

Scale Development and Validation of Alumni Satisfaction in Context of Indian Higher Education

* Prof. Puja Khatri,
**Ms. Neha Raheja



ABSTRACT:

This paper aims at developing and validating scale for assessing the level of satisfaction of alumni with their Alma Mater. The literature on higher education expansion indicates that the higher education market is now well-established as a global phenomenon. An alumnus could be the most valuable asset an institution could invest in. "Alumni studies are useful not only to assess institutional effectiveness but also to aid institutional planning and revenue generation" (Volkwein, 2010). Therefore, it becomes essential on our part to conduct such alumni studies in India and in order to perform such studies, we need to develop reliable and a valid scale to study and examine the level of satisfaction of alumni with their alma mater which will help institutions to plan and execute a framework to improve their relations with the alumni. This study has been conducted among alumni of Public, Private and Deemed Universities offering Management and Engineering education in Delhi/NCR.

Keywords: Alumni, Alma mater, Management, Engineering, Satisfaction, India

* Professor University School of Management Studies, GGSIP University, Delhi, India

**Research Scholar University School of Management Studies, GGSIP University, Delhi, India

INTRODUCTION

In India, alumni relations for professionals are entering an exciting and vibrant phase. Calitz et al. (2017) commented "Alumni are a university's best ambassadors and they bring real-world experience to the modern-day student and increase the perceived value that the university offers."

An alumna is most valuable for its institution and is often the biggest supporter of the alma mater. "Alumni who enjoyed their student experience give positive feedback to people in their networks, act as role models for students, share their skills and experiences, and advise institutional programs" (Hansen, 2015).

While addressing alumni of NMIMS Sarla Anil Modi School of Economics, Prof. Amita Vaidya (Associate Dean), mentioned "Alumni satisfaction is also an important measure of our quality. We now have over 100 alumni who have succeeded at attaining their degree at Sarla Anil Modi School of Economics, NMIMS and each year our most recent alumni tell us how satisfied they are with their academic experience, the skills they acquired and how both are helping them in the workplace and in places they have gone for further studies."

According to Pike (1994), Hartman & Schmidt (1995), Pascarella & Terenzini (2005) it is imperative to understand the dimensions of alumni satisfaction as its vital for developing educational outcomes and success criteria and evaluating academic programs of the institution. Pike (1994) and Pace (1979) have suggested that alumni satisfaction is the most valuable tool to assess the effect of the institution on students. Calitz et al. (2017) confirmed that "the alumni perception of the extent of learning and the usefulness of the knowledge is a key measure for Universities".



LITERATURE REVIEW

Various studies have suggested that the key to developing a strong, lasting relationship starts for graduates when they are a student (Zabatta, 2017). "As university administrators look forward to future alumni relations it would seem critical to begin building and planning for the alumni relationship with the institution during the course of the student's educational experience" (McAlexander & Koenig, 2001).

The undergraduate experience is at the heart of the relationship between the university and the students. It is through this experience that the students shapes feelings and perceptions regarding the college. According to Johnson and Eckel (1998), "Graduates who had a rewarding undergraduate experience may feel more connected to their alma mater, become more involved, and contribute financially when able". Pedro et al. (2018) found 'satisfaction with social and academic environment' during graduation as one of the key element to ensure the voluntary, conscious and long lasting bonds of alumni with their alma mater. Barkley (1993) suggested alumni satisfaction as a function of past experiences, and how those experiences relate to the current situation.

Satisfaction, a student had with his or her student experience has been identified as the strongest predictor of alumni giving

(Belfield & Beney, 2000; Clotfelter, 2003; Hunter et al., 1999; Stephenson & Bell, 2014; Weerts & Ronca, 2008). Hoyt (2004) suggested that alumni satisfaction is not only a significant predictor of willingness to give back to their institution but also has an indirect effect through involvement with alma mater. Gaier (2005) also reported significant increase in both alumni giving and alumni participation based on the degree of alumni satisfaction with the undergraduate academic experience.

Purpose: The purpose of this paper is to propose a reliable and valid scale for measuring satisfaction level of alumni of Public, Private and Deemed Universities offering Management and Engineering education in Delhi NCR.

