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Classification of Shared Values for Educational Research

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Abstract

The main aim of this article is to derive the list of shared values from academic perspective. The value statements were collected through qualitative procedure. The adapted version of McDonald and Gandz (1991) and the qualitative value statements provided by the respondents were combined together to prepare the list of shared values. Descriptive methods such as median, percentage agreement, item ambiguity, content validity index, content validity ratio, and content validity coefficient were employed to conclude the expert's rating in content validity analysis. The exploratory factor analysis (EFA) is a popular mathematical procedure to determine the underlying structure of the variables. The maximum likelihood extraction method and promax rotation method were chosen to extract the factors and eventually six factors were finalized. The six factors were named in order to represent the underlying variables. The confirmatory factor analysis (CFA) was also carried out to determine the goodness-of-fit to the data and ultimately the reliability test was done to ensure the consistency of the factors and the scale. The Cronbach's alpha value confirmed that the scale is consistent for further analysis.

Keywords: shared values, academic institution, EFA, CFA, content analysis, maximum likelihood, promax rotation

1. Introduction

Higher educational institution is a pool where the employees for various professions are

being prepared. It has a critical role in preparing the workforce (Lawrence & Lawrence, 2009). In this contemporary world, the educational institutions play a significant phase in molding the future employees. It is apparently seen that it is the place where various generation groups interact so often and tend to observe each other's value systems. The greatest responsibility of a management is to gather various generational cohorts under one roof and direct them in one way to attain the core values of the institution. It is evident from the various generational researches that each generation group has a unique set of values and characteristics. Strauss and Howe (1997) defined generational categories, as baby boomers (born between 1943 and 1960); Gen X (born between 1961 and 1981) and Gen Y or Millennials (born between 1982 and 2004).

Baby boomers give more importance to hard work and achievement (Collins, 1998); health (Gibson et al., 2009). Gen X tends to establish strong communal relationships with colleagues (Raineri et al., 2012) and more committed to their jobs (Lyons, 2004); whereas Gen Y focuses more on accomplishment (Gibson et al., 2009) and work liberty (Cennamo & Gardner, 2008). So, it is imperative to explore the shared values of various generational cohorts in higher educational institutions. Hence, the current article has attempted to present the list of shared values from academic perspective by adapting McDonald and Gandz's (1991) taxonomy of values.

2. The Importance of Shared Values in Academic Institutions

Over the past two decades, the concept of shared values has been explored widely (Kristof, 1996; Westerman and Vanka, 2005). The shared values or person- organisational values fit (P-O fit) has a positive influence on work adjustment, and career success (Adkins et al., 1994); organizational commitment (Finegan, 2000) and job satisfaction (Ostroff et al., 2005).

The shared values become a salient HR issue in the workplace and it is one of the approaches to get unfathomable levels of individual-organizational integration and high employee commitment (Macdonald & Gandz, 1991). In the academic institutions, the management, the employees, and students (different generational groups) need to understand the paramount importance of shared values in the workplace. Each institution is functioning based on its core values framed by the management. The present article has postulated the list of value statements from academic perspective in addition to the core values for the success of the institution. The measure of individual-organizational congruence will enable the researchers to explore positive behavior of employees, work attitudes, individual and organizational outcomes.

3. The Concept of Values

Rokeach has defined values as ‘‘enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence’’ (Rokeach 1973, p. 5).

Values have significant impact on attitudes and behaviors (Brown, 2002) and it is the fundamental concept for the purpose and goal of an organization (Posner, 2010a). Posner states: “They are the heart of the culture of an organization” (2010b, p.536). Each individual

is unique and a value which is important to one person may not be the same to the other (Yogamalar & Samuel, 2016). So far, many researchers like Allport et al. (1960); England, (1967); Rokeach, (1973); Schwartz, (1992); Schwartz and Bardi, (2001) had presented the instruments to measure the values at individual values but could not be employed to measure organizational values as well as the individual-organizational congruence.

McDonald and Gandz (1991) adapted Rokeach's (1973) list of values and proposed 'the taxonomy of 24 value dimension' to evaluate the values at the individual and organizational level. In the recent years, many researchers (Abbott et al. 2005; Finegan, 2000; Lawrence, 2006; Lawrence and Lawrence, 2009; McDonald and Gandz, 1992) have manipulated the taxonomy of 24 value dimensions to explore its impact on commitment. But, the above specified list of values has focused only on the business aspect. The shared values measurement is not available for higher educational institutions. We cannot operate the former list to academic field as the preferable values of business people differ from academic people as both of them are non-identical in their targets. Hence, this article has focused on deriving the list of shared values statements from academic perspective and explored the factor structure by administering exploratory factor analysis (EFA).

4. Method

McDonald and Gandz's (1991) taxonomy of values had been adapted for this study. To derive the list of shared values from academic perspective, semi-structured interview was conducted with 103 respondents and it comprised of Senior Professors, Professors, Associate Professors, Assistant Professors (Sr.), Assistant Professors (Jr.), Administrative staff, PhD scholars, students from engineering, management, and arts background. Their qualitative responses were recorded in written format. The interview was conducted for 15 to 20 minutes. In addition to their responses, the value statements had been collected from the prospectus of 30 AICTE (All India Council for Technical Education) recognized higher educational institutions in India. For qualitative data collection, Creswell (2003) described 4 types of procedure: observations, interviews, documents and audio visual methods.

In this present study, two methods (interview and document) have been followed to collect the value statements from the respondents. Table 1 displays the members included in the interview.

