Attitudes of Qatar Consumers towards Local Conventional Banks, Local Islamic Banks and Conventional Foreign Banks: A Multivariate Statistical Analysis

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Abstract

This study uses the results of a survey to determine the main factors that motivate Qatar consumers to choose between local conventional banks, local Islamic banks and branches of (conventional) foreign banks operating in the State of Qatar. A random sample was selected and interviews were conducted during the two months of November and December 2000.

The technique of factor analysis was used to analyze the relationships among the interrelated variables. The principal component method, with varimax rotation, is utilized to reduce the large number of explanatory variables to a few underlying factors.

Factor scores were used as predictive variables in multiple discriminant analysis to determine which, if any, of the identified factors predict Qatar Consumers' interest to deal with each type of banks.

Introduction

Qatar, like many other Middle Eastern Countries has a dual banking system, i.e. interest-free financial organizations operate side-by-side with traditional (interest-based) banks. Qatar has 14 banks: four local conventional, two Islamic (i.e. operate according to Islamic Laws which prohibits the payment of fixed interest on deposits and the charge of fixed interest on loans) and eight branches of foreign conventional banks.

The market share of the local conventional banks is approximately 65.7%, as compared with 25.2% for local Islamic banks and 9.1% for foreign (conventional) banks. There has never been an inquiry into the preference of Qatar consumers for the three types of banks. This paper is a modest attempt to close this gap in the literature.

A survey was conducted to gather opinions of banks' clients in Qatar of their attitudes toward the three types of banks operating within a dual banking system. These clients have a free choice to bank with any of the 14 banks. A questionnaire prepared the author in Arabic (with an English translation) and was filled through telephone interviews after a random sample was selected. The size was determined using a 95% level of confidence, 5% level of tolerated

error and a proportion of 0.5 (which reflects the maximum possible variation in the population). Under these assumptions, the sample size is determined to be equal 385 clients.

The respondents were asked to indicate their degree of agreement with a number of statements using a five point scale (1 = strongly disagree, 5 = strongly agree). The questionnaire also collected information on a number of socio-economic characteristics of the respondents. Factor analysis and multiple discriminant analysis were used to analyze the survey results. This paper is divided into four sections. Section one examines the main characteristics of the sample. Section two summarizes the results of factor analysis. Section three uses factor scores as predictors in multiple discriminant analysis. Finally, section four summarizes the main conclusions of the paper.

Main Characteristics of the Sample

Table 1 gives the main characteristics of the sample. The data in this table suggest that:

1. Approximately 64.2% of all respondents were males and 35.8% females.

2. Over two-thirds of the respondents aged 25 to 45 years. The mean age was 39 years and the standard deviation was 5.4 years.

3. 56.6% of the respondents had an average monthly income of 5000-15000 QR (approximately US$1350-4000). The mean income is approximately 13060 QR (US$ 3500) and the standard deviation is 4315QR (US$1180).

4. Most people interviewed (58.7%) reached an education level at the intermediate or secondary level. However, one-third of the respondents completed at least a first university degree.

5. Approximately 55% of the respondents are public servants i.e., work in the government sector and only 2.3% are self-employed.

6. The vast majority of respondents (64.7%) are Qatar Nationals. The sample suggests that only 35.3% of the respondents who carry bank accounts in Qatar were expatriates.

Table 1: Main Characteristics of the Sample

Socio-Economic Characteristics	No.	%	Mean	Std. Deviation
1. SEX:				
[1] Male	247	64.2		
[2] Female	138	35.8		
2. AGE:			39	5.4
a) Less than 21	9	2.3		
b) 21 and less than 25	32	8.3		
c) 25 and less than 35	168	43.6		
d) 35 and less than 45	92	23.9		
e) 45 or more	84	21.8		
3. MONTHLY INCOME			13060	1180
a) Less than 5000 QR	64	16.6		
b) 5000 and less than 10000 QR	138	35.8		
c) 10000 and less than 15000 QR	80	20.8		
d) 15000 and less than 20000 QR	39	10.1		
e) 20000 and less than 25000 QR	39	10.1		
f) More than 25000 QR	25	6.5		
4. EDUCATION				
a) Primary	5	1.3		
b) Intermediate	74	19.2		
c) Secondary	147	38.2		
d) Diploma for high school	32	8.3		
e) 1st University degree	109	28.3		
f) Higher education	18	4.7		
5. OCCUPATION				
a) Public servant	210	54.5		
b) Employee in a private organization	174	43.2		
c) Self-employed	9	2.3		
6. NATIONALITY				
a) Qatar	249	64.7		
b) Non-Qatar	136	35.3		