Design/ Methodology: – The purpose of our work is to identify a definite set of parameters for measuring alumni satisfaction (ASAT) by conducting Exploratory Factor Analysis (EFA)- Stage 1. The data was collected from 584 respondents through a self-constructed questionnaire based on a five-point Likert-type scale. In Stage 2, Confirmatory Factor Analysis (CFA) was conducted to confirm the dimensions of alumni satisfaction identified through EFA in Stage- 1. Also we establish convergent and discriminant validity of the reflective construct, alumni satisfaction (ASAT).

Findings: SPSS analysis of 584 responses of alumni provided a satisfactory value of KMO (.905) and Bartlett's test of Sphericity: $p < 0.05$. EFA helped in the identification of 2 factors comprising alumni satisfaction (ASAT) - Alma mater Experience (AE) and Career Assistance (CA). Alumni satisfaction (ASAT) has been established as a reflective - reflective second order construct with 2 dimensions - Alma mater Experience (AE) and Career Assistance (CA).

Research Implications: The findings of our research will help in assessing the level of satisfaction among alumni. Research will provide answer to the question- Why do ex-students of some selected Educational Institutes have a strong bond compared to those of others. Moreover, Educational Institutions will get benefitted by knowing the factors which lead to satisfaction of alumni with their alma mater.

Originality: This study attempts to develop and validate scale for assessing the level of alumni satisfaction in India. Though there has been many studies made in the western countries about the satisfaction of alumni but neither of the studies has given a standardized scale for measuring the alumni satisfaction nor any such study has taken place in India till now. Infact, this paper serves as founding stone for studying the concept of satisfaction with their alma mater in India among alumni of public, private and deemed Universities offering management and engineering education in Delhi/NCR.

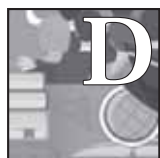


RESEARCH METHODOLOGY

The population frame of the study was alumni of Public, Private & Deemed Universities in Delhi-NCR. Multi- stage purposive sampling without any bias was used to collect data for the study. First of all, an exhaustive list of Universities were drawn from UGC list dated 05.02.2014. For further short-listing, Universities having both Management and

Engineering departments and also having alumni association were considered. Then in the second stage, purposive sampling was used to get the questionnaires filled and there was no deliberate bias in identifying the sample respondents. The questionnaire was personally administered during the annual alumni meet of the respective institutions. The target sample size for this study was 640 against which we collected 607 questionnaires out of which total usable questionnaires received were 584 for data analysis. Our work is an initiative to analyze the level of satisfaction among alumni. The demographic details of the respondents - age, gender, field of study, type of institution, education level, employment status etc. forms Part A of the questionnaire while satisfaction of alumni falls under Part B. A self-constructed questionnaire employing a five point Likert type agreement scale (1-strongly disagree and 5 – strongly agree) with 18 items was administered to respondents. The questionnaire was administered after incorporating the valuable review(s) of experts from academia and industry.

To ensure that the questionnaire was appropriate for achieving the objectives of the study and to ensure the comprehensiveness of the items included, the questionnaire was pilot tested on a sample of 200 respondents. Pilot study (Phase I study) was conducted between November, 2015-January, 2016. 200 usable responses were collected from the alumni of Engineering and Management Institution who attended alumni meets during the mentioned duration. The pilot study was conducted to establish the reliability and validity of the survey questionnaire. Exploratory factor analysis was applied to the data collected to determine the factorial structure of the constructs and the underlying dimensions. The results of pilot test were presented for review to the experts in that area. In addition, feedback and suggestions from these experts were also sought regarding the content, layout, wording and the ease of understanding of the measurement items. They were asked to offer suggestions for improving the proposed scale and to edit the items to enhance clarity, readability and content adequacy. The feedback was used for revising the instrument and then it has been incorporated in the questionnaire. The revised questionnaire was administered to 607 respondents in phase II study. Data collection for phase II study was conducted between October, 2017 to March, 2018.



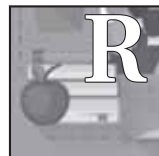
DATA ANALYSIS

The first section of the questionnaire was aimed at collecting the demographic information of the respondents such as gender, age, employment status, field of study, etc. followed by items relating to alumni satisfaction with their alma mater.