Table 1. Respondents included for deriving qualitative responses regarding the shared values

Methods of collecting responses	Groups	Category	No. of Respondents
Semi – structured Interview	Group 1 Teaching Staff	Senior Professors Professors Associate Professors Assistant Professors (Sr.) Assistant Professors (Jr.)	6 5 7 10 10
	Group 2 Non- teaching Staff	Administrative Staff	15

	Group 3 Students	Ph.D Scholars Students from engineering, management & arts background	15 35
		Total	**103**
Document	Group 4 Prospectus	AICTE recognized educational institutions	30

Table 2. McDonald and Gandz (1991) list of values and proposed list of values

S.No	List of values proposed by McDonald and Gandz (1991)	Proposed list of values				
		Value statements	Core values stated by AICTE recognized educational institutions		Values statements given by the respondents	
			$n_1 = 30$	%	$n_2 = 103$	%
1.	Moral Integrity	Integrity / Academic Integrity	6	20	52	50.5
2.	Autonomy	Academic Freedom	5	16.7	77	74.8
3.	Creativity	Creativity	6	20	63	61.17
4.	Development	Development of students	5	16.7	60	58.25
5.	Cooperation	Personality developments	6	20	98	95.15
6.	Initiative	Spirit of participation	10	33.3	62	60.2
7.	Aggressiveness	Quality education	9	30	82	79.61
8.	Fairness	Value based education	10	33.3	16	15.53
9.	Diligence	Inculcating moral values	5	16.7	89	86.4
10.	Experimentation	Benefit of society	12	40	22	21.36
11.	Adaptability	Changing the society	9	30	39	37.9
12.	Courtesy	Competent	5	16.7	60	58.25
13.	Cautiousness	Techsavvy	10	33.3	52	50.49
14.	Social equality	Creating effective professional leaders	2	6.7	12	11.65
15.	Economy	Creating effective entrepreneurs	4	13.3	19	18.45
16.	Consideration	Leadership skills	15	50	76	73.79
17.	Formality	Commitment	12	40	59	57.28
18.	Humor	Research	20	66.7	81	78.64
19.	Forgiveness	Meritocracy	2	20	33	32.03
20.	Broad-mindedness	Excellence in scientific & technical / Intellectual Excellence	9	30	24	23.3
21.	Logic	Innovation / Innovative teaching	13	43.3	78	75.72
22.	Openness	Advance knowledge	12	40	101	98.05
23.	Obedience	----------				
24.	Orderliness	----------				

After evaluating the qualitative responses of the respondents and core values stated on the prospectus, 22 items were derived. The four items proposed by McDonald and Gandz (1991)

such as moral integrity, autonomy, creativity and development were coincided with the proposed statements like academic integrity, academic freedom, creativity and development of students / personality development respectively. Hence, the former statements (represented from business perspective) were replaced by the latter items. For example, 'autonomy' refers to 'freedom' not 'constrained by many rules' (Chatman, 1989). Here, 'academic freedom' refers to "the freedom of teachers and students to teach, study, and pursue knowledge and research without unreasonable interference or restriction from law, institutional regulations, or public pressure" (The Editors of Encyclopaedia Britannica, 2010). The remaining items from both the lists were included for the further analysis.

5. Content Validity

Any measurement that we take for research should measure what we intend to measure. To ensure it, sundry types of validity tests are prevailing. Content validity is one among them. It is the responsibility of the researcher to evolve high support for the validity of their measures (Bollen, 1989). Content validity is based on the judgment of experts regarding the content relevancy of the test domains and representation of items to their domains (Rogers, 2010). The following topics have revealed the procedures to be followed in the selection of experts and rating their judgments.

5.1 Expert Judgment

This phase is to assess to what extent the items that were created represent the target and aspect of construct (Beck and Gable, 2001). In this study, the items were evaluated based on the relevance and representativeness. When there is high rating of relevance and representativeness, the better the content validity rating is.

5.2 Entreat Expert Participation

Initially, an invitation was sent to the experts. The experts who expressed their desire to participate were sent an attachment containing,

- Covering letter, and
- Content rating review form

Participants were given 3 weeks to complete the review form and mail it back to the researcher. The covering letter explained the main objective, purpose of the study, target population and the aim of collecting the content rating review form. The content rating review form encompassed the instructions and procedures to be followed to accomplish the rating pattern. It consisted of 5 columns. First column placed the items to be evaluated. Second column showed the rating scale 0 to 4 where the experts were expected to rate the item. Third column represented "Is the item well written?" – Yes / No and fourth column denoted "Is the item essential to the domain?" – Yes / No. The experts were supposed to mark yes or no on both the columns. The fifth column had given space for the experts to place their suggestions, ideas, opinions, and items to be revised.

5.3 Selection of the Experts

In selecting the panel of experts, the criteria outlined by Yun and Ulrich (2002) were used as a point of reference. Experts were selected on the premise of their job title, experience, knowledge on research and paper publications. A total of 15 HR & OB Professors from diverse universities and colleges in India were invited to participate as content evaluation experts. Out of 15, 8 professors accepted the invitation and participated.

Table 3. Selection of Experts based on the experience

Experts	Category	Area of expertise	Years of experience
1	Academic	HR & OB	15
2	Academic	HR & OB	10
3	Academic	HR & OB	11
4	Academic	HR & OB	17
5	Academic	HR & OB	20
6	Academic	HR & OB	12
7	Academic	HR & OB	10
8	Academic	HR & OB	15

5.4 Perusal of Expert Ratings

Three major approaches such as descriptive, quantitative, and qualitative were classified to analyze experts' ratings by Hellsten (2008). The present study has focused only two approaches like descriptive and quantitative approaches but qualitative approach was not able to perform due to time constraint.