Results of Factor Analysis

Respondents were asked to indicate their degree of agreement with 26 statements relating to their preferences for dealing with a particular bank, using a five-point scale. The survey results were analyzed using the SPSS program (Coakes and Steed, 1999). Table 2 gives the means and standard deviations of scores of variables related to consumers' preferences. The data in Table 8-2 suggest that bank's reputation (V1 and V13) score relatively higher than other variables. Other variables that score relatively high are speed of service, electronic service and easiness to deposit and withdraw. On the other hand, the

mean score of variables 21 and 22, which relate to advertising and promotion, are much small than other scores.

Table 2: Means and Standard Deviations of Scores of Variables Related to Bank Services in Qatar

	Mean	Std Dev	Variable
VAR1	4.34805	2.35814	Bank reputation
VAR2	4.18961	1.02464	Speed of service
VAR3	4.01558	1.05315	Staff competence
VAR4	4.08312	2.33817	Staff assistance
VAR5	4.03896	2.26868	Easiness to read statements
VAR6	3.50390	2.54657	Easiness to obtain loans
VAR7	3.47273	2.20083	Interest on loans
VAR8	3.76623	2.38428	Numerous number of branches
VAR9	3.58961	2.44691	Afternoon service
VAR10	3.35844	1.25886	Bank appearance
VAR11	4.08571	2.72726	Banking facilities
VAR12	3.44156	1.32772	Return on deposits
VAR13	3.73766	1.19950	Community service
VAR14	3.29610	1.35424	Cost of keeping a current account
VAR15	3.87532	1.09451	Easiness to open a current account
VAR16	4.28312	2.31736	Easiness to deposit and withdraw
VAR17	4.02597	1.04051	Variety of services
VAR18	3.92727	1.16811	Easiness to transfer money abroad
VAR19	4.13247	2.84964	The bank is known abroad
VAR20	3.75844	2.34550	Bank location
VAR21	2.85714	1.20885	Advertising
VAR22	2.97143	1.30572	Relatives and friends recommendations
VAR23	3.91688	1.27408	Religious reasons
VAR24	3.62857	1.24152	Size of the bank
VAR25	3.72468	2.34566	Available accounts
VAR26	4.18182	2.33924	Electronic services

Number of Cases = 385

Factor analysis was performed on the explanatory variables with the primary goal of data reduction (Muliak, 1972). The statistical results reveal high correlation between a number of variables. This suggests that factor analysis is appropriate.

Bartlett's test of sphericity was used to test the null hypothesis that the variables are uncorrelated in the population. The test gave a value of 5052.9 which is highly significant favouring a rejection of the null hypothesis (Dillon and Goldstein, 1984). Also, the Kaiser-Meyer-Olkin (KMO) measure of sampling

adequacy was calculated. A value of 0.87436 was obtained which indicate that correlation's between pairs of variables can be explained by other variables and hence factor analysis is appropriate (Hair, et. al, 1992).

Table 3 shows the "final statistics" which give relevant information after the desired number of factors have been extracted (Dunteman, 1989). The table gives the commonalties for the variables, along with the variance accounted for by each factor that is retained. It can be seen that the 25 explanatory variables are reduced to only six factors. The extracted six se variables account for 61% of the variance. The reproduced correlation matrix suggests that only 24% residuals are larger than 0.05 indicating an acceptable model fit (Johnson and Wichern, 1982).

