



## Introspecting Institutional Commitment Using Cluster Analysis

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### Abstract

The term '*commitment*' describes an employee's connection to and involvement with the organization. A person with a high level of commitment feels as though he is working for himself and not for somebody else. As a result, the person develops a sense of duty and does not need any additional motivation to execute their work. The present research work is an attempt to study the likeness of the responses given by secondary school teachers regarding Institutional Commitment. Two step cluster analysis technique is adopted for the study and several clusters are formed with respect to Gender of the Teachers and Location of the Institutions. The influence of the Predictors is also discussed for the formation of clusters. Every cluster displays a unique formation consisting of a single gender (male or female) or location of the institute (rural or urban).

**Keywords:** Institutional Commitment, Cluster Analysis, Clusters, Predictor



## Introduction

The idea of institutional commitment is not new; rather, it has roots that go back in time. The literature on industrial and organisational psychology is where the term institutional commitment or organisational commitment first appeared. An employee's psychological bond or emotional commitment developed in reaction to his connection and participation with the particular institution is referred to as an attitudinal viewpoint. Institutional commitment has been described in many ways by various persons. According to Cambridge Dictionaries Online, the term '*commitment*', denotes "*a willingness to give your time and energy to something that you believe in, or a promise or firm decision to do something*". Buchanan (1974) finds commitment as "*a partisan, affective attachment to the goals and values, and to the organization for its own sake, apart from its purely instrumental worth*". A person's psychological connection to the company, their sense of involvement at work, their loyalty, and their belief in the organization's principles. According to the researcher, organisational commitment may be summed up as employees' acceptance of organizational goals and their desire to give their all while adhering to the organization's conventions and ways of doing things.

A technique that just takes one iteration through the data is two-step cluster analysis. There are two main steps to the process: First, observations are initially clustered into small subclusters and then treated as distinct observations (Facca & Allen, 2011). For deciding whether to construct a new cluster or to add an observation to an existing one, the distance criteria are utilized. These fresh observations are grouped utilizing the hierarchical cluster approach. The number of clusters can either be predetermined or determined by the algorithm of the two-step cluster analysis. The second phase is grouping, where the subclusters are sorted into the necessary number of clusters and act as the basis for the analysis (Oey & Lim, 2022). Traditional grouping methods can be easily applied because the number of subclusters is considerably lower than the amount of data. The approach grows increasingly accurate as the number of subclusters increases.



## Literature Review

### Reviewing the existing literature on Organizational Climate

**Ofelia, S. P. (2022)** has worked on *Influence of Professional Commitment and Organizational Climate on the Work Engagement of Employees in the Department of Education*. The primary goal of this study was to determine whether the relationship between professional dedication and organisational environment is mediated by work engagement. The researcher used a correlational technique in a quantitative, non-experimental design. The respondents were members of a public school's non-teaching staff. To analyse the gathered data, regression analysis, mean, and Pearson-r were employed. The study's findings showed that non-teaching staff members have very high levels of organisational climate, professional commitment, and work engagement. Furthermore, there are strong correlations between organisational climate and job engagement as well as professional commitment and engagement at work.

**Mohanta, R & Saha, B. (2022).** in their paper *A Conceptual Delving into Organizational Climate in School Education*, is of the opinion that an institution's culture often serves as a reminder of its environment. The members' impressions of a group of characteristics that exist within an organisation are referenced by the organisational climate of such a successful institution. The culture of a business reflects the perceptions and feelings of its employees. To elevate employees' morals and values and ensure the ease and perfect continuation of their working habits, a leader must create a pleasant workplace environment. The goal of this research article is to explain and identify trends in the numerous studies and methodologies used to look into school climate and student results. It is a critical assessment of the function institutional climate plays in establishing a value.

**Shukla & Waris (2016)** made a study on *Professional Commitment of Secondary School Teachers in Relation to Their Gender and Area: A Comparative Study* to study secondary school teachers' professional commitment in regard to their gender and area. The researchers used 600 secondary school teachers from Uttar Pradesh (300 from urban areas and 300 from rural areas) for their study. The sample was chosen using a purposeful sampling technique. Dr. Ravinder Kaur, Dr. Sarbjit Kaur Ranu, and Mrs. Sarvjeet Kaur Brar's (2011) '*Professional Commitment*



*scale for teachers'* was used to collect the data. The findings showed that there was no significant variation in the professional commitment of secondary school teachers according to area, but there was a significant difference in the professional commitment of secondary school teachers between male and female.

