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A STRUCTURAL EQUATION MODEL OF PERCEIVED UNIVERSITY IMAGE IN QATAR: STUDENT PERSPECTIVE

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ABSTRACT

The aim of this research is to examine the factors that influence student perceptions of the image of Qatar's national university, Qatar University. The study is constructed on related research on perceptions of organizational image and explores institutional image perceptions in the state of Qatar. Based on data collected from a sample of 1427 students in Qatar, this study uses factor analysis in order to identify the variables that influence students' perceptions of Qatar University. The findings of this study indicate that the way students perceive Qatar University is determined by four main factors: Quality of education, comparability of educational standards, the facilities and extracurricular activities provided, and graduates' employability. The paper concludes with recommendations for institutional policy and future research.

Keywords: Educational standards, university image, employability, facilities and extracurricular activities, path analysis, factor analysis

1. INTRODUCTION

1.1. Review of Literature

Globalization has strongly affected the higher education market (Hemsley-Brown and Oplatka, 2006). Consequently, the globalization led to an international market for educational services and increased competition to attract students. As competition among universities has increased, these universities have been obliged to embrace market-oriented strategies to distinguish themselves from their competitors and to appeal themselves to as many students as possible (Butt and Rehman, 2010). Moreover, universities have also realized that their sector signifies a business-like service industry and have begun to emphasis more on exceeding the needs of their students (Gruber *et al.,* 2010). Therefore, abundant research have

been conducted to identify the most important factors that shapes the student perceptions of the university's image.

The concepts of image and reputation have been progressively highlighted in the fields of public relations and marketing. However, previous studies show that the significance of institutional image can be extended to the higher education context (Ali *et al.,* 2016). Never the less, not much research has been conducted on the concept of corporate image in relation to universities, while a respectable amount of marketing studies have been devoted to the topic. It is well known fact that a good corporate image has positive influence on the organization. Dichter (1985) defines image as a global or overall impression, or "the total impression an entity makes on the minds of others" (p. 75). In a study conducted by Palacio and his fellow researchers (2002) on a Spanish University, university image and its reputation, has been found to influence student satisfaction at a Spanish university. Higher education institutions can improve their image by developing nationally known academic programs, through recruiting excellent professors, by being committed to academic excellence, and by improving its visibility in the media (Hanssen & Solvoll, 2015). To surge the visibility in the media, the university could encourage and reward (financially or otherwise) those in the faculty and administration who best represent the university in the media channels that have regional coverage.

2. NEED FOR THE STUDY

University image is one of the main influences on student willingness to apply for enrolment (Alves & Raposo, 2010). Universities need to maintain or develop a distinct image to create a competitive advantage in an increasingly competitive market (El-Kassem *et al.*, 2018). However, literature on university image in Qatar as perceived by its students remains scarce. In this sense, this study focuses on the factors that are likely to determine students' perceptions of Qatar University image.

3. RESEARCH PROBLEM

The overarching question this piece of research aims to answer is: What are the determinants of the perceptions students hold vis-à-vis Qatar University (QU)? In addressing this question, four research hypotheses were generated based on a review of the relevant literature. These are as follows:

H_1: The more positive students' perceptions of the quality of education at QU, the more likely they are to perceive the university's image favorably.

H_2: The more positive students' perceptions of the comparability of educational standards at QU, the more likely they are to perceive the university's image favorably.

H_3: The more positive students' perceptions of QU's extracurricular activities and facilities, the more likely they are to perceive the university's image favorably.

H_4: The more positive students' perceptions of the employability of QU's graduates, the more likely they are to perceive the university's image favorably.

4. PROCEDURES AND METHODOLOGY

4.1. Sample Selection

Using highly trained field researchers, this study's researchers were able to collect questionnaires from 1427 students. Therefore, to reduce method biases, especially at the response stage, as was recommended by experts in this area, the field researchers assured participants there were no right or wrong answers and that all they needed to do was to

provide honest answers. As a whole, the questionnaire was undergone a robust process of development and testing in order to determine the factors associated with students' perceptions of the image of QU's image in Qatar.