Table 3: Results of Factor Analysis

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
VAR1	.33074	*	1	6.68602	25.7	25.7
VAR2	.71884	*	2	3.60593	13.9	39.6
VAR3	.69195	*	3	1.74269	6.7	46.3
VAR4	.28562	*	4	1.51958	5.8	52.1
VAR5	.69687	*	5	1.17412	4.5	56.6
VAR6	.42341	*	6	1.12117	4.3	61.0
VAR6	.56021	*				
VAR8	.89035	*				
VAR9	.86807	*				
VAR10	.52234	*				
VAR11	.22511	*				
VAR21	.60156	*				
VAR13	.63714	*				
VAR14	.51762	*				
VAR15	.62283	*				
VAR16	.29183	*				
VAR17	.69877	*				
VAR18	.70595	*				
VAR19	.35690	*				
VAR20	.89737	*				
VAR21	.59470	*				
VAR22	.59924	*				
VAR23	.72790	*				
VAR24	.58113	*				
VAR25	.90644	*				
VAR26	.89663	*				

Table 4: Rotated Factor Matrix

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 7 iterations.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
VAR1	.04526	.01217	.55169*	-.03711	-.01668	-.15008
VAR2	.05998	.83699*	.05797	.10352	.02399	.00582
VAR3	.07711	.81000*	-.02223	.03596	.11538	.12171
VAR4	.04999	.42455*	-.04830	.07532	.03527	.30599
VAR5	.07831	.63753*	-.02015	.07945	.05245	.52424
VAR6	.07070	.62821*	.08923	.09387	-.06974	-.04605
VAR7	.02694	.01803	-.07309	.74395*	.01167	.01502
VAR8	.93669*	.07763	.02194	.05338	.05945	.00914
VAR9	.91672*	.07433	.01245	.12768	.07530	.00717
VAR10	.14527	.14523	.29458	.11998	.61261*	-.06074
VAR11	.03725	.41015*	-.10389	.18745	.07880	-.05801
VAR12	.10380	.21333	.16225	.68880*	.20630	.04409
VAR13	.10750	.27252	.60133*	.18456	.32089	.22953
VAR14	.09404	.17921	.13273	.61328*	.26248	.11846
VAR15	.08150	.66666*	.16124	.09648	.31143	.19863
VAR16	.03161	.44972*	.26375	-.01204	.06344	-.12185
VAR17	.11310	.73307*	.32350	.13054	.16375	-.00865
VAR18	.07962	.69651*	.43943	.10350	.06854	-.07727
VAR19	.03292	.06673	.53431*	.15485	-.03733	.20124
VAR20	.93520*	.03127	.08936	.03885	.11094	.00023
VAR21	.07808	.12431	.19108	.06838	.72455*	.08357
VAR22	.06878	.17008	-.14464	.06213	.73517*	.01811
VAR23	-.00202	.02182	.17353	.00011	.04152	.83402*
VAR24	.04018	.12848	.66155*	.04769	.30341	.17616
VAR25	.93838*	.10882	.04497	.07183	.07359	.03803
VAR26	.93009*	.13110	.09444	.05781	.04286	.01633

The rotated factor matrix obtained by the varimax procedure (Table 4) suggests that Factor 1 has high coefficients for the variables which represent number of branches (V8), Afternoon service (V9), bank location (V20), available accounts (V25) and electronic services (V26). Therefore, this factor may be labeled "convenience". Factor 2 has high coefficients on the following variables: V2 (speed of service), V3 (staff competence), V4 (staff assistance), V5 (easiness to read bank statements), V6 (easiness to obtain loans), V11 (banking facilities),

V15 (easiness to open a current account) V16 (easiness to deposit and withdraw), V17 (variety of services) and V18 (easiness to transfer money abroad). Therefore, this factor may be labelled "traditional services". Factor 3 is highly correlated with variables V1 (bank reputation), V13 (community service), V19 (bank's recognition abroad) and V24 (size of the bank). Hence, this variable may be labeled "reputation". Factor 4 has high coefficients on V7 (interest on loans), V12 (return on deposits) and V14 (cost of keeping a current account). These variables refer to return and costs. Hence, factor 4 may be labeled "cost-return". Factor 5 is highly correlated with V10 (bank appearance), V21 (advertising) and V22 (relatives and friends recommendations). Therefore, this factor may be labeled "promotion". Finally, Factor 6 is highly related to the variables representing religion (V23), hence, this factor may be labeled "religion".

