Peer-reviewed and Open access journal
ISSN: 1804-5006 | www.academicpublishingplatforms.com
The primary version of the journal is the on-line version

BEH - Business and Economic Horizons
Volume 14 | Issue 2 | 2018 |pp.282-299
DOI: http://dx.doi.org/10.15208/beh.2018.22

Efficiency and client satisfaction of Islamic and conventional banks: A bilateral effect

Talla M Aldeehani

Department of Finance & Financial Institutions, College of Business Administration, Kuwait University

corresponding e-mail: talla[at]cba(dot)edu{dot}kw
address: Department of Finance & Financial Institutions, College of Business Administration, Kuwait University, P.O.Box 13055, Safat 13055

Abstract: In this paper, we investigate the possible bidirectional causal relationship between bank efficiency and client satisfaction in the banking sector of Kuwait. For this purpose, we applied structural equation model (SEM) methodology. Based on a 5-point Likert scale questionnaire, data was gathered from Islamic banks (IBs) clients and conventional banks (CBs) client. We found a significant evidence of a, relatively, higher client satisfaction for IBs. The findings, also, provide evidence of a positive and significant bilateral causal relationship between client satisfaction and bank efficiency. This is a result that confirms an anticipated theoretical proposition related to the ultimate goal of firm value maximization. Discussions, interpretations, implications, and recommendations are provided.

JEL Classifications: G20

Keywords: Bank efficiency, Islamic banks, customer satisfaction bilateral effects
Citation: Aldeehani, T. M. (2018). Efficiency and client satisfaction of Islamic and conventional banks: A bilateral effect. *Business and Economic Horizons, 14*(2), 282-299. http://dx.doi.org/10.15208/beh.2018.22

1. Introduction

Maximization of value (stock price) is the ultimate goal of business firms including banks. Research has established that profitability, operational efficiency, ability to generate cash, tolerance towards risks and other internal performance factors are drivers of value. Moreover, research has investigated external factors that are associated with firm value such as customer satisfaction. However, the main focus of the current literature is on how it is affected by the firm performance rather than being the cause of performance change. In this paper, we are examining a possible bilateral cause and effect relationship between customer-satisfaction and bank efficiency. Our focus is on a banking industry consisting of Islamic and conventional banks.

Although they provide similar banking services to their clients, Islamic banks and conventional banks differ fundamentally on how they handle deposits and loans. Their capitals are structured differently. Unlike conventional banks, Islamic banks do not consider deposits as liabilities. Theoretically, Islamic banks assume zero risks towards deposit accounts. They act as agents managing deposits on behalf of their clients (based on best practices) with almost no obligation in the case of losses. As such, the client bears all the risks. Compared to a conventional bank client, an Islamic bank client, therefore, faces higher risks for almost the same return. The question here is that: compared to conventional banks, should Islamic banks care about client satisfaction? This question implies the need to investigate the effect of customer satisfaction on bank performance. Therefore, we are motivated to investigate the relationship between client satisfaction and bank performance, regarding efficiency, in light of the dissimilarities among Islamic banks and conventional banks.

The literature is already rich on the subject of customer satisfaction and bank performance relationship. However, we believe that there is room for more contribution on four specific subjects. First, the differences in customer satisfaction levels for IBs compared to CBs. Second, the determinants of customer satisfaction for IBs and CBs. And, third, the specific dimensions of factors affecting customer satisfaction for IBs and CBs, and, fourthly, the causal direction of performance and customer satisfaction relationship.

2. A review of the relevant literature

Most of the available literature exploring the relationship between banking service quality and customer satisfaction focuses on what particular dimensions of services cause changes in the level of customer satisfaction. It provided scientific evidence on the significant effects of, almost, all possible dimensions. Levesque & McDougall (1996), for example, identified four important determining dimensions: getting it right the first time, reasonable rates, service problems and ability to recover. Ndubisi & Wah (2005) identified dimensions like competency, communication, conflict-handling, trust, and relationship. Munusamy et al. (2010) investigated five dimensions: assurance, reliability, tangibles, empathy, and responsiveness in the Malaysian banking industry and was unable to provide evidence of association with customer satisfaction except for tangibles. The insignificance effect of empathy was later confirmed by Raza et al. (2015). However, Siddiqi (2011) provided evidence of the effects of service quality attribute on customer satisfaction, including empathy and tangibility. Culiberg & Rojsek (2010) investigated 28-item of service quality measures reduced to four dimensions: empathy, service range, access, and tangibles. They found that empathy is the most critical in forming customer satisfaction in the Slovenian banking industry. Kassim & Asiah (2010) investigated 20 measures of service quality reduced to fewer dimension. They found a significant effect of the perceived service quality on customer satisfaction which in turn (being a mediating factor) affects trust.

As a mediator, customer satisfaction was investigated earlier by Al-Hawari & Ward (2006). They confirmed its mediating role between automated banking services and financial performance. Kadir et al. (2011) also studied Malaysian market to investigate the effect of ATM and online banking services on customer satisfaction. Ganguli (2011) provided evidence of association with service automation. Rod et al. (2009) found significant evidence of an association between the overall online banking services and customer satisfaction. Laukkanen (2011) was more specific in differentiating between the internet and mobile banking services as determinants of customer satisfaction. The inquiry was to determine which factor had more influence. Yap et al. (2010) investigated the effects of Off-line versus online banking. They conclude that good services at the branch are crucial for customer satisfaction and the level of demand for online services. Nevertheless, Omar et al. (2011) argued that clients prefer online banking service over branch banking due to convenience, speed, safety, cost-effectiveness, and friendliness. A similar investigation was done by Alsqqa (2017). Saleem & Rashid (2011) concluded with the same argument that customers are concerned about the security of data, authenticity, and reliability.

A considerable literature that compares Islamic banks to conventional banks in terms of the relationship of customer satisfaction and quality of service is also available mainly within individual countries. However, there were attempts to study the relationship within a region. The latest was done by Al-Deehani & Aldeehani (2017). They provide evidence to the effect that customers of Islamic and conventional banks perceive service quality

drivers differently and the relationship is modeled differently. Similar studies were conducted in an individual country such as Malaysia (Echchabi & Nafiu, 2012; Setiawan & Panduwangi, 2017), Pakistan (Awan & Azhar, 2014; Rahman & Anwar, 2017), Turkey (Okumuus & Gene, 2013), Kuwait (Naser et al., 2013). In Jourdan, Srouji et al. (2015) argue that faith is a crucial determinant of choosing Islamic banks over conventional banks in addition to other variables such as convenience, reputation, and image. However, Al-Hunnayan & Al-Mutairi (2016), disagree with the argument concerning the faith. They investigated "attitudes of customers towards Islamic banks" in Kuwait and concluded that faith is not enough to attract customers; they rather need to provide a wider range of banking services.