Demographics

Among the respondents around 37% respondents completed their degree from Public University, 45% from Private University and 17% from Deemed University where in 51% were management alumni and the rest were engineering alumni. The study consisted of 46% females and 53% of males with the educational background of 38% and 62% as graduate and postgraduate respectively. 41% of respondents were less

than 28 years, 31% of respondents were in the range of 29 to 34 years, 14% of respondents were in the range of 35 to 40 years and 6.5%, 4.8% and 2.2% in the range of 41 to 46, 47 to 52 and 53 year and above respectively. At the time of data collection, 87% respondents were working full-time (not self employed), 7% respondents were self employed, 1% respondents were unemployed and seeking employment, 0.17% respondents were working part-time (not self employed) as well as Unemployed, not seeking employment and around 4% respondents were Full-time student/not employed. The responses collected were analyzed using exploratory factor analysis technique to explore the dimensionality of alumni satisfaction.



RESULTS & DISCUSSION

In factor analysis, variability among observed, correlated variables is expressed through potentially lesser number of unobserved variables, referred as 'factors'. This statistical technique provides a more comprehensive, useful and feasible list of derived items. The appropriateness of using the technique of factor analysis was verified through Kaiser – Meyer – Olkin (KMO) test of sampling adequacy and Bartlett's Test of Sphericity. A satisfactory value of both testing statistical methods was attained (Bartlett's test of Sphericity: $p < 0.05$; value of .905 in KMO- Table 2). Thus, assumptions of exercising factor analysis were met (Table 1).

Table 1: KMO and Bartlett's Test of Sphericity for Alumni Satisfaction

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.905
Approx. Chi-Square	1226.860
Bartlett's Test of Sphericity Df Sig.	55.000

Objective of the study is to explore and identify dimensions of alumni satisfaction (ASAT). Principal component analysis was applied on initial 18 items of alumni satisfaction (ASAT). On applying factor analysis, the initial 18 items were reduced to 6 with 12 items being discarded for having factor loading scores less than .6. Following the rotation of factors, each of the clusters of variables was thoroughly examined to determine the meaning of the construct as is explained by the factors. In other words, what are the common items in each cluster (Kim & Mueller, 1978). When the items were grouped, it was found that according to the scores only 2 dimensions could be taken for the study with 3 items in each factor (Table 2).

Table 2: Factor Loadings for Alumni Satisfaction

Statements	Component	
	1	2
My experience as a student at alma mater met my expectations	.793	
The faculty cared about my success	.846	
Problems I encountered throughout the education process were adequately addressed by the institution	.853	

Table 3: Factor Loadings for Alumni Satisfaction

Statements	Component	
	1	2
The institution prepared me to find a job after completion of degree		.867
My degree prepared me for success after completion of degree		.692
The institution provided adequate assistance to me in finding a job after completion of degree		.863

Table 4 below shows the items that of factor 1 of alumni satisfaction with its factor loadings, communalities, mean and standard deviation. Factor 1 signifies the undergraduate

experience of alumni at their alma mater. It includes items which gives insight of experience alumni had at their alma mater during their graduation and factors which may impact their undergraduate experience such as the care shown by faculty, proper resolution of problems encountered while doing graduation. Therefore, this dimension was labeled as *alma mater experience (AE)*. Zabatta (2017) found relationships with faculty and staff as one of the contributing factors in strengthening a graduates bond with their alma mater. "Concurrent to their employee role, some faculty and staff also have relationships with their employing institutions, and with other colleges and universities, as alumni or as parents of students or alumni" (Borden, Shaker, & Kienker, 2013). Cronbach's Alpha (A), which measures internal consistent reliability, was 0.846 for this dimension.