**Berberoglu, A. (2018)** has conducted an investigation on *Impact of Organizational Climate on Organizational Commitment and Perceived Organizational Performance: Empirical Evidence from Public Hospitals*. This study sought to assess healthcare workers' views of organisational climate and test the hypothesis that climate has an effect on commitment to the company and perceived performance. The study used a self-administered questionnaire to obtain data from the healthcare professionals who are currently engaged in public hospitals in North Cyprus. ANOVA and linear regression analysis were applied to the acquired data in order to analyse it and evaluate the hypothesis. The findings demonstrated that organisational atmosphere and perceived organisational performance are closely connected. The results of a simple linear regression revealed that organisational atmosphere significantly influences how committed employees are to the organisation and how well it is regarded to be performing.

### **Reviewing the existing literature on Cluster Analysis**

**Mohanta et al. (2023)** in their research work *Perceptual Environment: A Study on Organizational Climate Using Cluster Analysis* has under taken 400 Secondary School Teachers through Stratified Random Sampling, which later contribute to form four clusters. According to the research paper's findings, male teachers who work in rural settings respond similarly to the institutional climate. Also, it has been discovered that female instructors who work in rural areas respond similarly to the workplace environment. Then, for all the institutions located in rural areas, opinions about the institutional climate are gender-specific. For universities that are urban in location, similar findings are discovered. According to the response logged for the institutional climate, male and female teachers here divide into two distinct clusters. Gender influences the institutional climate findings. From the aforementioned two facts, it is possible to draw the



conclusion that responses to institutional climate depend on both gender and location of the institution.

**Benassi et al. (2020)** in their paper *Using Two-Step Cluster Analysis and Latent Class Cluster Analysis to Classify the Cognitive Heterogeneity of Cross-Diagnostic Psychiatric Inpatients* is of the belief that considerable clinical information can be gleaned from the variety of cognitive characteristics among mental patients. The appropriate way to describe this cognitive variability, though, is still up for debate. Although cluster analysis methods like the Two-Step and the Latent Class are appropriate for clinical data, the literature has paid little to no attention to them. In the current study, 387 mental inpatients with a range of disorders had cognitive profiles, and it was intended to evaluate the validity of cluster solutions produced from Two-Step and Latent Class cluster analysis. Latent Class cluster analysis and two-step cluster analysis produced consistent and reliable results. All psychiatric inpatients can be divided into Low and High Cognitive Profiles, with schizophrenia and bipolar disorder patients showing higher cognitive variability than patients with depressive illness and personality disorder.

**Gorain et al. (2022)** in their research paper *A Study on Relationship and Cluster Analysis among Internet Dependency, Social Isolation and Personality* discusses how, in the twenty-first century, Internet addiction and rising social isolation are topics that must be addressed because they have become taboo topics. The current study examines different psychological characteristics of college students. Investigations are made into the relationships between several variables, including Internet Dependence, Social Isolation, and five different personality traits. Three clusters are created despite the weak and poor connections between these factors. With the aforementioned goals in mind, relationships between the variables Internet Dependency, Social Isolation, and five different personality traits are investigated for art, science, and all learners of art and science. These traits are Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. Each pair of variables has a link that is either very weak or average. Unexpectedly, three groups emerge. Science students formed a separate cluster, while male and female arts students formed two unique clusters.



**Saha et al. (2021)** in their research paper *Analysis of Attitude Towards Yoga Among College Students Using Clustering Techniques* discusses Yoga is an ancient practice. In the current study, views regarding yoga practice are examined among college students in the Purulia area of West Bengal, India. Five clusters are created using a two-step cluster analysis to carry out the current investigation. 570 undergraduate students' opinions on a measure measuring their attitude towards yoga were gathered. Four independent variables—gender, college location, student residence, and streams—as well as one dependent variable—the questionnaire's score—are all taken into account in this study. The task of grouping a collection of things into the same group such that they are more similar to each other is known as data clustering.