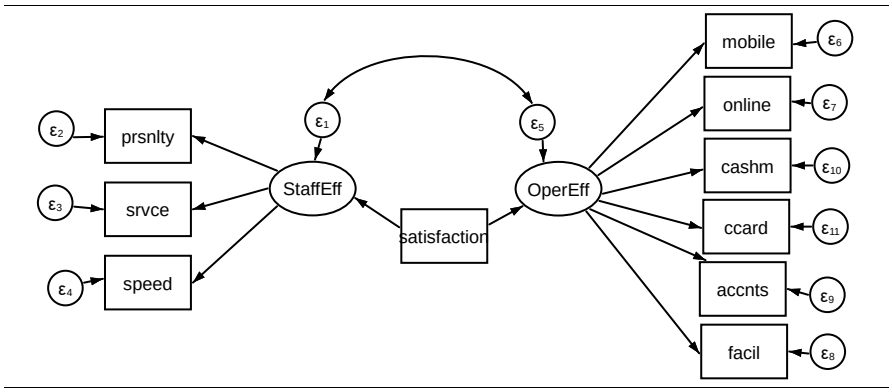
3. Development of the conceptual framework and hypotheses

In general, the literature has focused on three main dimensions of service quality related to customer satisfaction. These dimensions are (1) tangible, face-to-face service delivery which we describe as bank efficiency in getting the job done. We elected three measures for this dimension. These are the quality of service delivered by the teller, friendliness/personality of the teller and the speed of getting the job done. (2) the quality of remote services provided measured by the quality of mobile banking service, the quality of online banking services and the quality of ATM services. (3) The quality of accounts management measured by loans/financial facilities management and delivery and the quality of deposit accounts management. In this paper, we elected to deal with the latter two dimensions as one, representing operational efficiency. As such, in this paper, we should be dealing with three variables. The first variable is observed representing the overall perceived client satisfaction, which we call "*satisfaction*." The second variable is latent representing the perceived efficiency of the services delivered by bank staff (tellers) which we call "*StaffEff*." The third variable is also latent representing the perceived efficiency of operational services which we call "*OperEff*."

Based on the literature reviewed, we believe that, since maximization of value is the ultimate goal, causality should be modeled to point to that direction. Bank efficiency is an indicator of better value. As such, we believe that customer satisfaction should be treated as an exogenous variable causing the change in bank efficiency. Nevertheless, most of the existing research has been modeling it in the opposite direction as a dependent variable affected by efficiency or other performance indicators. Therefore, we opted to investigate a bilateral and bidirectional, relationship between "satisfaction" on one side of the equation and the two efficiency variables on the other side. The results of this analysis should help us identify the appropriate causality direction and answers a question we asked earlier. The conceptual models that reflect this proposition are depicted in Figures 1-2.

In the conceptual Model 1 (Figure 1), *satisfaction* is considered as the independent exogenous variable, causing changes in bank efficiency represented by staff efficiency and operational efficiency variables which, in the same time, are considered dependent and endogenous variables, causing changes in their relevant measures. Similar to the conceptual Model 1, the effect of the covariance between the error terms of the endogenous variables is included in this model.

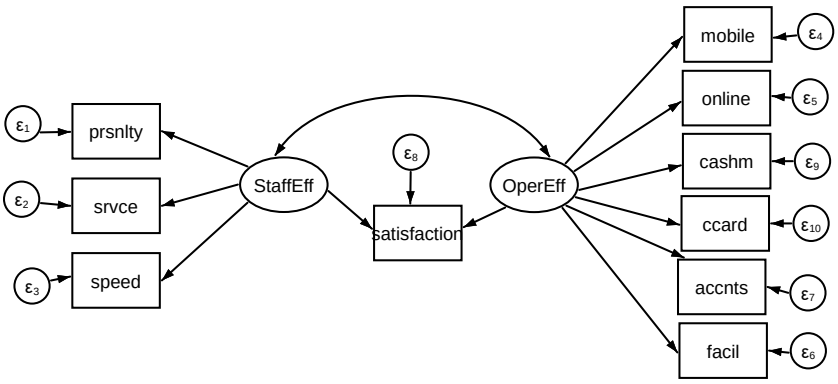
FIGURE 1. CONCEPTUAL MODEL 1 - EFFECT OF CLIENT SATISFACTION ON BANK EFFICIENCY



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

The conceptual Model 2 (Figure 2) portrays a causal direction from the two variables representing bank efficiency to the variable representing client satisfaction. It shows that the levels of *StaffEff* and *OperEff* are determinants of the level *satisfaction*. *StaffEff* has three measures. These are teller personality (prsnlty), the quality service of the job provided by the teller (srvce) and the speed at which the job is done (speed). Operational efficiency has six measures including, the quality mobile services (mobile), online services (online), ATMs (cashm), credit card services (ccard), accounts services (accnts) and loans/facilities services (facil). The proposed model caters for the effect of covariance between the two efficiency variables.

FIGURE 2. CONCEPTUAL MODEL 2 - EFFECT OF BANK EFFICIENCY ON CLIENT SATISFACTION



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

As such, our conceptual framework portrayed in the previous two charts calls for testing the following specific research hypothesis:

1. Bank staff efficiency is measured by teller personality, teller job provided and the speed at which the job is done.
2. Bank staff efficiency explains variability in the level of client satisfaction.
3. Operational efficiency of the bank is measured by mobile banking, online banking, ATM services, credit card services and loans/facilities and accounts' services.
4. Operational efficiency explains variability in the level of client satisfaction.
5. Client satisfaction is a determinant of staff efficiency and operational efficiency.

4. Data and methodology

Almost all-existing literature uses Likert scaling questioners targeting bank clients to collect data on customer satisfaction and service quality variables. They then use data reduction techniques such as exploratory factor analysis to reduce and classify these items into fewer constructs. The new factors are then used to develop cause and effect models that can be estimated using regression techniques (see for example Kassim & Asiah, 2010 and Al-Deehani & Aldeehani, 2017).