4.2. Validity and Reliability

Based on the review of the literature, the researchers constructed a questionnaire to gather data on students' perception of QU's image. The current study is based on twenty five statements and each response uses a 4-point agree Likert scale: (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly Agree and a 3- point importance Likert scale: (1) Very Important, (2) Somewhat Important, (3) Somewhat Important. Factor analysis was applied as a data reduction technique to test the construct validity of the questionnaire instrument. Accordingly, two statistical checks were utilized to determine the appropriateness of factor analysis.

First, the Kaisers-Meyer-Olkin (KMO) measure of sampling adequacy produced a score of 0.85, more than the recommended value of 0.50. Second, the Bartless test of sphericity result was significant (Chi Square = 8033, P = 0.00), indicating that there are adequate inter-correlations between the questionnaire statements that allow the use of factor analysis. Principal axis and oblique rotation were used as extraction and rotation methods. Using a criterion of an Eigen value greater than 1 (the total variance explained by each factor) yielded four factors. The six-factor solution accounted for 55.855% of the total variance.

Table 1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.850
Bartlett's Test of Sphericity	Approx. Chi-Square	8033.821
	df	300
	Sig.	.000

Table 2 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings [a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.819	23.278	23.278	5.819	23.278	23.278	3.547
2	2.385	9.541	32.819	2.385	9.541	32.819	2.584
3	1.805	7.222	40.041	1.805	7.222	40.041	3.960
4	1.438	5.754	45.795	1.438	5.754	45.795	1.659
5	1.290	5.161	50.955	1.290	5.161	50.955	3.432
6	1.225	4.900	55.855	1.225	4.900	55.855	2.762
7	.977	3.908	59.763				
8	.881	3.524	63.287				
9	.845	3.379	66.667				
10	.741	2.965	69.631				
11	.681	2.723	72.354				
12	.668	2.671	75.026				
13	.651	2.604	77.629				

14	.616	2.465	80.094				
15	.588	2.351	82.445				
16	.562	2.250	84.694				
17	.530	2.121	86.815				
18	.518	2.070	88.885				
19	.501	2.002	90.888				
20	.480	1.922	92.809				
21	.442	1.770	94.579				
22	.386	1.544	96.123				
23	.361	1.442	97.565				
24	.318	1.273	98.839				
25	.290	1.161	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 3 Structure Matrix

	Component					
	1	**2**	**3**	**4**	**5**	**6**
QU is symbol of national identity	.756	.122	.267	.042	.305	.246
Social environment at QU consistent with cultural values	.749	.168	.249	.053	.205	.171
campus life is consistent with Qatari cultural values	.728	.147	.194	.057	.310	.222
Learning environment at QU is very good	.635	.067	.434	.188	.449	.335
staff are friendly	.541	.091	.344	.226	.321	.372
how important is- Quality of professors/teachers	.174	.703	.067	.087	.060	-.011
how important is- Availability of programs I am interested in	.086	.672	.007	-.013	.020	.134
how important is- Quality of academic programs	.176	.668	.098	.109	.030	.043
how important is- Availability of programs that offer good job	.099	.640	.116	-.015	.082	.102
how important is- Degree recognized in other countries	-.068	.568	-.032	.115	.119	.183
how important is- Quality of student life	.105	.536	.060	-.035	.052	-.059
Academic standard-educ standards comparable to other national unis in M.E.	.290	.069	.791	.091	.218	.094
QU is comparable to other national unis in M.E.	.243	.057	.776	.080	.245	.089
Academic standard-educ standards comparable to other national unis in GCC	.240	.066	.721	.113	.197	.411
QU is comparable to other national unis in GCC	.086	.149	.672	.061	.191	.385