**Nelson (2014)** in his research paper *Student motivational profiles in an introductory MIS course: An exploratory cluster analysis* concentrates on the profiles of students in an introductory MIS course based on a variety of variables related to academic major choice. A survey that was given to 12 sections of the course was used to collect the data. Students' assessments of the importance of tasks in the area of information systems, self-efficacy with regard to computers and applications, and attitudes towards computer use were all taken into account in a two-step cluster analysis, which also included gender as a categorical variable. Five clusters were uncovered. One all-male cluster showed positive motivation on all dimensions, one all-female cluster showed positive motivation except for computer efficacy, one all-male cluster showed negative motivation except for computer efficacy, one all-female cluster showed negative motivation except for applications efficacy, and one IT-averse cluster showed very low scores on all dimensions of motivation.

### **Rationale of the Study**

Gender and Location of the institution contributes important inputs on the views of teachers regarding Institutional Commitment. Therefore, teachers (Male and Female) working in Rural and Urban schools may have different views regarding Institutional Commitment. Clustering Analysis is a helpful technique to study the situation about the accumulation of inputs given by teachers with respect to their gender and location.



## Objectives

The objectives of the research work taken up are:

1. To find out pair wise relationship among different dimensions of Institutional Commitment.
2. To find out the cluster using independent variables – gender and location, and dependent variables- Professional Commitment, Academic Commitment, Affective Commitment, Commitment to the Learner.
3. To find out importance of the predictors of the clusters for formation of clusters.

## Methodology

**Method:** The method used in the research work is Descriptive Survey Method.

**Sample:** To undertake the research work a sample of 400 teachers from West Bengal Board of Secondary Education (WBBSE) were taken.

**Sampling Procedure:** In order to collect data Stratified Random Sampling has been applied.

## Statistical Techniques Used:

- Product Moment Method is used to calculate the Coefficient of Correlation in the research work.
- In order to classify the total sample into different clusters, two step clustering technique is used in the research work.

## Results and Discussions

The Results and Discussions will follow few abbreviations, which are enumerated here.

Professional = Professional Commitment

Academic = Academic Commitment

Affective = Affective Commitment

Leader = Commitment to the Learner.



Correlations					
		Affective	Professional	Learner	Academic
Affective	Pearson Correlation	1	.223**	.428**	.085
	Sig. (2-tailed)		.000	.000	.089
	N	400	400	400	400
Professional	Pearson Correlation	.223**	1	.384**	.500**
	Sig. (2-tailed)	.000		.000	.000
	N	400	400	400	400
Learner	Pearson Correlation	.428**	.384**	1	.086
	Sig. (2-tailed)	.000	.000		.085
	N	400	400	400	400
Academic	Pearson Correlation	.085	.500**	.086	1
	Sig. (2-tailed)	.089	.000	.085	
	N	400	400	400	400
<b>** . Correlation is significant at the 0.01 level (2-tailed).</b>					

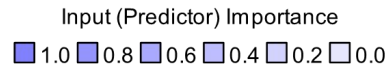
**Table 1: Coefficient of Correlation among different dimensions of Institutional Commitment.**





From Table 1, it is clear that Affective Commitment is significantly correlated with Professional Commitment and Commitment to the Learner. But it is not significantly correlated (.01 level of Significance) with Academic Commitment. Professional Commitment is significantly correlated with Commitment to the Learner and Academic Commitment. Commitment to the Learner is not significantly correlated with Academic Commitment.