5.4.1 Descriptive Approach

- **Median:** A higher median value indicated a more relevant item. The present study has used a rating scale of 0 to 4, and an item with a median value of 2.75 and above is accounted for acceptance (Hellsten, 2008).
- **Item Ambiguity:** The item ambiguity score for each item has been calculated. Items with lower ambiguity scores are desired as they indicate consensus among judges. The rating scale of 0 to 4 which is used in this research, a range of 3 or more between scores (or R_k of 4 or higher) is considered ambiguous. Hence, low ambiguity values such as 1, 2 or 3 are acceptable for this study. When the value of IA is 4 or more, then the ambiguity is more. We need to think of removing such an item, but we should not take decision just by noticing this value alone, instead the other methods need to be considered for deleting any item.
- **Percentage Agreement:** 80% of agreement of judges is considered as acceptable.

5.4.2 Quantitative Approach

- **Content Validity Index (CVI):** CVI for each individual item is the percentage of judges who have rated the item as 3 or 4 (Lynn, 1986). Polit, Beck and Owen (2007) observed that the CVI value of 1.00 is acceptable for panels of three or four experts, whereas 0.80 was considered acceptable for a panel of 5 members. The table 4 denotes the rating of experts and content validity index value.

Table 4. Content validity Index value and Evaluation

No. of Experts	No. of experts rating 3 or 4	CVI	Evaluation
8	8	1.00	Excellent
8	7	0.88	Excellent
8	6	0.75	Good

- **Content Validity Ratio:** The CVR range should be -1 to +1. The number was equal to zero when half of the judges rated the item as essential (Lawshe, 1975). The minimum CVR for each item to be considered as acceptable was 0.75 for a one-tailed test at the 95% confidence level, if a minimum of 8 judges were used for the study (Lawshe, 1975). In this study, 8 judges have participated; the CVR value 0.75 was accepted for the present study.

- **Content Validity Coefficient (VI_k):** An item is highly accepted if the coefficient was closer to 1. The coefficient value is compared with a table of right-tail probabilities (p) to determine the significant value (Aiken, 1985, p.133). For 8 experts, the significant value was v = 0.75 and p = 0.40.

Table 5. Formula for the Descriptive and Quantitative methods

Descriptive Approach	**Formula**	**Description**
Median	If n is odd, then median (M) = ((n+1) / 2)) If n is even, then median (M) =[(n/2) + ((n/2) +1)] / 2	n = no. of Experts
Item ambiguity (IA)	$R_k = (X_{kjh} - X_{kjl}) + 1$	X_{kjh} is the items' highest rating X_{kjl} is the lowest rating
Percentage Agreement (PA)	= (No. of experts rated "YES" / Tot. no. of experts) * 100	
Quantitative Approach	**Formula**	**Description**
Content Validity Index (CVI)	= (No. of experts who rated 3 or 4 / Tot. no. of experts)	CVI is expressed in percentage
Content Validity Ratio (CVR)	$CVR_i = (n_e - N/2) / (N/2)$	• CVR_i is the value of CVR for the i^{th} item • n_e is the no. of experts indicated that the item is essential • N is the no. of experts on the panel • CVR ranges from -1 to +1
Content Validity Coefficient (VI_k)	$VI_k = S / [j (c-1)]$	• S is the sum of s_j ($s_j = r_j - l_o$) • r_j is the j's ratings • l_o is the lowest rating of j^{th} item • j is the tot. no of experts • c is the no. of rating categories • s_j & r_j (j represents 1,2,3…n experts)

Table 5a. Acceptable Range for Content Validity

Median	Item Ambiguity	Percentage Agreement	Content validity index	Content validity ratio	Content validity coefficient
2.75 or above	1,2 & 3	80%	0.75	0.75	0.75

Descriptive and quantitative approaches are applied to determine the content validity of the items. Out of six, any item satisfies less than four methods, it should be deleted and if any item satisfies more than 3 methods that should be retained. Table 5 has displayed the formulas for calculating three methods of descriptive approach and three methods of quantitative approach. Table 5a discloses the acceptable values for six methods in the present study. Table 6 shows the list of value statements, judge's rating for each method, and decision to retain or remove the items. The items such as cooperation, aggressiveness, social equality and consideration are replaced by the items such as teamwork, assertiveness, equality in opportunities and recognition respectively based on the suggestions of judges. The seven items such as *assertiveness, courtesy, economy, formality, broad-mindedness, emerging as an effective professional leaders/skills/entrepreneurs, and commitment* were removed as they satisfied less than 4 methods. Eventually, the final list comprised of 30 items and this final list was taken for data collection for performing EFA.

Table 6. Content validity report based on the judges' rating.

S.No	List of Values	Median	IA	PA	CVI	CVR	VI_k	Decision to retain / remove items
1	Team work	4	2	100	1	1	0.94	Retain
2	Diligence	4	1	100	1	1	1.00	Retain
3	Academic Integrity	4	1	100	1	1	1.00	Retain
4	Openness	3	2	100	1	1	0.84	Retain
5	Initiative	4	2	100	1	1	0.91	Retain
6	Experimentation	3.5	2	100	1	1	0.88	Retain
7	Assertiveness	2	2	62.5	0.25	0.25	0.56	Remove
8	Fairness	3	2	62.5	1	0.25	0.84	Retain
9	Adaptability	3.5	2	100	1	1	0.88	Retain
10	Creativity	3.5	2	100	1	1	0.88	Retain
11	Personality development	3.5	3	75	0.75	0.5	0.81	Retain
12	Courtesy	3	3	62.5	0.63	0.25	0.72	Remove
13	Cautiousness	3	3	75	0.75	0.5	0.75	Retain
14	Equality in opportunities	3	3	87.5	0.63	0.75	0.63	Retain
15	Economy	2	5	50	0.25	0	0.50	Remove
16	Recognition	3	2	87.5	0.75	0.75	0.69	Retain
17	Formality	2	5	50	0.25	0	0.50	Remove
18	Humor	3	3	87.5	0.88	0.75	0.75	Retain
19	Forgiveness	3	2	87.5	0.75	0.75	0.69	Retain
20	Broad-mindedness	2.5	4	62.5	0.5	0.5	0.50	Remove
21	Logic	3.5	2	100	1	1	0.88	Retain
22	Academic Freedom	4	2	100	1	1	0.94	Retain
23	Obedience	3	3	100	0.75	1	0.78	Retain
24	Orderliness	3	3	100	0.75	1	0.72	Retain