Alternatively, some relatively recent research uses a more versatile theory-driven confirmatory factoring as per structural equation modeling (SEM) techniques (see for example Amin et al., 2011; Subramanian et al., 2014). The main advantage of applying SEM is the confirmatory nature of factoring the raw data based on an existing theoretical background and framework, the ability to allow for the effect of covariance between explanatory variables, and the ability to measure direct and indirect effects of exogenous and endogenous factors.

As mentioned, we used a 5-point Likert scale questionnaire soliciting responses ranging from 1=totally disagree to 5=totally agree on statements measuring the service quality of nine particular items. The statements are designed to measure two latent variables. These variables are staff efficiency and operational efficiency. Table 1 summarizes the variables targeted by the research questionnaire, which lists the measures, and their corresponding latent variables.

TABLE 1. LISTS OF THE MEASURES AND VARIABLES

OBSERVED MEASURE/VARIABLE	LATENT
1. Quality service of teller personality	
2. Quality service of the job provided teller	*StaffEff*
3. Teller Speed to complete the job	
4. Quality service of ATMs	
5. Quality service of mobile banking	
6. Quality service of online banking	*OperEff*
7. Quality service of credit cards	
8. Quality service of loans & facilities	
9. Quality service of accounts' affairs	
10. Overall *satisfaction*	

To capture the overall level of customer satisfaction, respondents were asked to, simply, indicate their overall satisfaction towards the services they get from their banks on the same 5-point Likert scale. The questionnaire included one categorical question to differentiate between IBs clients and CBs clients. We collected 297 responses from bank clients in the State of Kuwait. 171 of which were clients of BCs and 126 were IBs clients.

Our method starts with a check of data reliability followed by a test of mean rank differences based on the type of bank. The results of this test should provide a statistical evidence of the theoretical differences of the individual quality services provided by IBs compared to CBs. We then apply structural equation model (SEM) techniques to estimate our theoretical, conceptual framework depicted in Figures 1 and 2. We were tempted to adopt SEM due to its wide versatility to cater for many techniques concurrently. This is a single estimation method that incorporates confirmatory factor analysis (CFA), path analysis and multiple regression techniques. Its flexibility extends to allow for the incorporation of the effect of covariance between variables and between error terms to improve the model fit. It also allows for investigating non-recursive effects between latent/observed variables. Moreover, researchers can easily identify and measure direct and indirect effects. Because of this versatility and flexibility, some researchers prefer to describe it as a system rather than a method or technique.

5. Testing, estimations, and discussions

Our analysis starts with the various descriptive statistics of the data. This is shown in Table 2. The table lists the ten variables and their corresponding mean responses, standard deviation, standard error, confidence interval, minimum and maximum response values for conventional and Islamic banks.

TABLE 2. DESCRIPTIVE STATISTICS OF THE DATA

		N	Mean	Std. deviation	Std. error	95% Confidence interval for mean		Min	Max
						Lower	Upper		
PERSONALITY	Conventional	171	3.98	.778	.060	3.86	4.10	1	5
	Islamic	126	4.03	.726	.065	3.90	4.16	1	5
SERVICE	Conventional	171	3.80	.898	.069	3.67	3.94	1	5
	Islamic	126	3.99	.815	.073	3.85	4.14	1	5
SPEED	Conventional	171	3.60	.998	.076	3.45	3.75	1	5
	Islamic	126	3.79	.917	.082	3.62	3.95	1	5
ATMS	Conventional	171	3.92	.979	.075	3.77	4.07	1	5
	Islamic	126	4.28	.776	.069	4.14	4.41	1	5
MOBILE	Conventional	171	3.77	1.103	.084	3.60	3.93	1	5
	Islamic	126	4.21	.952	.085	4.05	4.38	1	5
ONLINE	Conventional	171	3.85	1.018	.078	3.69	4.00	1	5
	Islamic	126	4.29	.868	.077	4.14	4.45	1	5
LOANS	Conventional	171	3.06	1.069	.082	2.90	3.23	1	5
	Islamic	126	3.40	1.051	.094	3.21	3.58	1	5
ACCOUNTS	Conventional	171	3.46	1.001	.077	3.30	3.61	1	5
	Islamic	126	3.63	.917	.082	3.47	3.80	1	5
CCARD	Conventional	171	3.69	1.059	.081	3.53	3.85	1	5
	Islamic	126	3.89	.931	.083	3.72	4.05	1	5
SATISFACTION	Conventional	171	3.78	.936	.072	3.64	3.92	1	5
	Islamic	126	4.01	.743	.066	3.88	4.14	1	5

Looking at the mean and standard deviation descriptive statistics, one would observe, interestingly, the higher scores of all means and lower standard deviations for IBs compared with CBs. This is an initial indicator of client perception towards the quality of banking services provided. Although the significance of theses scores has not yet been tested, the results show a dominating higher level of satisfaction in favor of Islamic banks.

The test of Cronbach's Alpha, which measures internal consistency based on the average between items' correlations, marked 0.841 indicating a high-reliability score. The result suggests that the items of the questionnaire are consistent and useful to measure the intended concepts measuring bank service quality and the level of client satisfaction.

To investigate the significance of differences, between the two types of banks, in the individual items of service quality provided to clients, we apply the nonparametric test of Kruskal-Wallis statistic. This test is considered appropriate when the normality assumption is not a concern. The results of the test are exhibited in Table 3.

TABLE 3. KRUSKAL-WALLIS TEST STATISTICS (grouping by bank type)

	Personality	Service	Speed	ATMs	Mobile	Online	Loans	Accounts	ccard	Satisfaction
Chi-Square	.382	3.623	2.073	10.835	14.034	16.830	7.006	1.661	2.392	3.644
df	1	1	1	1	1	1	1	1	1	1
Asymp. Sig.	.537	.057*	.150	.001***	.000***	.000***	.008***	.198	.122	.056*

Note: * - Significant at the 10% level, ** - Significant at the 1% level.

The results of the Kruskal-Wallis test indicate significant differences between conventional and Islamic banks, at the 1% level, regarding ATM services, mobile services, online services and loans/facilities services provided to their clients. It is also significant at the 10% level in terms of the quality services provided by the teller and the overall satisfaction of customers. Looking at Table 2, and as discussed earlier, it appears that clients of Islamic banks are scoring higher on all items indicating a perceived better service quality and satisfaction.