Thus, using the principal component method and varimax rotation, the 26 explanatory variables for dealing with a particular bank, listed in Table 2, have been reduced to the following six factors:

F1: Convenience

F2: Traditional Services

F3: Reputation

F4: Cost-return

F5: Promotion

F6: Religion

Multiple Discriminant Analysis of Factor Scores

The factor scores for the six factors were introduced in multiple discriminant analysis as explanatory variables. The type of bank, where banks were divided into three groups, represents the dependent variable. Group 1 comprises *conventional local banks*. Group 2 refers to *local Islamic banks* while group 3 consists of *conventional foreign banks.*

Table 5: Results of Multiple Discriminant Analysis

Number of cases by group

	Number of cases		
VAR119	Unweighted	Weighted	Label
1	253	253.0	Local Conventional
2	97	97.0	Local Islamic
3	35	35.0	Foreign Bank
Total	385	385.0	

Group means

VAR119	FAC1_	FAC2_1	FAC3_	FAC4_1	FAC5_1	FAC6_1
1	1.07156	.06573	1.0057	.11586	.03075	-.12638
2	-.00404	-.11733	-.12559	-.14897	-.08423	1.42338
3	-.09656	.10882	.02587	.93855	.03050	-.22455
Total	.69437	.02352	.63160	.12393	.00590	.25515

Group standard deviations

VAR119	FAC1_1	FAC2_1	FAC3_1	FAC4_1	FAC_5	FAC_6
1	1.28552	1.06010	1.28191	.98503	1.02542	1.10169
2	.81839	.97431	1.02790	1.10885	.98076	.98368
3	.64807	.60476	.68149	1.46061	.92391	.89600
Total	1.25023	1.00701	1.28614	1.10107	1.00441	1.25344

Pooled within-groups correlation matrix

	FAC1_1	FAC2_1	FAC3_1	FAC4_1	FAC5_1	FAC6_1
FAC1_1	1.00000					
FAC2_1	.04703	1.00000				
FAC3_1	.54785	.21146	1.00000			
FAC4_1	.21157	.02005	.14653	1.00000		
FAC5_1	.26354	.00230	.13279	-.00201	1.00000	
FAC6_1	-.01954	-.00097	.09075	.05344	-.00195	1.00000

Wilks' Lambda (U-statistic) and univariate F-ratio
with 2 and 382 degrees of freedom

Variable	Wilks' Lambda	F	Significance
FAC1_1	.82473	40.5922	.0000
FAC2_1	.99325	1.2987	.2741
FAC3_1	.83648	37.3366	.0000
FAC4_1	.93456	13.3749	.0000
FAC5_1	.99728	.5214	.5941
FAC6_1	.70618	79.4695	.0000

Canonical Discriminant Functions

Fcn	Eigen	Pct of Variance	Cum Pct	Canonical Corr	After Fcn	Wilks' Lambda	Chi²	df	Sig
					0	.516870	250.456	12	.0000
1*	.6464	78.68	78.68	.6266	1	.850972	61.242	5	.0000
2*	.1751	21.32	100.00	.3860					

* Marks the 2 canonical discriminant functions remaining in the analysis.

Standardized canonical discriminant function coefficients

	Func 1	Func 2
FAC1_1	-.24012	.68084
FAC2_1	.01212	-.11140
FAC3_1	-.45458	.15374
FAC4_1	-.06103	-.76202
FAC5_1	.06077	-.21808
FAC6_1	.82318	.37363

Structure matrix:

Pooled within-groups correlations between discriminating variables and canonical discriminant functions
(Variables ordered by size of correlation within function)

	Func 1	Func 2
FAC6_1	.78322*	.33409
FAC3_1	-.50973*	.39647
FAC2_1	-.09718*	-.06300
FAC5_1	-.06433*	-.01769
FAC4_1	-.13433	-.57728*
FAC1_1	-.50158	.53382*

* denotes largest absolute correlation between each variable and any discriminant function.