25	Meritocracy	3	2	100	1	1	0.81	Retain
26	Intellectual Excellence	3.5	3	100	0.75	1	0.81	Retain
27	Innovation	3	2	75	1	0.5	0.81	Retain
28	Advance knowledge	3	2	100	1	1	0.78	Retain
29	Spirit of participation	4	2	100	1	1	0.91	Retain
30	Quality Education	3.5	2	100	1	1	0.88	Retain
31	Benefit of society	3	2	100	1	1	0.84	Retain
32	Competent	3	2	100	1	1	0.84	Retain
33	Tech-savvy	3	2	100	1	1	0.78	Retain
34	Emerging as an effective professional leaders/skills/entrepreneurs	2	3	49	0.75	1	0.42	Remove
35	commitment	2	3	49	0.75	1	0.42	Remove
36	Research	3.5	2	100	1	1	0.88	Retain
37	Inculcating moral values	3	3	100	0.75	1	0.75	Retain

6. Exploratory Factor Analysis (EFA)

The final list of values was taken for further analysis. The questionnaire was distributed to 350 respondents based on the item ratio method. For employing exploratory factor analysis, Nunnally (1978, p.421) suggested that for doing EFA, the subject to item ratio should be at least 10:1 and 5 to 10 observations (Comrey & Lee, 1992). In this study, 30 items have been included and therefore the sample size should be at least 300.

In the present study, the questionnaire was distributed to 350 faculty members working in higher educational institutions. Out of 350, the questionnaire was collected from 341 respondents. Hence, the response rate is 97.4%. 10 respondents were removed from the analysis because some data were missing. Finally, 331 respondents were included in the analysis. The value statements were made into 5 point Likert scale. The scale represented the following ratings: not at all important = 1, unimportant = 2, neutral = 3, important = 4, and very important = 5.

Factor analysis followed mathematical procedures for summarizing the interrelated variables to draw structure in a set of variables (Child, 2006). It operated for reducing measurable and observable variables to fewer latent variables by sharing a common variance among them (Bartholomew et al., 2011). EFA is applied to reveal any latent variable that causes the manifest variables to covary. The main aim of EFA is to group the correlated variables under some common factors (McDonald, 1985). EFA is used to assess the variables which ‘go together’ and to determine the underlying factors (DeCoster, 1998). During factor extraction, the shared variance of a variable is partitioned from its unique variance and error variance to reveal the underlying factor structure; only shared variance appears in the solution. The present study has followed maximum likelihood extraction method and promax rotation method for performing EFA.

7. Analysis and Interpretation

Before doing the analysis, the dataset need to be determined that is suitable for EFA. The value of Bartlett’s Test of Sphericity (significant level $p<0.05$) show the patterned relationship among the variables. The table 7 shows $p < 0.001$ and the dataset is suitable for

EFA. Also, we need to look at Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy (cut-off above 0.05) value. The table 7 represents the KMO of sampling adequacy value which is above cut-off (0.835). Thus, the initial process satisfied the requirements for performing EFA.

Table 7. SPSS output for KMO and Bartlett's test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.835
Bartlett's Test of Sphericity	Approx. Chi-Square	3191.32
	df	435
	Sig.	.000

Table 8. SPSS output for the total variance explained for extracted factors

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.049	23.496	23.496	6.492	21.641	21.641	4.860
2	2.694	8.980	32.476	2.121	7.070	28.710	3.178
3	1.678	5.593	38.069	1.120	3.732	32.442	2.849
4	1.661	5.536	43.605	1.000	3.334	35.776	3.796
5	1.526	5.087	48.691	1.050	3.501	39.278	1.644
6	1.180	3.935	52.626	.714	2.382	41.659	3.221
7	1.125	3.750	56.376	.558	1.861	43.520	2.634
8	.984	3.278	59.654				

Extraction Method: Maximum Likelihood.