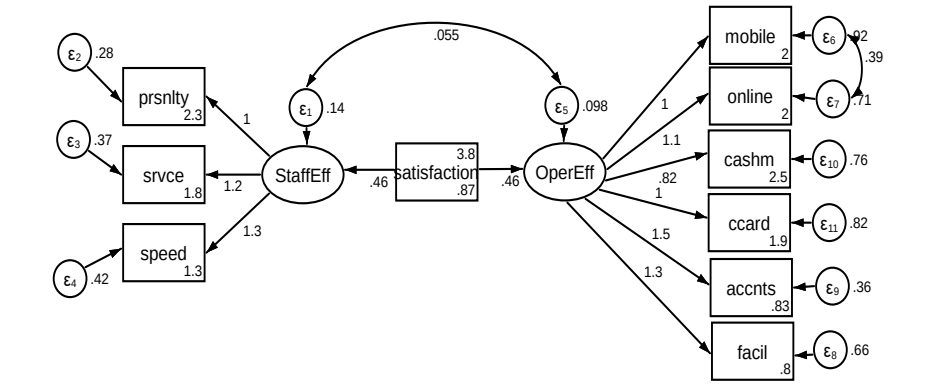
While the results in Tables 2 & 3 do not tell us if faith is crucial for the clients to put their money in IBs as argued by Srouji et al (2015), they definitely show that IBs' clients are more satisfied with the banking services (in-house and online services) they are getting from IBs when compared with CBs. The results also indicate that IBs are succeeding in competing with their conventional counterpart in widening their range of banking services as advised by Al-Hunnayan & Al-Mutairi (2016).

The conceptual framework depicted in Figures 1 & 2 calls for the estimation of the SEM to investigate the effects of efficiency on satisfaction and vice versa for both types of banks.

5.1. Model 1: The effect of client satisfaction on bank efficiency for CBs

The final model representing the relationship between bank efficiency and client satisfaction for CBs is depicted in Figure 3. To realize a better model fit, we add the effect of covariance between the error terms of mobile services and online services measures.

FIGURE 3. SEM: EFFECT OF CLIENT SATISFACTION ON BANK EFFICIENCY FOR MODEL 1



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

The proposed direction of causality is from client satisfaction to bank efficiency. Client satisfaction is the independent variable causing changes in staff efficiency and operational efficiency. The model caters for the covariance effect between the error terms of both latent variables. It also required an additional inclusion of a covariance effect of the error terms of mobile and online measures. This proved to be vital for a better model goodness of fit. The association between the error terms of mobile and online services depicted in Figure 3 is very much understandable as the two variables share obvious similarities. The important numbers to look for in the figure are the coefficients and their signs. Clearly, all the signs of the coefficients are positive indicating positive effects. These results are illustrated by the output of the estimation process in Tables 4 and 5. Table 4 exhibits the results of structural effects and Table 5 shows the results of measurement effects.

TABLE 4. STRUCTURAL EFFECT OF SATISFACTION FOR MODEL 1 (CBS)

STRUCTURAL EFFECTS	Coef.	OIM Std. error	z	P>|z|	[95% Conf. interval]	
StaffEff ← Satisfaction	.4566366	.0515818	8.85	0.000	.3555383	.557735
OperEff ←Satisfaction	.4637704	.0763276	6.08	0.000	.314171	.6133698

From Table 4, we can observe significant positive effects of client satisfaction on both staff efficiency and operational efficiency. This is indicated by a coefficient of 0.4566 and a z score of 8.85 with a corresponding significant p-value of 0.000 for staff efficiency variable and a coefficient of 0.4638 and a z score of 6.08 with a corresponding significant p-value of 0.000.

The measurement effects are presented in Table 5.

TABLE 5. MEASUREMENT EFFECTS OF LATENT VARIABLES FOR MODEL 1 (CBS)

MEASUREMENT EFFECTS	Coef.	Std.Err.	z	P>|z|	[95% Conf.	Interval]
prsnlty (StaffEff)	1 (constrained					
_cons	2.254714	.2013652	11.20	0.000	1.860045	2.649383
Srvce (StaffEff)	1.15099	.1359027	8.47	0.000	.884626	1.417355
_cons	1.812555	.2256701	8.03	0.000	1.37025	2.254861
Speed (StaffEff)	1.327434	.1512001	8.78	0.000	1.03108	1.623781
_cons	1.303027	.2457067	5.30	0.000	.8214506	1.784603
Mobile (OperEff)	1 (constrained)					
_cons	2.011348	.2989542	6.73	0.000	1.425409	2.597288
Online (OperEff)	1.051562	.1482137	7.09	0.000	.7610689	1.342056
_cons	2.002741	.2710921	7.39	0.000	1.47141	2.534072
Facil (OperEff)	1.291768	.2362721	5.47	0.000	.8286827	1.754852
_cons	.7976195	.2703797	2.95	0.003	.2676849	1.327554
Accnts (OperEff)	1.493953	.25332	5.90	0.000	.9974546	1.990451
_cons	.8346511	.2396703	3.48	0.000	.364906	1.304396
Cashm (OperEff)	.8155747	.1808013	4.51	0.000	.4612106	1.169939
_cons	2.487012	.2644179	9.41	0.000	1.968763	3.005262
Ccard (OperEff)	1.022537	.2071216	4.94	0.000	.6165856	1.428488
_cons	1.895779	.2790652	6.79	0.000	1.348821	2.442737
cov(e.mobile, e.online)	.3948911	.075426	5.24	0.000	.2470589	.5427233
cov(e.StaffEff, e.OperEff)	.0546999	.0185131	2.95	0.003	.0184148	.090985

All coefficients of the listed measures and covariances in Table 5 are positive indicating their importance as components of this model. To test the goodness of fit for our model, we elected four different tests. These tests are the likelihood ratio, the comparative fit index (CFI), the Tucker-Lewis index (TLI) and the standard root mean squared residual (SRMR). The results of these tests are presented in Table 6.