Unstandardized canonical discriminant function coefficients

	Func 1	Func 2
FAC1_1	-.2109378	.5980847
FAC2_1	.0120462	-.1107067
FAC3_1	-.3854412	.1303553
FAC4_1	-.0571888	-.7140252
FAC5_1	.0604279	-.2168515
FAC6_1	.7794676	.3537913
(Constant)	.1974787	-.4955283

Canonical discriminant functions evaluated at group means (group centroids)

Group	Func 1	Func 2
1	-.51830	.13371
2	1.35824	.12689
3	-.01768	-1.31816

Test of Equality of Group Covariance Matrices Using Box's M

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Group	Label	Rank	Log Determinant
1	Local Conventional	6	.345627
2	Local Islamic	6	-1.120540
3	Foreign Bank	6	-2.937077
Pooled within-groups covariance matrix		6	.300132

Box's M	Approximate F	Degrees of freedom		Significance
234.98491	5.34345	42,	32087.1	.0000

Classification results

Actual Group	No. of Cases	Predicted Group Membership 1	2	3
Group 1 Local Conventional	253	238	15	0
		94.1%	5.9%	.0%
Group 2 Local Islamic	97	31	64	2
		32.0%	66.0%	2.1%
Group 3 Foreign Bank	35	20	2	13
		57.1%	5.7%	37.1%

Percent of "grouped" cases correctly classified: 81.82%

Since we have three groups and six predictors, we can estimate **two** discriminant functions (Klecka, 1980). Table 5 presents the results of estimating three-group discriminant analysis. The following comments can be made about these results:

1. An examination of group means indicates that factors 1, 3, 4 and 6 separate the groups more widely than the other two factors.

2. The pooled within-groups correlation matrix that is computed by averaging the separate covariance matrices for all groups (Lachenbruch, 1975) indicates low correlation coefficient between predictors. Hence, there is no serious problem of multi-collinearity.

3. The significance attached to the univariate F ratios indicates that when the predictors are considered individually, all predictors are significant in discriminating between the three groups, with the exception of factor 2 (traditional services) and factor 5 (promotion).

4. The eigenvalue for function 1 is 0.6464. For function 2, it is 0.1751. The first function has the largest between-groups variability (as is usually the case). This function accounts for 78.7% of the variability while function 2 accounts for the remaining 21.3% of the between-groups variability.

5. The Wilks' lambda associated with function 1 is .51687 This transforms to a chi-square value of 250.45 which is statistically significant at .000 level. The Wilks' lambda of function 2 after function 1 has been removed is 0.851 The significance level associated with the second function is also .000, indicating that it does contribute significantly to group differences (Morrison, 1969). These results suggest a simultaneous Wilks' lambda = .4398.

6. Since the value of Chi-square of each function is statistically significant beyond the 5% level, we reject the null hypothesis that the means of both functions are equal. Hence, both functions contribute to group separation.

7. The canonical correlation for function 1 is .6266 while for function 2, the correlation is .3860. Hence, the proportion of total variability explained by differences between groups is 39.3% for function 1 and 14.9% for function 2.

8. The standardized canonical discriminant function coefficients indicate a large coefficient for factor 6 (religion) and factor 3 (reputation) on function 1, whereas function 2 has relatively larger coefficients for factor 1 (convenience) and factor 4 (cost-return). A similar conclusion is reached by an examination of the structure matrix (Manly, 1994).