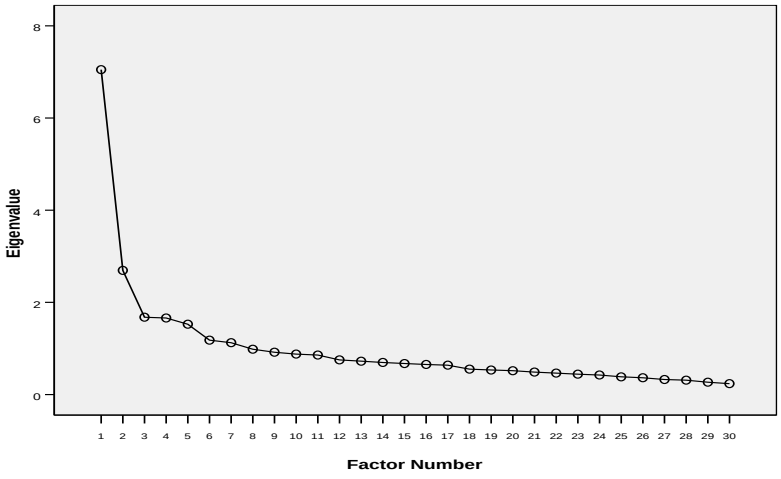

Figure 1. SPSS output for Scree Plot indicating that the data have seven factors

The table 8 shows the total variance explained to determine the number of significant factors. The initial eigen values and extraction sums of squared loadings are shown in this table. The factors are arranged in the descending order based on the most explained variance. There are 7 factors extracted based on the eigen value (eigen value greater than 1). The factors which were extracted denoted 56. 38% of variance. The figure 1 clearly shows the Scree plot of significant factors. Both table 8 and figure 1 indicate the extraction of seven factors. The list consists of 30 value items and among them only one item 'teamwork' got very low communality value (0.226) and hence it was removed for the further analysis. The remaining items have the communalities above 0.4. The item communalities are considered 'high', if they are all 0.8 and above (Velicer and Fava, 1998). But, the moderate communalities of 0.4 to 0.7 are acceptable by the researchers.

Table 9. SPSS output for Pattern Matrix after Promax rotation method

Pattern Matrix[a]

	Factor						
	1	2	3	4	5	6	7
p22	.627						
p19	.582						
p30	.558						
p20	.544						
p16	.541						
p23	.519						
p21	.458						
p24	.451						
p10	.438						
p11		.625					
p5		.595					
p7		.546					
p3		.535					
p2		.374					
p15			.716				
p14			.608				
p9			.445				
p26				.794			
p25				.466			
p17			.328	.440			
p27				.362			
p18					.601		
p4					.369		
p8					.368		
p1							
p29						.541	
p6						.508	
p28						.472	
p12							.739
p13				.365			.466

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 13 iterations.

Table 9 shows the variables grouped together under common factors based on the interrelation among them. There is a good rule of thumb that the minimum loading of item should be 0.32 and above (Tabachnick and Fidell, 2001). There are chances for 'cross loading' or 'split loading' which means that an item could be loaded on two or more factors having the loading at 0.32. If there are several cross loaders, then the items may be poorly written. Also, it is very significant to notify the number of variables placed in a factor. The factor 7 shows only two variables placed on it and the two items p13 and p17 were cross loadings on two factors. A factor with fewer than three items is generally weak and unstable factor. Hence, the items p12 (equality in opportunities), p13 (cautiousness), p17 (academic freedom) (cross-loading), p1 (low communality -0.154) were removed and the analysis has been carried out again.

Table 10 shows the total variance of the factors after the removal of four items, the rotation has extracted six factors and at least three variables presented in each factor and the total variance is 53.76%. The table 11 shows the pattern matrix and the number of factors after removing two items. The factor loadings less than 0.32 are not shown in table 9 and 11. Figure 2 denotes the six factors based on the Eigen value, and the reference line is drawn at the break point. There are six data points above the break. After the sixth data point, the bend becomes flatten. Hence, six factors are retained for the further explanation. The table 12 represents the correlation among the factors. All the factors are correlated among them.

Table 10. Extraction of six factors after removing four items (p12, p13, p17, and p1)

Total Variance Explained

	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.319	24.304	24.304	5.746	22.100	22.100	4.648
2	2.667	10.257	34.561	2.078	7.994	30.094	3.124
3	1.599	6.148	40.709	1.036	3.986	34.080	2.730
4	1.440	5.537	46.246	.834	3.207	37.287	2.925
5	1.306	5.023	51.269	.813	3.127	40.414	3.060
6	1.116	4.292	55.561	.573	2.204	42.618	1.442

Extraction Method: Maximum Likelihood.