Academic standard-educ standards comparable to other univ. in Qatar	.382	-.072	.662	.150	.363	.140
QU is comparable to other unis in Qatar	.371	.080	.635	.168	.361	.039
how important is- Financial aid	.013	.039	.052	.841	.050	-.035
how important is- Education cost	.081	.033	.112	.840	.023	.116
QU degrees are well-recognized by employers in GCC countries	.324	.086	.259	.078	.860	.306
QU degrees are well-recognized by employers in other countries	.278	-.001	.282	.041	.827	.193
QU degrees are well-recognized by employers in Qatar	.270	.132	.232	.072	.795	.270
Campus life-has modern non academic facilities	.297	.107	.250	.060	.314	.833
Campus life-has modern academic facilities	.383	.079	.258	.119	.311	.731
Campus life-offers extra activities	.325	.051	.256	.079	.411	.709
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.						

a) The first factor "Perceived image of QU" accounts for 23.278 percent of total variance and is defined by five items:

- Qatar university is a symbol of national identity
- Social environment at Qatar University is consistent with cultural values
- Campus life is consistent with Qatari culture values
- Learning environment at Qatar University is very good
- Qatar University staff are friendly towards students

b) The second factor "Perceived quality of education" accounts for 9.541 percent of total variance and is defined by six items:

- How important is the quality of professors/ teachers?
- How important is availability of programs/majors that I am interested in?
- How important is the quality of academic programs?
- How important is the availability of degree programs that offer good job opportunities?
- How important is Qatar University degree to be well recognized in other countries (accreditation)?
- How important is the quality of student life?

c) The third factor "Perceived comparability of educational standards" accounts for 7.22 percent of total variance and is defined by six items:

- Qatar University's education standards are comparable to those of other national universities in the Middle East such as Cairo University and University of Jordan
- Qatar University is comparable to other national universities in the Middle East

- Qatar University's education standards are comparable to those of other national universities in the GCC countries such as the university of Bahrain and UAE University
- Qatar University is comparable to other national universities in the GCC
- Qatar University's education standards are comparable to those of other national universities in in Qatar such as Georgetown, North western university and College of North Atlantic
- Qatar University is comparable to other universities in Qatar

d) The fourth factor "Perceived cost" accounts for 5.754 percent of total variance and is defined by two items:

- How important is financial aid/ scholarship?
- How important is lower education cost?

e) The fifth factor "Perceived employability "accounts for 5.161 percent of total variance and is defined by three items:

- Qatar University degrees are well recognized by employers in GCC countries
- Qatar University degrees are well recognized by employers in other countries
- Qatar University degrees are well recognized by employers in Qatar

f) The sixth factor "Perceived facilities & extracurricular activities" accounts for 4.9 percent of total variance and is defined by three items:

- Qatar University has modern academic facilities
- Qatar University has modern non-academic facilities
- Campus life offers extra activities

5. PATH ANALYSIS–SEM

The researchers used Path–SEM whereby they saved factor scores from confirmatory factor analysis (CFA) and used these scores in a path analysis associated with the structural equation model (SEM). This type of analysis is very sophisticated and highly recommended by scholars. As Cai (2013) comments, "The structural equation models are linear simultaneous equation models derived from a successful merger of path analysis and factor analysis" (p. 117). Based on the literature review, the researchers believe the PLS-SEM and Path Analysis-SEM debate remains unresolved.

The purpose of Path Analysis–SEM is to identify the direct and indirect effects between variables and to test a priori theory-driven model (explanation and prediction), as compared to the purpose of PLS–SEM that is to estimate the effect of one variable on another while removing the effect of other variables (Prediction). It needs to be noted here that Path Analysis is a form of structural equation modeling and Confirmatory Factor Analysis (CFA) is also known within SEM as the measurement model. According to the Oxford Dictionary of Statistical Terms, a path analysis can be performed as a hierarchical (sequential) set of structural equation model after establishing the construct validity and reliability of the instrument, (Dodge, 2003).