Table 4: Table showing Factor Loadings, Commonalities, Mean, Standard Deviation for Alma mater Experience (AE) of Alumni Satisfaction (ASAT)

Factor I	Alma mater Experience	Factor Loading	Commonalities	Mean	SD
AE1	My experience as a student at alma mater met my expectations	.793	.704	3.76	.990
AE2	The faculty cared about my success	.846	.786	3.61	1.041
AE3	Problems I encountered throughout the education process were adequately addressed by the institution	.853	.791	3.49	.996

Table 5 below shows the items of factor 2 of alumni satisfaction with its factor loadings, communalities, mean and standard deviation. Factor 2 signifies the career assistance received by alumni at their alma mater. An appropriate guidance/ assistance provided by alma mater prove to be instrumental in accomplishment of the career goals set by alumni. It is the prime responsibility of the alma mater to help alumni realize

their career aspiration by providing adequate education and assistance in finding job after completion of degree. This dimension has been labeled as *Career Assistance (CA)*. Barkley (1993) described alumni satisfaction as the function of career experiences, college experiences and personal characteristics. Internal consistent reliability i.e. Cronbach's Alpha (A) of this dimension was 0.826.

Table 5: Table showing Factor Loadings, Commonalities, Mean, Standard Deviation for Career Assistance (CA) of Alumni Satisfaction (ASAT)

Factor II	Career Assistance	Factor Loading	Commonalities	Mean	SD
CA1	The institution prepared me to find a job after completion of degree	.867	.840	3.73	1.116
CA2	My degree prepared me for success after completion of degree	.692	.663	3.86	.963
CA3	The institution provided adequate assistance to me in finding a job after completion of degree	.863	.775	3.54	1.185

Cronbach alpha values for the two factor solution were found to be more than the acceptable threshold level of 0.70 (Nunnally, 1978; Garson, 2012). Cronbach alpha is

0.846 for AE & 0.826 for CA and for complete scale; it is 0.868 which is above threshold level of 0.70, therefore acceptable (Table 6).

Table 6: Reliability Statistics

Variable	Cronbach's Alpha	Number of Items
Alma mater Experience ((AE) (Factor I))	.846	3
Career Assistance (CA) (Factor II)	.826	3
Alumni Satisfaction (ASAT)	.868	6

Total variance explained by two factors of alumni satisfaction (ASAT) - alma mater experience (AE) and career assistance (CA), is 75.97% (Table 7). Total variance percentage

is the variance accounted for by these two factors (AE & CA) to the total variance in alumni satisfaction (ASAT) construct.

Table 7: Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.641	60.679	60.679	3.641	60.679	60.679	2.374	39.573	39.573
2	.918	15.296	75.976	.918	15.296	75.976	2.184	36.403	75.976
3	.481	8.010	83.986						
4	.415	6.912	90.898						
5	.301	5.021	95.919						
6	.245	4.081	100.000						

In our study, we proposed alumni satisfaction (ASAT) as higher order reflective- reflective construct. We utilized PLS SEM to confirm the dimensions of alumni satisfaction (ASAT) and establish it as a higher order construct.

variance extracted (AVE) to estimate convergent validity. In addition, reflective measurement model's assessment also contains discriminant validity (Hair, Hult, Ringle&Sarstedt, 2016).

Prior to examining and confirming, and to establish reliability & validity of alumni satisfaction (ASAT) construct, we examined the skewness and kurtosis of data to determine if the data is not too far from normal to extremely non- normal data. Therefore, the data was checked for normality through skewness and kurtosis. The data distribution is considered symmetric if value of skewness lie between ± 1 (Hair et al., 2017). Since all the values were below the threshold limits, so no treatment of data was required in the present study and all indicators were retained for further analysis (Table 8).

In our study, Alumni Satisfaction (ASAT) is the reflective construct wherein we checked the reliability and validity of the measures used to represent alumni satisfaction (ASAT) construct. Here, we provide an evaluation of how accurate the measure is and also its convergent and discriminant validities.

Reliability & Convergent Validity of Reflective Constructs

As we can observe from the values given in Table 9, all composite reliability values and values of Cronbach are

Table 8 Indicators- Mean, Median, Standard Deviation, Kurtosis & Skewness

Indicator	Mean	Median	Standard Deviation	Kurtosis	Skewness
AE1	3.757	4	0.989	0.286	-0.785
AE2	3.608	4	1.04	-0.055	-0.637
AE3	3.493	4	0.995	-0.257	-0.494
CA1	3.733	4	1.115	-0.006	-0.796
CA2	3.86	4	0.962	0.5	-0.838
CA3	3.539	4	1.184	-0.571	-0.569

For the second stage, additional sample of 584 students was further collected. In this part of analysis, both the factors were retained with all the items, none of the items comprising them were dropped.

between 0.70 and 0.90; our condition of internal consistency is satisfied. For evaluating convergent validity of our constructs which are reflective in nature, we took the outer loadings of the indicators as well as Average Variance Extracted (AVE).