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

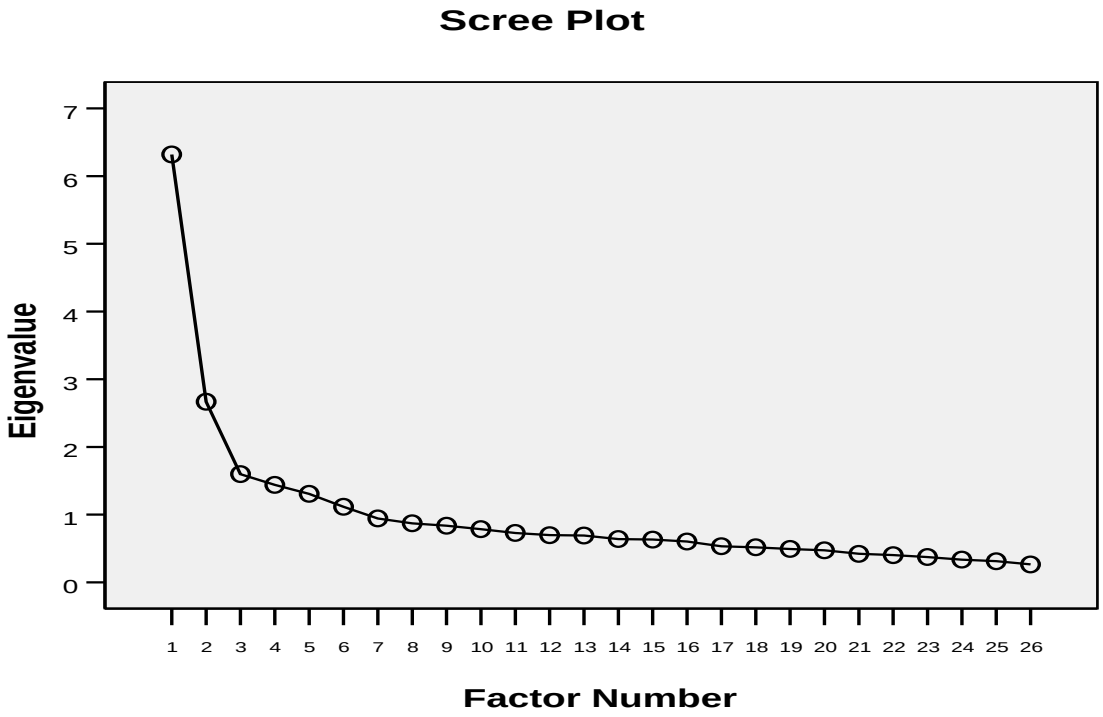

Figure 2. SPSS output of Scree Plot after the removal of four items

Table 11. SPSS output for Pattern Matrix after the removal of four items

Pattern Matrix

	Factor					
	1	2	3	4	5	6
p19	.643					
p20	.604					
p22	.581					
p16	.576					
p30	.556					
p23	.549					
p21	.490					
p10	.490					
p24	.442					
p11		.658				
p5		.612				
p3		.550				
p7		.512				
p2		.387				
p15			.742			
p14			.627			
p9			.431			
p26				.809		
p25				.436		
p27				.349		
p6					.595	
p29					.542	
p28					.462	
p18						.623
p4						.401
p8						.328

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a Rotation converged in 11 iterations.

8. Labeling the Factors

The exploratory factor analysis has extracted 6 factors. Based on the grouped variables, the factors are labeled. The first factor, labeled '*cognitive values'* contains nine items: personality development, logic, orderliness, meritocracy, innovation, advance knowledge, spirit of participation, inculcating moral values, and intellectual excellence. The second factor, labeled '*meticulous values'* contains five items: diligence, academic integrity, initiative, cautiousness, and fairness. The third factor, labeled '*sensible values'* contains three items: creativity, humor, and forgiveness. The fourth factor, labeled '*proficiency values'* contains three items: quality education, benefit of society, and competent. The fifth factor, labeled '*exploration values'* contains three items: experimentation, tech-savvy, and research. The sixth factor, labeled '*behavioral values'* contains three items: openness, adaptability, and obedience.

9. Confirmatory Factor Analysis (CFA)

CFA is a measurement model and it is used when the researcher postulates relations between the observed measures and the underlying factors 'a priori', based on knowledge of the theory, empirical research, or both, and then tests this hypothesized structure statistically. The primary task of CFA is to determine the goodness-of-fit between the hypothesized model and the sample data. It characterizes how the measured variables come together to represent constructs and are used for validation and reliability checks.

The ideal level of standardized loadings for reflective indicators is 0.70, but 0.60 is considered to be an acceptable level (Barclay et al., 1995). In this current study, the questionnaire has been distributed to the teaching members of various Engineering colleges in India. The respondents have been asked to rate the values in two methods. In one hand, the respondents have been instructed to rate how much importance they give (personal values) to a specific item and on the other hand, they have to rate how much importance that their institution offers (perceived organizational values).The CFA has been employed for both these responses and shown an acceptable overall model fit.