As in Figure 1, a latent variable (factor) is an underlying dimension (cause) of multiple observed behaviors (variables). The figure shows that the factor "Perceived image of QU", which is defined by its five items (questionnaire statements) as a hypothetical latent variable is assumed to be the cause of the observed correlation among the five observed variables (items known in SEM as observed–manifest variables). The variance in response to each item

in the "Perceived image of QU" reflects individual differences in "Perceived image of QU" across questionnaire respondents, plus some error.

The number between parentheses is the true relation between the two variables which exemplifies the direct effect. The other number is the Pearson simple relation, which exemplifies the total effect (direct plus indirect)
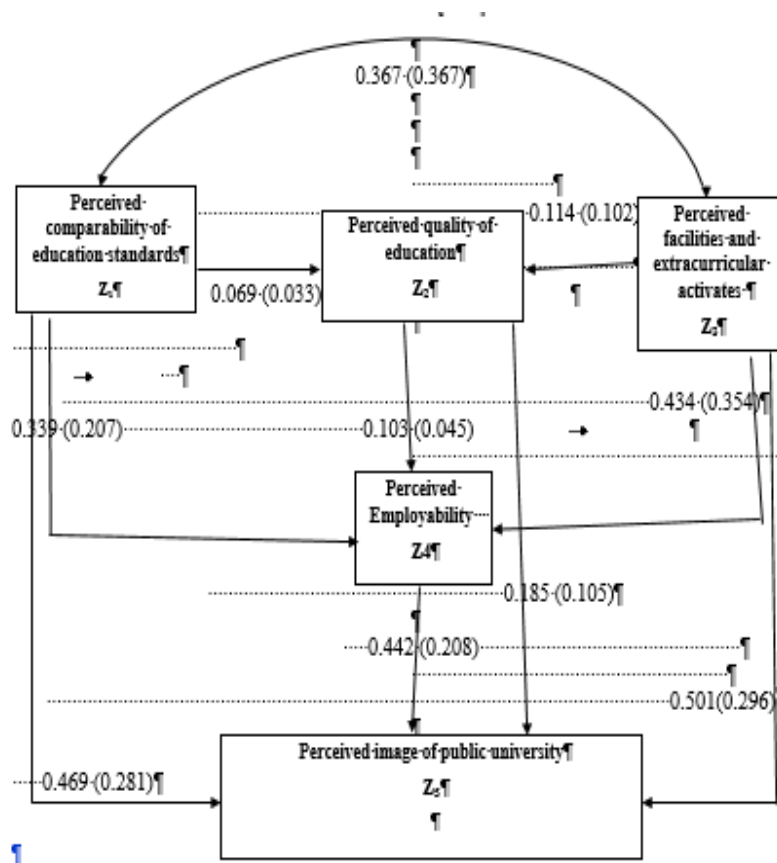

Figure 1 Path Analysis

$$Z_3 = \beta_1 Z_1 + \beta_2 Z_{2} + u$$

$$Z_4 = \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_{3} + u$$

$$Z_5 = \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_{3} + \beta_4 Z_4\, u$$

Figure 1 demonstrates the results from this study's path analysis of the structural causal model. The true direct effect between two variables is shown between parentheses as an estimated path coefficient converted into a standardized Z-score while the other numbers are the zero-order relation (i.e., the total relation = direct effect + indirect effect). Beginning with the exogenous independent variables (1. Perceived comparability of education standards and 2. Perceived extracurricular university activity) and then adding more endogenous predictors (3. Perceived Quality of Education and 4. Perceived employability) and moving toward the dependent variable (Perceived image of Qatar University), the path diagram shows the path-analytic decomposition of the total relation into direct and indirect effects.