As we can see, both the factors, namely *Alma mater Experience (AE) and Career Assistance (CA)* are shown in the reflective measurement model, accounting for an explanation towards alumni satisfaction (ASAT). Robustness of reflective measurement model lies on internal consistency reliability and validity. Evaluation of reflective measurement model comprises of composite reliability to assess internal consistency, individual indicator reliability and average

With respect to outer loadings, we have a standard recommendation, that the reflective indicator must be reserved provided it's outer loading > 0.70. In case, the indicator's outer loading is < 0.70 but > than 0.40, the indicator should be deleted only if the composite reliability or AVE shows an improvement on deletion (Hair et al., 2016). In case the indicator's outer loading < 0.40 then we need to outwardly delete the indicator (Hair et al., 2016).

AVE values are also shown in Table 9. As we can observe, that all the outer loadings are greater than 0.70 and AVE values are also greater than 0.50; pointing to the establishment of the convergent validity of the constructs.

each construct is diverse from the other constructs in the model (Hulland, 1999). It can be assessed using three approaches- Cross-loadings, Fornell-Larcker Criterion and heterotrait-monotrait ratio (HTMT) of the correlations.

Table 9: Construct Reliability & Convergent Validity

Alumni Satisfaction (ASAT)		0.870	0.870	0.529
Alma mater Experience (AE)		0.846	0.847	0.648
AE1:My experience as a student at alma mater met my expectations	0.783			
AE2:The faculty and staff cared about my success	0.819			
AE3:Problems I encountered throughout the education process were adequately addressed by the institution	0.813			
Career Assistance (CA)		0.829	0.830	0.621
CA1:The institution prepared me to find a job after completion of degree	0.826			
CA2:My degree prepared me for success after completion of degree	0.807			
CA3:The institution provided adequate assistance to me in finding a job after completion of degree	0.727			

Discriminant Validity of Alumni Satisfaction (ASAT)

The degree to which the construct is empirically distinguishable from other constructs is known as its discriminant validity. Discriminant validity indicated that

(a) Cross Loadings

One of the ways to evaluate discriminant validity of reflective construct is to examine the cross loadings of the indicators. Indicators of alma mater experience (AE) - AE1, AE2, AE3 has

Table 10: Discriminant Validity- Cross Loadings

	ACB	AE	AG	ASAT	CA	CGB	FGB	PGB	SGB
AE1	0.294	0.783	0.300	0.822	0.573	0.060	0.248	0.259	0.265
AE1	0.294	0.919	0.300	0.710	0.573	0.060	0.248	0.259	0.265
AE2	0.362	0.819	0.363	0.860	0.591	0.069	0.292	0.351	0.291
AE2	0.362	0.966	0.363	0.760	0.591	0.069	0.292	0.351	0.291
AE3	0.380	0.813	0.337	0.854	0.581	0.092	0.297	0.299	0.245
AE3	0.380	0.965	0.337	0.753	0.581	0.092	0.297	0.299	0.245
CA1	0.262	0.589	0.289	0.863	0.826	0.056	0.193	0.254	0.322
CA1	0.262	0.589	0.289	0.739	1.002	0.056	0.193	0.254	0.322
CA2	0.355	0.621	0.355	0.843	0.807	0.090	0.246	0.329	0.350
CA2	0.355	0.621	0.355	0.748	0.923	0.090	0.246	0.329	0.350
CA3	0.234	0.493	0.232	0.760	0.727	0.004	0.164	0.227	0.239
CA3	0.234	0.493	0.232	0.648	0.911	0.004	0.164	0.227	0.239
	ACB	AE	AG	ASAT	CA	CGB	FGB	PGB	SGB
AE1	0.294	0.783	0.300	0.822	0.573	0.060	0.248	0.259	0.265
AE1	0.294	0.919	0.300	0.710	0.573	0.060	0.248	0.259	0.265
AE2	0.362	0.819	0.363	0.860	0.591	0.069	0.292	0.351	0.291
AE2	0.362	0.966	0.363	0.760	0.591	0.069	0.292	0.351	0.291
AE3	0.380	0.813	0.337	0.854	0.581	0.092	0.297	0.299	0.245
AE3	0.380	0.965	0.337	0.753	0.581	0.092	0.297	0.299	0.245
CA1	0.262	0.589	0.289	0.863	0.826	0.056	0.193	0.254	0.322
CA1	0.262	0.589	0.289	0.739	1.002	0.056	0.193	0.254	0.322
CA2	0.355	0.621	0.355	0.843	0.807	0.090	0.246	0.329	0.350
CA2	0.355	0.621	0.355	0.748	0.923	0.090	0.246	0.329	0.350
CA3	0.234	0.493	0.232	0.760	0.727	0.004	0.164	0.227	0.239
CA3	0.234	0.493	0.232	0.648	0.911	0.004	0.164	0.227	0.239