9. The unstandardized canonical discriminant function coefficients give the following two discriminant functions:

$$Z_1 = .197 - .2109\,F_1 + .012\,F_2 - .385\,F_3 - .057\,F_4 + .060\,F_5 + .779\,F_6$$

$$Z_2 = -.495 + .598\,F_1 + .111\,F_2 + .130\,F_3 - .714\,F_4 - .217\,F_5 + .354\,F_6$$

10. The canonical discriminant functions evaluated at group means (group centroid) suggest that group 1, *conventional local banks,* has a large negative value on function 1. Since the "reputation" and "convenience" factors have a large negative sign on this function, this suggests that Qatar consumers who elect to bank with local conventional banks do so mainly for convenience and because of the reputation these banks enjoy locally. Group 2 customers on the other hand, has a large positive value on function 1. Since "religion" has a large positive coefficient on function 1, this suggests that Qatar consumers who elect to bank with Islamic banks do so mainly for religious reasons. Those customers attach more importance to religion than to anything else when selecting a bank. Group 3 has a large negative value on function 2. Since factor four (cost-return) carries a large negative sign in function 2, this suggests that Qatar consumers who elect to bank with foreign conventional banks do so because they get a relatively higher return on their deposits and pay a relatively lower interest on their loans when dealing with these banks.

    The level of significance of ***Box's M*** suggests that we should not reject the null hypothesis that the covariance matrices are equal (Metwally, 1999).

11. The classification results based on the analysis sample suggest a hit ratio equal to 81.82%. This suggests that 81.8% of the cases are correctly classified. Since we have three groups of equal size, a chance hit ratio would be 1/3 ≐ 33.3%. The improvement over chance is more than 25%

indicating at least satisfactory validity (Malhotra et al, 1996). The *Press's Q* statistic is given by:

$$Press's\ Q = \{385-(315)(3)\}^2 / \{385(2)\} = 407.3$$

This value exceeds by far the critical value at a significant level of .01 which is 6.63, suggesting that the predictions are significantly better than chance.

Conclusions

The main conclusions of this paper may be summarized in the following:

1. 385 consumers were surveyed to find out how they evaluate banks operating in the State of Qatar. Those consumers are free to select any of 14 banks. Approximately 65.7% of the consumers choose to deal with local conventional banks, as compared with 25.2% for local Islamic banks and 9.1% for foreign (conventional) banks.

2. The respondents were asked to rate the importance of 26 bank attributes. Factor analysis was used to reduce the number of explanatory variables to a manageable level. Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling suggest that factor analysis is appropriate in determining the main reasons for preferring one type of bank over the other within the dual-banking system currently operating in Qatar.
3. Using the principal component method and varimax rotation, the 26 explanatory variables for dealing with a particular bank, listed in Table 2, were reduced to the six factors namely: a convenience factor, a traditional services factor, a reputation factor, a cost-return factor, a promotion factor and a religious factor.

4. The factor scores of the six extracted factors were used as predictors in multiple discriminant analysis. Two discriminant functions were obtained, each has a significant Chi-square.

5. The canonical discriminant functions evaluated at group means (group centroid) together with the structure matrix of the two discriminant functions suggest that:

   * Qatar consumers who elect to bank with *conventional local banks* do so mainly for convenience and because of the reputation these banks enjoy locally.

   • Qatar consumers who elect to bank with Islamic banks do so mainly for religious reasons. Adhering to Islamic religion, which prohibits using (i.e. paying or receiving) interest is a main factor which motivates Qatar consumers to deal (borrow or deposit funds) with one of the two local

Islamic banks rather than any of the other 12 traditional (interest-based, local or foreign) banks.

- Qatar consumers who elect to bank with foreign conventional banks do so because they get a relatively higher return on their deposits and pay a relatively lower interest on their loans when dealing with these banks.

6. The above results should have some serious policy implications for conventional banks in Qatar.

   - Those conventional banks who plan to open special "Islamic Transactions" sections in conjunction with interest-based transactions may not be successful in expanding their market shares, if adherence to religion means "keep completely away from institutions which deal with 'Riba' (fixed-interest charges)".
   - While reputation and high-quality banking services are important factors when selecting a bank, commercial banks must pay attention to price competition when thinking of expanding or maintaining their market shares. Banking de-regulation should be a base for competition in terms of interest rates on loans and deposits.
   - Although Qatar is a relatively small country, convenience, in terms of number of branches, location of branches and business hours, is an important decision factor for consumers who live in relatively new developed areas.

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