.833		
GQ6		.822				.846		
SQ1			.763				.827	
SQ2			.823				.854	
SQ3			.893				.853	
SQ5			.740				.741	
AQ1				.826				.851
AQ2				.898				.871
AQ3				.869				.888
AQ4				.837				.874
AVE	.558	.688	.648	.736	.586	.708	.672	.759
Reliability	.881	.897	.877	.916	.894	.907	.887	.926

Table 3. First-order groups' models fit statistics

	χ^2	df	χ^2/df	SRMR	CFI	RMSEA
Males	340.187	129	2.637	.043	.961	.064
Females	240.835	129	1.867	.034	.965	.063
Groups' configural model	581.100	258	2.252	.043	.962	.045

Table 4. Summery of goodness of fit statistics for test of multi-group invariance

Models	Comparative Model	χ^2	df	$\Delta\chi^2$	Δdf	Sig.	CFI	ΔCFI
1. Unconstrained		581.02	258	-	-	-	.962	-
2. Measurement Weights	2 vs. 1	594.99	272	13.97	14	ns	.963	.001
3.Structural Covariances	3 vs. 2	604.16	282	9.17	10	ns	.963	.000
4. Measurement Residuals	4 vs. 3	630.30	300	26.14	9	sig*	.962	.001

Note. * decision is base on $\chi^2_{(df)}$ distribution table under p= .05 (Hair et al., 2010, p. 760) .

3.2.3 Second-Order Measurement Model Structure

Previous research (AlQeisi & Al-Abdallah, 2013; AlQeisi et al., 2014) demonstrated that web quality construct is best represented as a higher-order construct. In current paper the four dimensions of the web quality construct correlate among each other in support of the higher-order approach (Chen, Sousa, & West, 2005). A second-order model is applicable when a higher order factor is hypothesized to account for the relationships among the first-order factors. Accordingly, in order to introduce the higher order model (Figure 2), we posit a higher –order structure specified as follows: (1) Each item would have a non-zero loading on the first order factor it was designed to measure, and zero loadings on the other three first-order factors; (2) error terms associated with each item would be uncorrelated; and (3) covariation among the three first-order factors is explained fully by their regression on the second-order factor.

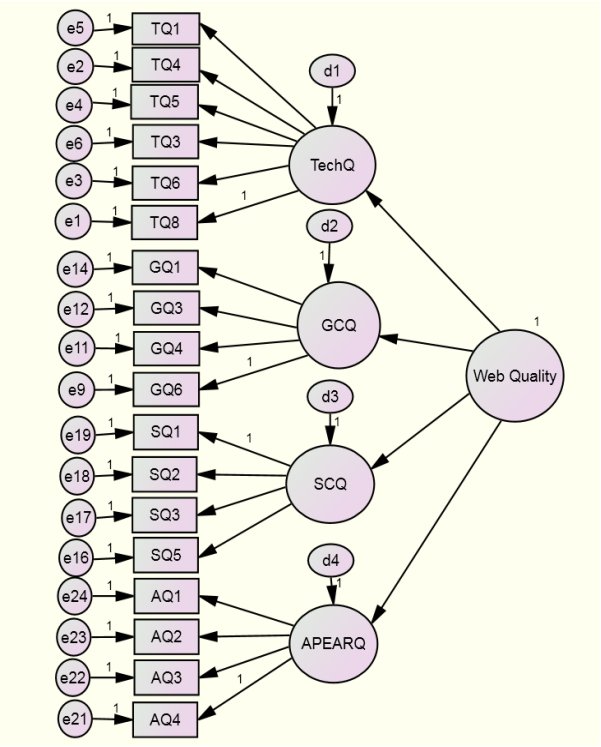

Figure 2. Higher-order measurement model structure

The base model estimates: factor loadings and variances extracted are all above the threshold of 0.50 and model fit statistics are within acceptable ranges, in addition, the model fitted each gender group well and statistics are with acceptable ranges (Table 5), which allowed proceeding with multi-group analysis.

Table 5. Second-order groups' models fit statistics

	χ^2	df	χ^2/df	SRMR	CFI	RMSEA
Males	345.93	131	2.64	.044	.960	.064
Females	241.77	131	1.85	.034	.966	.062
Groups' configural model	405.73	131	3.09	.034	.968	.058

Running the multi-group analysis for the two groups simultaneously resulted in fit statistical readings that support measurement invariance among gender groups (Table 6) based on the insignificant $\Delta\chi^2$ and ΔCFI results <0.01.

Table 6. Fit statistics for measurement invariance of second-order factor model of web quality

Model	Model Comparison	χ^2	df	$\Delta\chi^2$	Δdf	Sig.	CFI	ΔCFI
1. Unconstrained	-	587.78	262	-	-		.962	-
2. Measurement weights	2 vs.1	601.74	276	13.96	14	ns	.962	.000
3.Structural residuals	3 vs.2	605.31	280	3.57	4	ns	.962	.000
4. Measurement residuals	3 vs.4	609.94	284	4.63	4	ns	.962	.000

Note. * decision is base on $\chi^2_{(df)}$ distribution table under p= .05 (Hair et al., 2010, p. 760).