cross loading on AE as well as ASAT but it has highest loading on ASAT which is higher order construct (HOC). Alma mater experience (AE) has been established as lower order reflective construct with three indicators- AE1, AE2 and AE3. Indicators of career assistance (CA) - CA1, CA2 & CA3 also has loadings both on CA and ASAT, with highest outer loading on alumni satisfaction (ASAT) (Table 10). Career assistance (CA) has also been established as lower order reflective construct with indicators CA1, CA2 & CA3. Alumni satisfaction (ASAT) has been confirmed as second order reflective construct with two lower order reflective constructs- Alma Mater Experience (AE) and Career Assistance (CA) with three indicators in each construct.

(b) Fornell- Larcker Criterion

A more conservative way of determining discriminant validity is the Fornell-Larcker criterion. The rationale behind this approach is that a construct has more in common with its related measures than with other constructs. It involves a comparison of the square root of the AVE with the latent variable correlations such that the square root of AVE of any given construct should be larger than its highest correlation with any other construct. The values obtained during PLS Algorithm indicates that the diagonal line stands are greater than the values in their columns and rows as recommended by Fornell and Larcker (1981). In Table 11, square root of the AVE of AE & alumni satisfaction (ASAT) and also CA & alumni satisfaction (ASAT) is more than latent variable correlations. Therefore, Alumni Satisfaction (ASAT) is established as a Reflective- Reflective Second Order Construct.

Table 11: Discriminant Validity- Fornell- Larcker Criterion

	AE	ASAT	CA	CGB	FGB	PGB	SGB
AE	0.805						
ASAT	1.050	0.727					
CA	0.723	1.044	0.788				

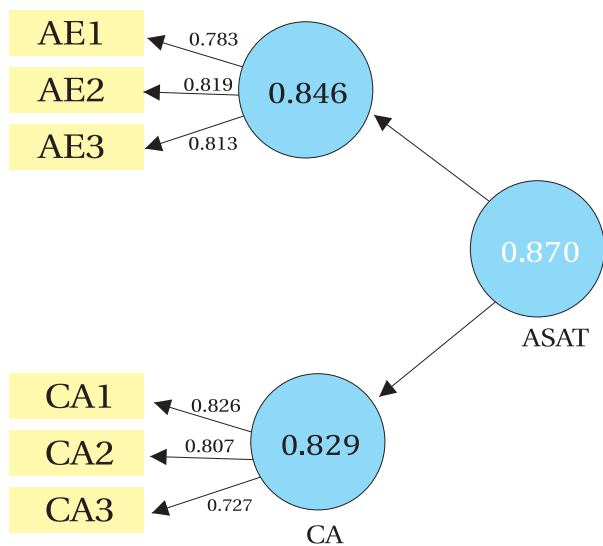


Figure 1- Alumni Satisfaction (ASAT) as Reflective- Reflective Second Order Construct

cross loading on AE as well as ASAT but it has highest loading on ASAT which is higher order construct (HOC). Alma mater experience (AE) has been established as lower order reflective construct with three indicators- AE1, AE2 and AE3. Indicators of career assistance (CA) - CA1, CA2 & CA3 also has loadings both on C

(c) Heterotrait-monotrait ratio (HTMT)

The last and latest method to evaluate discriminant validity of reflective constructs is Heterotrait-monotrait ratio (HTMT) which was proposed by Henseler et al. (2015). The HTMT approach estimates the true correlation between two constructs would be, if they were perfectly measured. The threshold HTMT value for establishing discriminant validity between two reflective is below 0.90. Alma mater experience (AE) and career assistance (CA) are individual reflective constructs but HTMT ratios with alumni satisfaction (ASAT) exceed 1 (Table 12). This implies alumni satisfaction (ASAT) is a second reflective- reflective Type I construct with two reflective sub- constructs- experience at Alma Mater (AE) and Career Assistance (CA).