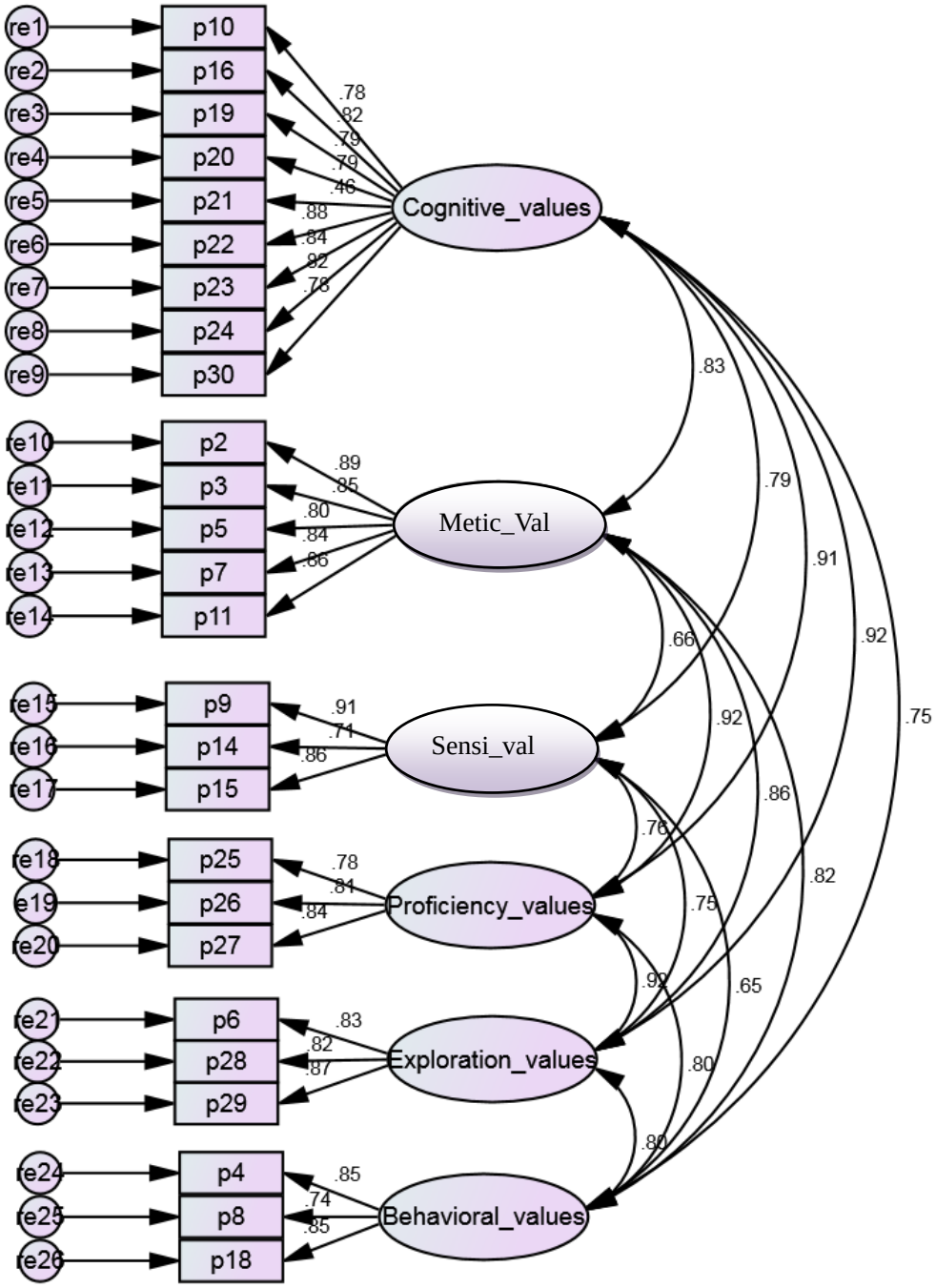

Figure 3. Confirmatory analysis for Personal values

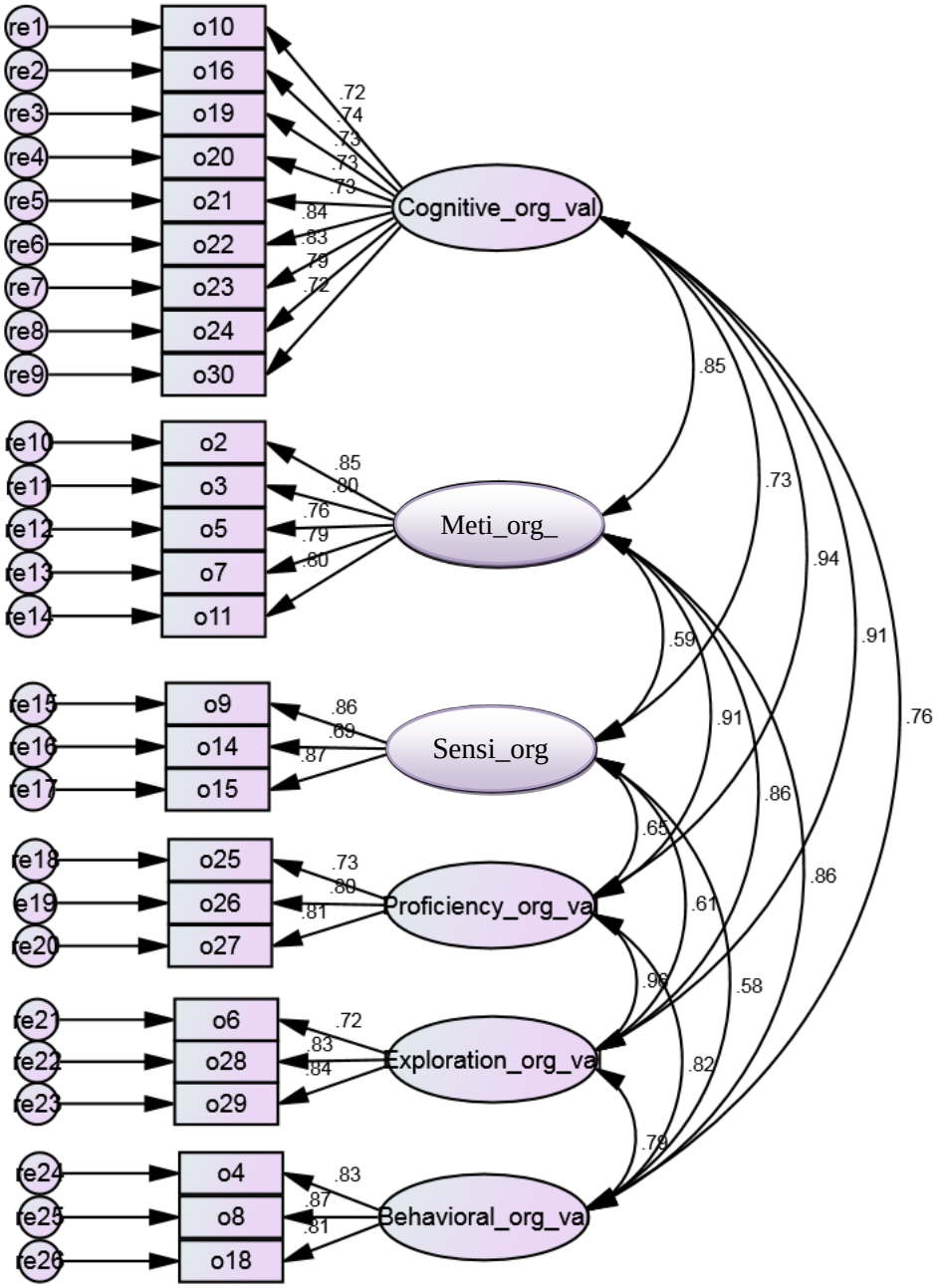

Figure 4. Confirmatory analysis for Perceived organizational values

A confirmatory factor analysis was employed using AMOS structural equation software. To do CFA, data was collected from 350 respondents. The following indices were used for evaluating the fit of the model to the data. A test of overall fit of the baseline model was carried out across organizations, resulting in the following indices: for personal values, chi-square = 843.818, df=284, chi-sq/df=2.971, CFI=0.931, RMSEA=0.074; for organizational values, chi-sq=800.309, df=284, chi-sq/df=2.818, CFI=0.925, RMSEA=0.072. Thus, the baseline model was considered as an acceptable fit to the data.