TABLE 6. RESULTS OF THE GOODNESS OF FIT TESTS FOR MODEL 1

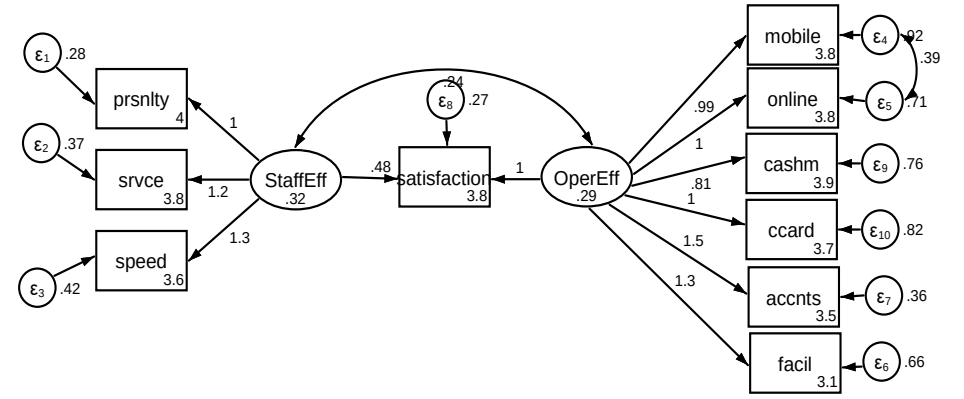
FIT STATISTICS	VALUE
Likelihood ratio $\chi^2(31)$	47.732 model vs. saturated
Relative index χ^2/df Fit is good when index < 2 (Ullman, 2001) and < 5 (Schumacker & Lomax, 2004)	1.54
Comparative fit index (CFI) Fit is good when CFI > 0.93	0.975
Tucker-Lewis index (TLI) Fit is good when TLI > 0.90	0.965
Standardized root mean squared residual (SRMR) Fit is good when SRMR < 0.08	0.043

All the tests in Table 6 indicate a good model fit to the data.

5.2. Model 2: The effect of bank efficiency on client satisfaction for CBs

Figure 4 presents the final model to investigate the effect of bank staff efficiency and operational efficiency of satisfaction. Again, to have a better model fit, we have added the effect of covariance between the error terms of mobile services and online services measures.

FIGURE 4. SEM: EFFECT OF BANK EFFICIENCY ON CLIENT SATISFACTION FOR MODEL 2



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

Similar to the Model 1, this model shows positive coefficients for all the effects. The detailed results of the SEM estimation are presented in Table 7.

TABLE 7. MEASUREMENT EFFECTS OF LATENT VARIABLES FOR MODEL 2

MEASUREMENT EFFECTS	Coef.	Std.Err.	z	P>|z|	[95% Conf. Interval]	
Prsnlty (StaffEff)	1 (constrained					
_cons	3.982456	.0593351	67.12	0.000	3.866162	4.098751
Srvce (StaffEff)	1.15099	.1359027	8.47	0.000	.884626	1.417355
_cons	3.80117	.0685084	55.48	0.000	3.666896	3.935444
Speed (StaffEff)	1.327435	.1512001	8.78	0.000	1.031088	1.623781
_cons	3.596491	.0760589	47.29	0.000	3.447419	3.745564
Satisfaction (StaffEff)	.481532	.2038187	2.36	0.018	.0820547	.8810093
Satisfaction (OperEff)	1 (constrained)					
_cons	3.783626	.071382	53.01	0.000	3.64372	3.923532
Mobile (OperEff)	.9892838	.2522127	3.92	0.000	.4949561	1.483612
_cons	3.766082	.0840648	44.80	0.000	3.601318	3.930846
Online (OperEff)	1.040294	.2524836	4.12	0.000	.5454349	1.535152
_cons	3.847953	.0775921	49.59	0.000	3.695875	4.000031
Facil (OperEff)	1.277925	.3034462	4.21	0.000	.683181	1.872668
_cons	3.064327	.0815139	37.59	0.000	2.904563	3.224092
Accnts (OperEff)	1.477943	.3326281	4.44	0.000	.826004	2.129882
_cons	3.45614	.0763423	45.27	0.000	3.306512	3.605768
Cashm (OperEff)	.8068348	.2154822	3.74	0.000	.3844974	1.229172
_cons	3.918129	.0746282	52.50	0.000	3.77186	4.064397
Ccard (OperEff)	1.011579	.2588581	3.91	0.000	.5042263	1.518931
_cons	3.690058	.0807299	45.71	0.000	3.531831	3.848286
cov(e.mobile, e.online)	.3948911	.075426	5.24	0.000	.2470589	.5427232
cov(StaffEff, OperEff)	.2418124	.0643245	3.76	0.000	.1157388	.3678861

The resulting scores of all the elected goodness of fit test indicate a good model fit are shown in Table 8.

TABLE 8. RESULTS OF THE GOODNESS OF FIT TESTS FOR MODEL 2

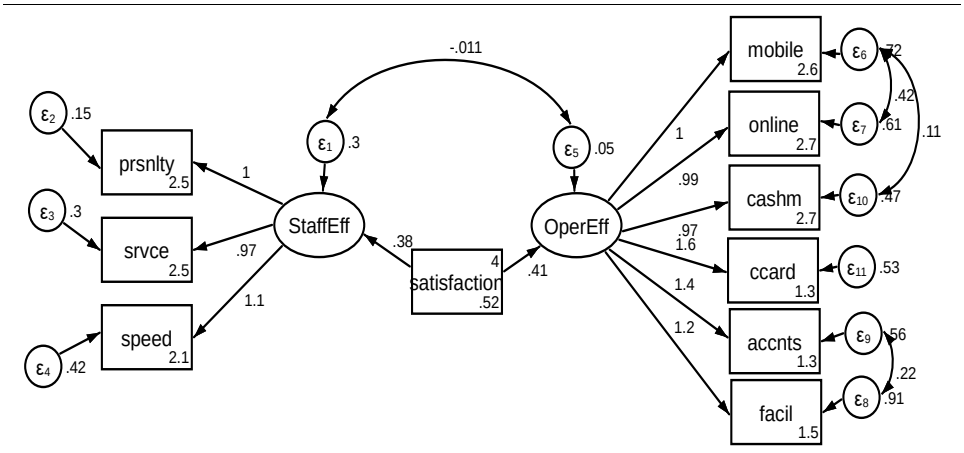
FIT STATISTICS	VALUE
Likelihood ratio $\chi^2(31)$	47.732 model vs. saturated
Relative index χ^2/df Fit is good when index < 2 (Ullman, 2001) and < 5 (Schumacker & Lomax, 2004)	1.54
Comparative fit index (CFI) Fit is good when CFI > 0.93	0.975
Tucker-Lewis index (TLI) Fit is good when TLI > 0.90	0.965
Standardized root mean squared residual (SRMR) Fit is good when SRMR < 0.08	0.043

Again, similar to Model 1, the results show a positive and significant effect of all the measures and covariances. Based on these results, we can conclude that the causal relationship between client satisfaction and bank efficient for CBs is of bilateral nature. That is, each variable affect the other.

We perform a Stability analysis of simultaneous equation systems with a resulting stability index of 0.8748709 where all the eigenvalues lie inside the unit circle indicating that SEM satisfies stability condition.