Table 12: Discriminant Validity- Heterotrait- monotrait ratio (HTMT)

	AE	ASAT	CA	CGB	FGB	PGB	SGB
AE							
ASAT	1.046						
CA	0.723	1.053					

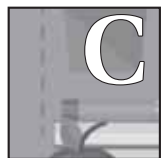
Bootstrapping procedure is done to derive a distribution of the HTMT statistic. While analyzing the Confidence Intervals (Table 12(i)) and Confidence Intervals Bias Corrected tables (Table 12(ii)) after bootstrapping, it is observed the confidence intervals include the value 1 for alumni satisfaction (ASAT)- alma mater experience (AE) and alumni satisfaction (ASAT)- career assistance (CA). Therefore, alumni satisfaction (ASAT) is established as a reflective- reflective second order construct with 2 dimensions- experience at alma mater experience (AE) and career assistance (CA).

Table 12(i) Discriminant Validity- Heterotrait- monotrait ratio (HTMT) Confidence Intervals after Bootstrapping

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
ASAT->AE	1.050	1.050	1.033	1.069
ASAT->CA	1.044	1.044	1.023	1.065

Table 12(ii) Discriminant Validity- Heterotrait- monotrait ratio (HTMT) Confidence Intervals Bias Corrected after Bootstrapping

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
ASAT->AE	1.050	1.050	0.000	1.033	1.069
ASAT->CA	1.044	1.044	0.000	1.023	1.066



CONCLUSION

Alumni relationship development can help the alma mater to enhance the reputation of their institution in an increasingly competitive market and by linking alumni engagement activities to this strategic aim, it will provide an important impetus in terms of resource allocation and sustainability. This study contributes to the alumni literature in India by evaluating the dimensions of alumni satisfaction in Indian Higher Education. The study led to conceptualization and validation of alumni satisfaction scale applicable to Indian culture. The exploratory factor analysis of alumni satisfaction has identified two dimensions- alma mater experience (AE) and career assistance (CA). The dimensions provide a basic framework to assess the level of satisfaction of alumni with their alma mater in India. Alumni satisfaction scale has been confirmed through PLS SEM and alumni satisfaction has been established as second order reflective-reflective construct.

Alma mater experience factor has been defined by the experience as a student, relationship with faculty and staff and adequate redressal of problem faced during graduation. Zabatta (2017) found faculty and staff played a critical role in

the student experience. "Administrators should encourage the participation of key relationship partners (e.g. faculty and advisors) at alumni functions and other venues where alumni who have formed bonds with individuals from the institution can interact with them again and reinvigorate those bonds" (McAlexander & Koenig, 2001). Clotfelter (2003) found that having had a mentor relationship with staff or faculty led to alumni feeling more satisfied with their student experience. Gaier (2005) and Sun, Hoffman, Grady (2007) found that relationships with faculty and staff were the critical part of the student experience that influenced alumni giving.

Career assistance factor has been described as a function of level of preparedness given by alma mater to find a job as well as success after completion of degree and the adequate assistance provided for searching job after completion of degree. Hansen (2015) conducted study among alumni who attended Carthage College, a small, private, liberal arts institution located in the Midwest and found that career preparation and undergraduate experiences along with life preparation, alumni experiences, alumni involvement, communication methods with alumni, perception of prestige, willingness to promote the institution, and level of financial support really contributed to the overall opinion of the college.