As expected, the endogenous variable (perceived extracurricular activities) depends on the exogenous variable (perceived comparability of educational standards). Both variables in turn affect perceived employability. The last endogenous variable (perceived image of QU) is dependent on all of the variables in the model. As Table 1 demonstrates, all of the variables that explain the variation in the dependent variable (perceived image of QU) are quite

significant. The RSQ for the regression model is .395with an F = 145.313 which is sig at 0.000

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628[a]	.395	.392	.40896
a. Predictors: (Constant), Perceived Cost, Perceived Employability , Perceived Quality of Education, Perceived Comparability of Education Standards , Perceived Facilities and Extracurricular activities				

Table 5 ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	121.516	5	24.303	145.313	.000[b]
	Residual	186.314	1114	.167		
	Total	307.831	1119			
a. Dependent Variable: Perceived University Image						
b. Predictors: (Constant), Perceived Cost, Perceived Employability , Perceived Quality of Education, Perceived Comparability of Education Standards , Perceived Facilities and Extracurricular activities						

Table 6 Regression Analysis

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	.147	.074		1.992	.047
	Perceived Quality of Education	.184	.042	.104	4.428	.000
	Perceived Comparability of Education Standards	.238	.022	.278	10.755	.000
	Perceived Employability	.169	.022	.207	7.815	.000
	Perceived Facilities and Extracurricular activities	.282	.025	.298	11.137	.000
	Perceived Cost	.036	.020	.042	1.774	.076
a. Dependent Variable: Perceived University Image						

The standardized path coefficients in Figure 1 show the relative strength and the direction from the causal variable to the outcome variable. For instance, the total effect between perceived Employability and perceived image of QU is 0.442, which is better and stronger than the direct effect 0.208. The total relation is improved via other variables shown in Figure 1. These findings are consistent with previous research indicating public universities are designed to satisfy student and market needs (Barnett, 2011).

6. DISCUSSION AND CONCLUSION

Although a significant amount of research into corporate image has been conducted, comparatively less image research has been conducted on service-oriented institutions such as universities. University image is the representative of students' perception and rarely implemented in the higher education sector (Sung and Yang, 2008) although it has considerable influence on students' enrollment. According to researchers (Theus 1993 and Paramewaren & Glowacka 1995), the image of universities is a hot topic that is receiving countless attention as universities recognize the importance of attracting students and obtaining a distinctive image in the competitive world. Image is a strategic managerial matter that affects the university's ability to recruit distinguished faculty members, attract philanthropic donations, and to attract and retain motivated students (Treadwell and Harrison, 1994). This paper identified the components that construct students' perceptions of Qatar University's image. To see the relationship between the variables simultaneously, the researcher used path analysis with first order confirmatory Factor Analysis. Determining the factors that shape the university image and reputation would consequently, enhance the university's position. The results revealed that four main factors shape how students' perceive the university: (a) comparability of the institution's educational standards; (b) facilities and extra-curricular activities; (c) employability, and (d) quality of education.

The results support this study's hypothesis that students' positive perception of Qatar University's image is associated with their positive view of QU's educational standards. The practice of aligning learning to standards is very essential and especially at the university level to ensure that, a higher level of learning is achieved. According to Brink (2010) comparability comes in two forms: comparing quality and standards among different universities; and comparing the standards of today with the standards of yesterday.

This study's results further support the hypothesis that student's positive perceptions of Qatar University's image are associated with their positive views of the university's facilities and extra-curricular activities. For many institutions, facilities have a significant influence on students' choice of university (Price *et al.,* 2003). University facilities play a significant role in attaining the goals of the university through providing students and staff an effective infrastructure as a basis for university functions (Kärnä *et al*., 2013). University facilities are also a critical factor that affect student perception of the higher education institutions' image (Nguyen and LeBlanc, 2001).

Moreover, as consistent with all empirical studies, the more positive students' perceptions of the quality of education at QU, the more likely they are to perceive the university's image favorably.

Finally, the more positive students' perceptions of the employability of QU's graduates, the more likely they are to perceive the university's image favorably.

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