5.3. Model 3: The effect of client satisfaction on bank efficiency for IBs

FIGURE 5. SEM: EFFECT OF CLIENT SATISFACTION ON BANK EFFICIENCY FOR MODEL 3



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

Compare to Model 1 for CBs, and to have a better model fit, we have included two more covariance effects to model the relationship for IBs. The first one is between the error terms of mobile service and cash machines services, which we can be explained by the fact that they share remote banking services similarities. The second one is between the error terms of accounts and loans/facilities measures. This association between these two variables can be explained by the fact that the clients deal directly and personally with the staff bank to handle jobs related to their accounts.

We can observe from Figure 5, that, except for the covariance between the error terms of staff efficiency and operational efficiency, all coefficients are positive. Similar to the results in Model 1, the structural effects and measurement effects are all significantly positive.

The resulting structural effects output of estimating Model 3 are presented in Table 9. Table 10 illustrates the detailed results of measurement effects.

TABLE 9. STRUCTURAL EFFECT OF SATISFACTION FOR MODEL 3 (IBS)

STRUCTURAL EFFECTS	Coef.	OIM Std.Err.	z	P>|z|	[95% Conf. Interval]	
StaffEff ← Satisfaction	.3846873	.0797998	4.82	0.000	.2282825	.5410921
OperEff ←Satisfaction	.4103625	.1027615	3.99	0.000	.2089536	.6117713

TABLE 10. MEASUREMENT EFFECTS OF LATENT VARIABLES FOR MODEL 3 (IBS)

MEASUREMENT EFFECTS	Coef.	Std.Err.	z	P>|z|	[95% Conf. Interval]	
Prsnlty (StaffEff)	1 (constrained					
_cons	2.4811	.3274255	7.58	0.000	1.839357	3.122842
Srvce (StaffEff)	.9691084	.1264301	7.67	0.000	.7213099	1.216907
_cons	2.488695	.3385384	7.35	0.000	1.825172	3.152218
Speed (StaffEff)	1.058422	.1439583	7.35	0.000	.7762691	1.340575
_cons	2.148542	.3797955	5.66	0.000	1.404157	2.892928
Mobile (OperEff)	1 (constrained)					
_cons	2.563055	.4217606	6.08	0.000	1.736419	3.38969
Online (OperEff)	.9859921	.193243	5.10	0.000	.6072427	1.364742
_cons	2.674942	.3872812	6.91	0.000	1.915885	3.433999
Facil (OperEff)	1.165851	.3969427	2.94	0.003	.3878572	1.943844
_cons	1.457976	.4812266	3.03	0.002	.514789	2.401163
Accnts (OperEff)	1.432807	.4639252	3.09	0.002	.5235306	2.342084
_cons	1.282374	.4875231	2.63	0.009	.3268462	2.237902
Cashm (OperEff)	.96576	.2658093	3.63	0.000	.4447833	1.486737
_cons	2.69229	.3417772	7.88	0.000	2.022419	3.362161
Ccard (OperEff)	1.560917	.4259906	3.66	0.000	.7259904	2.395843
_cons	1.312329	.3994488	3.29	0.001	.5294236	2.095234
cov(e.mobile, e.online)	.4208382	5.50		0.000	.270936	.5707404
cov(e.StaffEff, e.OperEff)	-.0107892	.0216708	-0.50	0.623	-.0532632	.0316848
cov(e.mobile,e.cashm)	.1120577	.0446701	2.51	0.012	.0245058	.1996096
cov(e.facil,e.accnts)	.2200785	.0770554	2.86	0.004	.0690528	.3711042

Similar to the previous models, Model 3 passes all four goodness of fit tests as shown in Table 11.

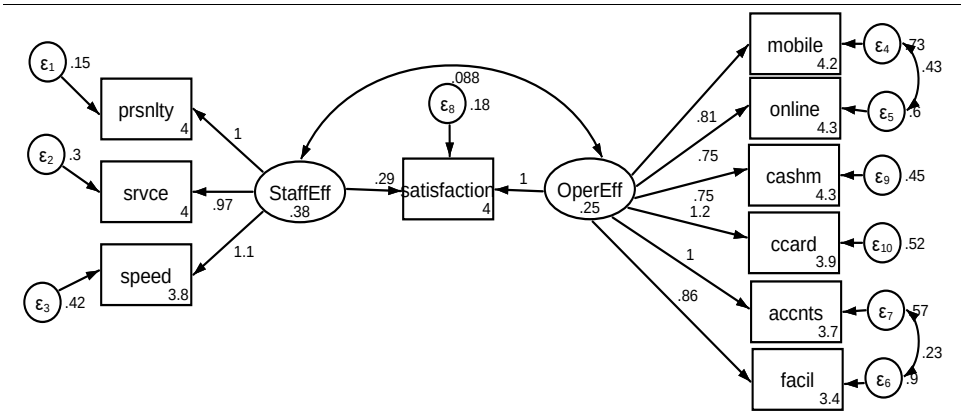
TABLE 11. RESULTS OF THE GOODNESS OF FIT TESTS FOR MODEL 3

FIT STATISTIC	VALUE
Likelihood ratio $\chi^2(30)$	42.726 model vs. saturated
Relative index χ^2/df Fit is good when index < 2 (Ullman, 2001) and < 5 (Schumacker & Lomax, 2004)	1.42
Comparative fit index (CFI) Fit is good when CFI > 0.93	0.967
Tucker-Lewis index (TLI) Fit is good when TLI > 0.90	0.951
Standardized root mean squared residual (SRMR) Fit is good when SRMR < 0.08	0.071

5.4. Model 4: The effect of bank efficiency on client satisfaction for IBs

Except for the added covariance between error terms of the measurements of accounts and loans/facilities, this model is similar to Model 2 for CBs. All coefficients depicted in Figure 6 are positive indicating a predictable increase in the level of client satisfaction in response to an increase in staff efficiency or/and operational efficiency. The detailed tests' results of the effect generated by SEM estimation are presented in Table 12.

FIGURE 6. SEM: EFFECT OF BANK EFFICIENCY ON CLIENT SATISFACTION FOR MODEL 4



Note: The model abbreviations mean the following: prsnlty – personality; srvce – service; speed - speed at which the job is done; mobile - quality mobile services; online - online services; cashm - ATMs; ccard - credit card services; accnts - accounts services; and facil - loans/facilities services.