REFERENCES

- i. Barkley, A. P. (1993). "Consumer Satisfaction" Response from Kansas State Alumni. *NACTA Journal*, 43-47.
- ii. Belfield, C. R., & Beney, A. P. (2000). What determines alumni generosity? Evidence for the UK. *Education Economics*, 8(1), 65-80.
- iii. Borden, V. M., Shaker, G. G., & Kienker, B. L. (2014). The impact of alumni status on institutional giving by faculty and staff. *Research in Higher Education*, 55(2), 196-217.
- iv. Calitz, A. P., Greyling, J. H., & Cullen, M. (2017, July). Industry versus Post-graduate Studies: CS and IS Alumni Perceptions. In *Annual Conference of the Southern African Computer Lecturers' Association* (pp. 192-205). Springer, Cham.
- v. Clotfelter, C. T. (2003). Alumni giving to elite private colleges and universities. *Economics of Education review*, 22(2), 109-120.
- vi. Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.
- vii. Gaier, S. (2005). Alumni satisfaction with their undergraduate academic experience and the impact on alumni giving and participation. *International Journal of Educational Advancement*, 5(4), 279-288.
- viii. Garson, G. D. (2012). Testing statistical assumptions. *Asheboro, NC: Statistical Associates Publishing*.
- ix. Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.
- x. Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. SAGE Publications.
- xi. Hansen, L. (2015). *Once students, forever alumni: A study analyzing drivers of alumni loyalty* (Doctoral dissertation).
- xii. Hartman, D. E., & Schmidt, S. L. (1995). Understanding student/alumni satisfaction from a consumer's perspective: The effects of institutional performance and program outcomes. *Research in Higher Education*, 36(2), 197-217.
- xiii. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
- xiv. Hoyt, J. E. (2004). Understanding alumni giving: Theory and predictors of donor status. *Online Submission*.
- xv. Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, 20(2), 195-204.
- xvi. Hunter, C. S., Jones, E. B., & Boger, C. (1999). A study of the relationship between alumni giving and selected characteristics of alumni donors of Livingstone College, NC. *Journal of Black Studies*, 29(4), 523-539.
- xvii. Johnson, J. W., & Eckel, P. D. (1998). Preparing seniors for roles as active alumni. *The senior year experience: Facilitating integration, reflection, closure and transition*, 227-241.
- xviii. Kim, J. O., & Mueller, C. W. (1978). Introduction to factor analysis. Beverly Hills: Sage Publications
- xix. McAlexander, J. H., & Koenig, H. F. (2001). University experiences, the student-college relationship, and alumni support. *Journal of Marketing for Higher Education*, 10(3), 21-44.
- xx. Nunnally, J. C. (1978). *Psychometric Theory*, 2d ed., New York: McGraw-Hill.
- xxi. Pace, C. R. (1979). *Measuring Outcomes of College. Fifty Years of Findings and Recommendations for the Future*.
- xxii. Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). San Francisco: Jossey-Bass.

- xxiii. Pedro, I. M., Pereira, L. N., & Carrasqueira, H. B. (2018). Determinants for the commitment relationship maintenance between the alumni and the alma mater. *Journal of Marketing for Higher Education*, 28(1), 128-152.
- xxiv. Pike, G. R. (1994). The relationship between alumni satisfaction and work experiences. *Research in Higher Education*, 35(1), 105-123.
- xxv. Stephenson, A. L., & Bell, N. (2014). Motivation for alumni donations: a social identity perspective on the role of branding in higher education. *International Journal of Nonprofit and Voluntary Sector Marketing*, 19(3), 176-186.
- xxvi. Sun, X., Hoffman, S. C., & Grady, M. L. (2007). A multivariate causal model of alumni giving: Implications for alumni fundraisers. *International Journal of Educational Advancement*, 7(4), 307-332.
- xxvii. Weerts, D. J., & Ronca, J. M. (2008). Characteristics of alumni donors who volunteer at their alma mater. *Research in higher education*, 49(3), 274-292.
- xxviii. Vaidya, Amita. "Prof. Amita Vaidya (Associate Dean) addresses alumni of NMIMS Sarla Anil Modi School of Economics". Retrieved from <https://economics.nmims.edu/students/alumni/>
- xxix. Volkwein, J. F. (2010). Assessing alumni outcomes. *New Directions for Institutional Research*, 2010(S1), 125-139.
- xxx. Zabatta, L. (2017). Alumni Giving: A Relationship between On-Campus Alumni Engagement, Participation and Financial Support.