The following indices were used for evaluating the fit of the model to the data: chi-sq/df

(acceptable value, <3); comparative fit index (CFI), (acceptable value at least 0.90); and root mean squared error of approximation (RMSEA) (acceptable values <0.08), (Kline, 1998; Byrne 2001). The standardized loadings for all the indicators are greater than 0.7. But, it is greater than 0.6 for the indicator 'humor' in organizational values. Barclay et al. (1995) suggested that the standardized loadings greater that 0.6 is acceptable. Therefore, all the loadings are within the acceptable range. The standardized regression weights (factor loadings), Cronbach alphas, model of fit indices for personal and perceived organizational values of all respondents are reported in Table 12.

Table 12. Standardized regression weights (factor loadings), Cronbach alpha value, Model of fit indices for personal and organizational values

Factor	Value	Personal values	Perceived organizational values
Cognitive values	Personality development	0.776	0.717
	Logic	0.818	0.736
	Orderliness	0.79	0.726
	Meritocracy	0.788	0.734
	Intellectual Excellence	0.763	0.732
	Innovation	0.877	0.845
	Advance knowledge	0.841	0.827
	Spirit of participation	0.815	0.793
	Inculcating moral values	0.784	0.724
	Alpha value	**(0.942)**	**(0.923)**
Meticulous values	Diligence	0.885	0.853
	Academic Integrity	0.854	0.797
	Initiative	0.802	0.757
	Recognition	0.841	0.79
	Fairness	0.855	0.797
	Alpha value	**(0.927)**	**(0.898)**
Sensible values	Creativity	0.911	0.858
	Humor	0.706	0.694
	Forgiveness	0.863	0.87
	Alpha value	**(0.86)**	**(0.844)**
Proficiency values	Quality education	0.776	0.731
	Benefit of society	0.809	0.803
	Competent	0.839	0.814
	Alpha value	**(0.849)**	**(0.825)**
Exploration values	Experimentation	0.826	0.724
	Tech-savvy	0.824	0.827
	Research	0.87	0.838
	Alpha value	**(0.877)**	**(0.837)**
Behavioral values	Openness	0.854	0.834
	Adaptability	0.739	0.868
	Obedience	0.853	0.809
	Alpha value	**(0.853)**	**(0.875)**
Model of fit indices	**Acceptable Range**		
Chi-sq	-	842.856	800.309
df	-	284	284
Chi-sq/df	< 0.3	2.968	2.818
CFI	> 0.90	0.933	0.925
RMSEA	< 0.08	0.074	0.072

CFI – comparative fit index; RMSEA – root mean squared error of approximation

10. Reliability Test

Reliability test has been used to identify the validation of questionnaire. After the factor analysis, it is significant to determine whether the factors are reliable and can be measured for further exploration.

To assess the reliability of the scale, the Cronbach's alpha method has been applied. Gliem and Gliem (2003) presented the guidelines to evaluate reliability coefficient; alpha value greater than 0.7 is acceptable; greater than 0.6 is questionable; greater than 0.8 is good. Nunnally and Bernstein (1994) suggested a rule of thumb level of higher than 0.70, with a level as low as 0.60 being accepted for new scale.

The Cronbach's alpha value for personal values: cognitive values (0.942), meticulous values (0.927), sensible values (0.86), proficiency values (0.849), exploration values (0.877), and behavioral values (0.853); for organizational values: cognitive values (0.923), meticulous values (0.898), sensible values (0.844), proficiency values (0.825), exploration values (0.837), and behavioral values (0.875) are accepted as suggested by Gliem and Gliem (2003) and Nunnally and Bernstein (1994). Therefore, it has been confirmed that the scale is reliable for measuring shared values.

11. Conclusion

The present study has presented the list of shared values from academic perspective. The list of values has been formulated from McDonald and Gandz (1991) taxonomy of values. Some of the values like diligence, openness, initiative, experimentation, orderliness, obedience, etc., from business perspective are suitable for academic institutions too. The other values which are especially for academic institutions have been derived by means of interview and documents. The qualitative statements have been given by various generation groups (Baby boomers, Gen X and Gen Y) such as teaching staff, non-teaching staff, scholars and students, and collected from printed documents as well. The collected statements have been changed as single statement and submitted to the experts to determine the content validity.

There have been 8 experts involved in doing the process of content validity and they gave the validity ratings as well as suggestions. Out of 37 items, 7 items have been deleted based on the judge's ratings. The remaining 30 items have been taken for factor analysis. The maximum likelihood extraction method has been applied and promax rotation method has been chosen for performing EFA.

The requirements for assessing EFA have been satisfied and there have been seven factors extracted. As the seventh factor consisted of only two variables, it would become unstable. The items p13 and p17 had cross loaded, and p1 has low communality. Hence, four items were removed and the analysis was carried out again. It extracted six factors and at least three variables should be placed on each factor. The factors were named according to the variables grouped. After EFA, CFA was carried out using AMOS software to confirm the factors. The data was collected from 350 respondents to do CFA. Eventually, the reliability test was conducted to determine whether the scale is reliable for further measurement. It was found that Cronbach's alpha value for all the factors for both personal and organizational values had

been greater than 0.7 which is acceptable. Hence, this scale can be taken for promoting future studies for finding the relationship between the values and work attitude variables, behaviours, and various individual and organizational outcomes of various generational cohorts in academic institutions because it may provide deeper insight to understand them. This measurement would help the management to understand the value system of various generational groups and provide better organizational culture to attain the goals and success of the institutions.

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