TABLE 12. MEASUREMENT EFFECTS OF LATENT VARIABLES FOR MODEL 4 (IBS)

MEASUREMENT EFFECTS	Coef.	Std.Err.	z	P>|z|	[95% Conf. Interval]	
Prsnlty (StaffEff)	1 (constrained					
_cons	4.032258	.0654524	61.61	0.000	3.903974	4.160542
Srvce (StaffEff)	.969557	.1265149	7.66	0.000	.7215923	1.217522
_cons	3.991935	.072577	55.00	0.000	3.849687	4.134184
Speed (StaffEff)	1.057573	.1437294	7.36	0.000	.7758681	1.339277
_cons	3.790323	.0824588	45.97	0.000	3.628706	3.951939
Satisfaction (StaffEff)	.2882145	.1106144	2.61	0.009	.0714143	.5050148
Satisfaction (OperEff)	1 (constrained)					
_cons	4.032258	.0644511	62.56	0.000	3.905936	4.15858
Mobile (OperEff)	.8112333	.2491094	3.26	0.001	.3229879	1.299479
_cons	4.217742	.0850112	49.61	0.000	4.051123	4.384361
Online (OperEff)	.7495501	.2181161	3.44	0.001	.3220503	1.17705
_cons	4.306452	.0775011	55.57	0.000	4.154552	4.458351
Facil (OperEff)	.8608071	.2342325	3.68	0.000	.4017199	1.319894
_cons	3.387097	.0938466	36.09	0.000	3.203161	3.571033
Accnts (OperEff)	1.025268	.1892943	5.42	0.000	.6542578	1.396278
_cons	3.653226	.0822773	5.42	0.000	3.491965	3.814486
Cashm (OperEff)	.7489221	.1991229	3.76	0.000	.3586485	1.139196
_cons	4.290323	.0691616	62.03	0.000	4.154768	4.425877
Ccard (OperEff)	1.174657	.2527574	4.65	0.000	.6792613	1.670052
_cons	3.895161	.083668	46.55	0.000	3.731175	4.059148
Cov (e.mobile, e.online)	.4326178	.0825358	5.24	0.000	.2708505	.594385
cov(e.facil, e.accnts)	.2254039	.0786077	2.87	0.004	.0713356	.3794723
cov(StaffEff, OperEff)	.0884615	.0445493	1.99	0.047	.0011465	.1757766

As Model 4 assumes no structural effects, only the results of the measurements effects are presented in Table 12. As shown, all the coefficient of the variables and covariances exhibit positive effects. These positive effects are statistically significant as indicated by all the z scores and p-values. Similar to our conclusions regarding the results of estimated models 1 and 2 for CBS, we can conclude that there is a strong evidence of bilateral positive effects between client satisfaction and bank efficiency.

The Model 4 appears to pass all goodness of fit tests as illustrated in Table 13.

TABLE 13. RESULTS OF GOODNESS OF FIT TESTS FOR MODEL 3

FIT STATISTICS	VALUE
Likelihood ratio χ^2(30)	49.776 model vs. saturated
Relative index χ^2/df Fit is good when index < 2 (Ullman, 2001) and < 5 (Schumacker & Lomax, 2004)	1.66
Comparative fit index (CFI) Fit is good when CFI > 0.93	0.951
Tucker-Lewis index (TLI) Fit is good when TLI > 0.90	0.929
Standardized root mean squared residual (SRMR) Fit is good when SRMR < 0.08	0.077

The Stability analysis of simultaneous equation systems resulted in a stability index of 0.0404395 where all the eigenvalues lied inside the unit circle, which also indicate a stable SEM.

To recap on the results of this research, we observe the following particular remarks:

1. To answer the main question we asked in the introduction of this paper, our results confirm that client satisfaction for IBs and CBs are equally important determinants of bank efficiency.
2. Our results provide evidence of minor dissimilarities of the client satisfaction and efficiency causal models for IBs compared to CBs.
3. Despite the obvious dissimilarities of capital structure and operations of IBs versus CBs, our results provide evidence of identical positive effects of the same variables.
4. With little alterations regarding the inclusion of some covariances, our proposed bidirectional causal models proved to be well specified with statistical evidence of strong goodness of fit.
5. Modeling the causality relationship for Islamic banks required catering for more covariances between the error terms of the measurement observed variables which indicates the importance of these associations from the point of view of IBs' clients.
6. All research hypotheses were supported with predicted positive signs. Table 14 below exhibits these results.

TABLE 14. A SUMMARY OF THE HYPOTHESES TESTS

HYPOTHESIS	TYPE OF BANK	EFFECT SIGN	RESULT
Bank staff efficiency explains changes in teller personality, teller job provided and the speed at which the job is done.	CBs IBs	+ +	Supported Supported
Bank staff efficiency explains variability in the level of client satisfaction.	CBs IBs	+ +	Supported Supported
Operational efficiency of the bank explains mobile banking, online banking, ATM services, credit card services and loans/facilities and accounts' services.	CBs IBs	+ +	Supported Supported
Operational efficiency explains variability in the level of client satisfaction.	CBs IBs	+ +	Supported Supported
Client satisfaction explains staff efficiency and operational efficiency.	CBs IBs	+ +	Supported Supported

6. Conclusion

The purpose of this study is to investigate possible bilateral effects between client satisfaction and bank efficiency in the context of value maximization goal. Although most of the existing research focuses on singular direction effect pointing from bank performance factors to customer satisfaction, it was argued that since value maximization is the ultimate goal, it is valid to investigate the effect in the opposite direction.

Furthermore, as Islamic banks differ fundamentally from conventional banks, modeling the dual effects is expected to be different between the two types of banks.

Our investigation started with collecting survey data targeting the clients of the two types of banks. Initially, we used a nonparametric mean ranking procedure to test the significance of differences in the proposed measures. Some of them proved significantly different. We then modeled the causal effects of client satisfaction and bank efficiency using structural equation model system. We proposed four models. Two for each bank type. The results of estimating these models indicated bidirectional causal effect between client satisfaction and bank efficiency.

We believe that the results of this research have two type of implications: theoretical and practical. Regardless of bank type, theoretically, the results imply that a bank client is an important predictor of value. Therefore, it is important to cater for this variable when developing valuation models. From a practical point of view and regardless of the bank type, bank owners and managers should give more attention to their clients to increase the level of satisfaction as it is an important determinant of efficiency, which ultimately should lead to a higher value of the bank.