The estimate output readings of squared multiple correlations (R^2) reveal that females' reading are higher compared to males readings (Table 7) indicating that the model explanation power is higher for females than males.

Table 7. Squared multiple correlations (R^2) output for gender second-order mode.

	Males	Females
Variables	R^2	R^2
Technical Quality	.776	.896
General Content Quality	.915	.931
Special Content Quality	.731	.774
Appearance Quality	.815	.843

5. Discussion

The current confirmatory work represents an interesting area of research with respect to gender and the web design. The tests of the factorial validity of the multidimensional web quality construct developed by Aladwani and Palivia (2002) and Aladwani (2006) revealed number of findings. Results confirm the notion that web quality is a multidimensional construct best represented by a higher-order structure. Web presence perceived quality dimensions is business related, in banking sector results show general content quality features come first based on the R^2 results for both genders. The first-order model retained well specified items by respondents. Samples appreciated general content quality features of usefulness, clarity, updates and accuracy; appearance quality features of organization, readability, attractiveness and proper use of colors; special content quality features of contact details, history, customer service information and details of products and services; and technical quality features of security, valid links, search facility, download speed and valid service applications. The findings confirm the general perspective that content is king on websites and customers are normally drown

by or motivated to use the bank website based on informational content (Waite & Harrison, 2002) in addition to the other qualities.

The major objective for this work is to identify gender differences with respect to perceived web quality dimensions developed by Aladwani and Palvia (2002). The findings of the analysis of measurement invariance in the first order and second order models revealed gender equality and no differences were identified. In other words, both genders are invariant on the factorial level of the first and second order models. Perhaps a good explanation lies with the samples' demographics; both genders are educated and approximately enjoy similar experience with internet banking usage behavior. Previous research indicates that with gained experience gender differences tend to demolish. The e-banking service websites are more transactional than informational and not entertaining in nature, people log in purposefully to run certain inquiries or financial tasks; for this reason, web quality features on the factorial level maybe communicating the same value here for men and women. Several researchers pointed out that gender differences tend to disappear under discretionary use of technology and gained experience (Morris et al., 2005, Venkatesh et al., 2003; Morrris & Venkatesh, 2000). However, the R^2 readings reveal a difference between men and women in respect to emphasis placed on the four quality dimensions. Next to general quality women place more emphasis on technical quality followed by appearance quality; whereas men emphasize appearance quality in second place and technical quality in third place.

6. Limitations and Future Work

The current work is not without limitations. The findings of the factorial validity tests are limited to the domain of online banking. As indicated before, perceptions of web quality are business related, hence current findings may not replicate in another e-business area. The findings of gender invariance are also confined to quality features of the model under investigation, there might be other features on which the two genders might react differently. Furthermore, this paper used one research method, survey, potentially leading to bias due to common method variance. Future research is invited to explore areas of possible gender variance by using other quality futures or incorporating the web quality structure into other behavioral model to gauge such variances.

7. Conclusion

The current work investigates whether gender variance exists among online banking users using a sample from actual users in three Arab world counties. Previous research on website quality attributes and properties indicates that differences exist among genders. However, recognizing that assessment of website attributes is business related give explanation for current findings. It appears that factorial differences among genders are not present in evaluating banking websites' quality features although emphasis on of some dimension does differ, which invite further investigation on how this overall web quality evaluation might impact other online behavioral aspects.

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Appendix

Web Quality statements

Factors	Statements	
Technical Quality	The bank's website:	
	TQ1	looks secure for carrying out transactions
	TQ2	looks easy to navigate
	TQ3	has adequate search facilities
	TQ4	has valid links (hyperlinks)
	TQ5	can be personalized or customized to meet my needs
	TQ6	has many interactive features (e.g. services online application)
	TQ7	is easy to access
	TQ8	pages load quickly
General Content Quality	GQ1	The content of the bank's website is useful
	GQ2	The content of the bank's website is complete
	GQ3	The content of the bank's website is clear
	GQ4	The content of the bank's website is current
	GQ5	The content of the bank's website is concise
	GQ6	The content of the bank's website is accurate
Special Content Quality	SQ1	On the bank's website, I can find contact information (e.g. email addresses, phone numbers, etc.)
	SQ2	on the bank's website, I can find general bank information (e.g. goals, owners)
	SQ3	On the bank's website, I can find details about their products and services
	SQ4	On the bank's website, I can find information related to customer policies (e.g. privacy and dispute details)
	SQ5	On the bank's website, I can find information related to customer services
Appearance Quality	AQ1	The bank website looks attractive
	AQ2	The bank website looks organized
	AQ3	The bank website is easy to read
	AQ4	The bank website uses appropriate colors
	AQ5	The bank website uses multimedia features properly