We believe this quest can be enhanced by modeling the bilateral effects using other factors including valuation measurements and measurement of bank performance other than the measurement of efficiency used in this research. Investigating non-recursive bidirectional effect modeling might be a viable option to investigate the relationship between client satisfaction and bank valuation.

References

Al-Deehani, M. T., & Aldeehani, T.M. (2017) Perceptions and predictions of service quality-customer satisfaction of conventional and Islamic banks in the GCC region. *Journal of Research in Business, Economics and Management, 9*(1), 1641-1656

Al-Hawari, M., & Ward, T. (2006), The effect of automated service quality on Australian banks' financial performance and the mediating role of customer satisfaction, *Marketing Intelligence & Planning, 24*(2), 127-147.

Al-Hunnayan, S., & Al-Mutairi, A. (2016). Attitudes of customers towards Islamic banks in Kuwait. *International Journal of Business and Management, 11*(11), 59-69.

Alsqqa, M. A. M. M. (2017). *How the online service influences customer satisfaction within the banking sector in UAE: A comparative study between management and customer perspective* (Doctoral dissertation, Cardiff Metropolitan University). Retrieved March 17, 2018, from https://repository.cardiffmet.ac.uk/handle/10369/8687

Amin, M., Isa, Z., & Fontaine, R. (2011). The role of customer satisfaction in enhancing customer loyalty in Malaysian Islamic banks. *The Service Industries Journal, 31*(9), 1519-1532.

Awan, G. A., & Azhar, M. (2014). Consumer behavior towards Islamic banking in Pakistan. *European Journal of Accounting Auditing and Finance Research, 2*(9), 42-65.

Culiberg, B., & Rojšek, I. (2010). Identifying service quality dimensions as antecedents to customer satisfaction in retail banking. *Economic and Business Review, 12*(3), 151-166.

Ganguli, Sh., & Roy, S. K. (2011), Generic technology-based service quality dimensions in banking: Impact on customer satisfaction and loyalty, *International Journal of Bank Marketing, 29*(2), 168-189.

Echchabi, A., & Nafiu Olaniyi, O. (2012). Malaysian consumers' preferences for Islamic banking attributes. *International Journal of Social Economics, 39*(11), 859-874.

Kadir, H. A., Rahmani, N., & Masinaei, R. (2011). Impacts of service quality on customer satisfaction: Study of Online banking and ATM services in Malaysia. *International Journal of Trade, Economics, and Finance, 2*(1), 1-9.

Kassim, N., & Asiah Abdullah, N. (2010). The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce settings: A cross cultural analysis. *Asia Pacific Journal of Marketing and Logistics, 22*(3), 351-371.

Kumbhar, V. M. (2011). Factors affecting the customer satisfaction in e-banking: Some evidences form Indian banks. *Management Research & Practice, 3*(4), 1-14.

Levesque, T., & McDougall G. (1996), Determinants of customer satisfaction in retail banking, *International Journal of Bank Marketing, 14*(7), 12-20.

Laukkanen, T. (2007). Internet vs mobile banking: comparing customer value perceptions. *Business Process Management Journal, 13*(6), 788-797.

Munusamy, J., Chelliah, S., & Mun, H. W. (2010). Service quality delivery and its impact on customer satisfaction in the banking sector in Malaysia. *International Journal of Innovation, Management, and Technology, 1*(4), 398-404.

Naser, K., Al Salem, A., & Nuseibeh, R. (2013). Customers awareness and satisfaction of Islamic banking products and services: Evidence from the Kuwait finance house. *International Journal of Marketing Studies, 5*(6), 185-199.

Ndubisi, N., & Wah, C. K. (2005), Factorial and discriminant analyses of the underpinnings of relationship marketing and customer satisfaction, *International Journal of Bank Marketing, 23*(7), 542-557.

Okumus, H. S., & Genc, E. G. (2013). Interest free banking in Turkey: a study of customer satisfaction and bank selection. *European Scientific Journal, ESJ, 9*(16), 144-166.

Omar, A. B., Sultan, N., Zaman, K., Bibi, N., Wajid, A., & Khan, K. (2011). Customer perception towards online banking services: Empirical evidence from Pakistan. *Journal of Internet Banking and Commerce, 16*(2), 1-24.

Rahman, A., & Anwar, M. (2017), Customer loyalty toward Islamic and conventional banks; mediator role of customer satisfaction, *Journal of Marketing Management and Consumer Behavior, 1*(5), 1-23.

Raza, S. A., Jawaid, S. T., & Hassan, A. (2015). Internet banking and customer satisfaction in Pakistan. *Qualitative Research in Financial Markets, 7*(1), 24-36.

Rod, M., Ashill, N. J., Shao, J., & Carruthers, J. (2009). An examination of the relationship between service quality dimensions, overall internet banking service quality and customer satisfaction: A New Zealand study. *Marketing Intelligence and Planning, 27*(1), 103-126.

Saleem, Z., & Rashid, K. (2011). Relationship between customer satisfaction and mobile banking adoption in Pakistan. *International Journal of Trade, Economics, and Finance, 2*(6), 537-544.

Setiawan, B., & Panduwangi, M. (2017). *Measurement of Islamic Banking Attributes in Indonesia.* Proceedings of the Global Conference on Business and Economics Research (GCBER) 14-15 August 2017, Universiti Putra Malaysia, Retrieved March 16, 2018, from http://www.econ.upm.edu.my/

Siddiqi, K. O. (2011). Interrelations between service quality attributes, customer satisfaction and customer loyalty in the retail banking sector in Bangladesh. *International Journal of Business and Management, 6*(3), 12-36.

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Srouji, A. F., Ab Halim, M. S., Lubis, Z., & Hamdallah, M. E. (2015) Determinants of bank selection criteria's in relation to Jordanian Islamic and conventional banks, *International Journal of Economics, Commerce and Management, III*(10), 294-306.

Subramanian, N., Gunasekaran, A., Yu, J., Cheng, J., & Ning, K. (2014). Customer satisfaction and competitiveness in the Chinese E-retailing: Structural equation modeling (SEM) approach to identify the role of quality factors. *Expert Systems with Applications, 41*(1), 69-80.

Ullman, J. B. (2001). *Structural equation modeling*. In B. G. Tabachnick & L. S. Fidell (2001). Using Multivariate Statistics (4th ed., pp 653-771). Boston: Allyn and Bacon.

Yap, K. B., Wong, D. H., Loh, C., & Bak, R. (2010). Offline and online banking - where to draw the line when building trust in e-banking? *International Journal of Bank Marketing, 28*(1), 27-46.