### Clusters

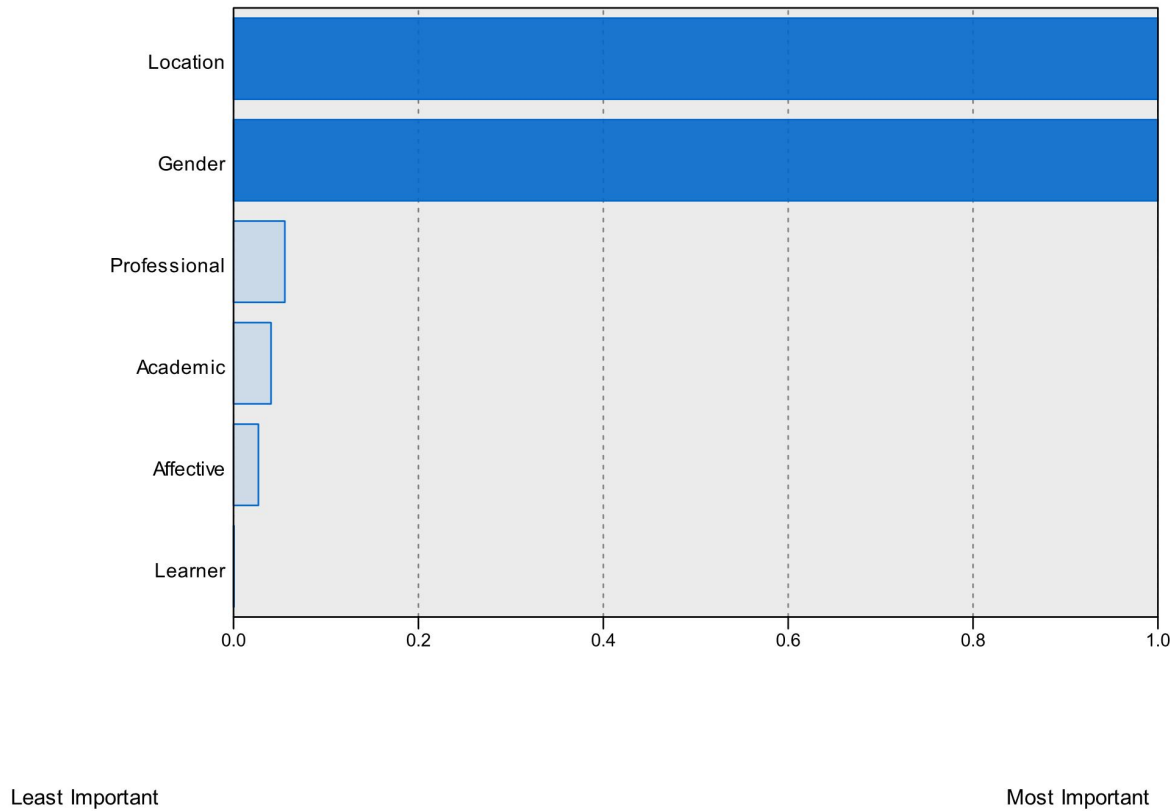


Cluster	1	3	4	2
Label				
Description				
Size	 30.2% (121)	 28.5% (114)	 24.2% (97)	 17.0% (68)
Inputs	Gender Male (100.0%)	Gender Female (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)
	Location Rural (100.0%)	Location Urban (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)
	Professional 49.07	Professional 49.56	Professional 51.01	Professional 51.44
	Academic 43.92	Academic 44.25	Academic 46.01	Academic 45.43
	Affective 53.89	Affective 55.40	Affective 55.49	Affective 53.29
	Learner 41.73	Learner 41.61	Learner 41.86	Learner 41.97

**Table 2: Formation of 4 Clusters**



**Predictor Importance**



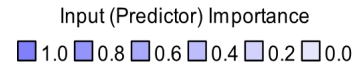
**Figure 1: Predictor Importance for the clusters described in Table 2**






Table 2 represents four clusters. Cluster 1 is the largest cluster consisting of Male teachers (30.2% of total Sample Size). Male teachers (100%) of Rural institutions (100%) are accumulated in this cluster. Cluster 3 is the second largest (28.5%) cluster consisting of Female teachers (100%) of institutions located in the Urban area (100%). Cluster 4 (24.2%) is the third largest cluster consisting of Male Teachers (100%) located in the Urban area (100%). Cluster 2 (17.0%) is the smallest cluster consisting of Female teachers (100%) located in the Urban area (100%). From Figure 1 it is clear that location and gender are two major predictors of the clusters



Professional, Academic and Affective are very low predictors of the clusters mentioned in Table 2.

**Clusters**

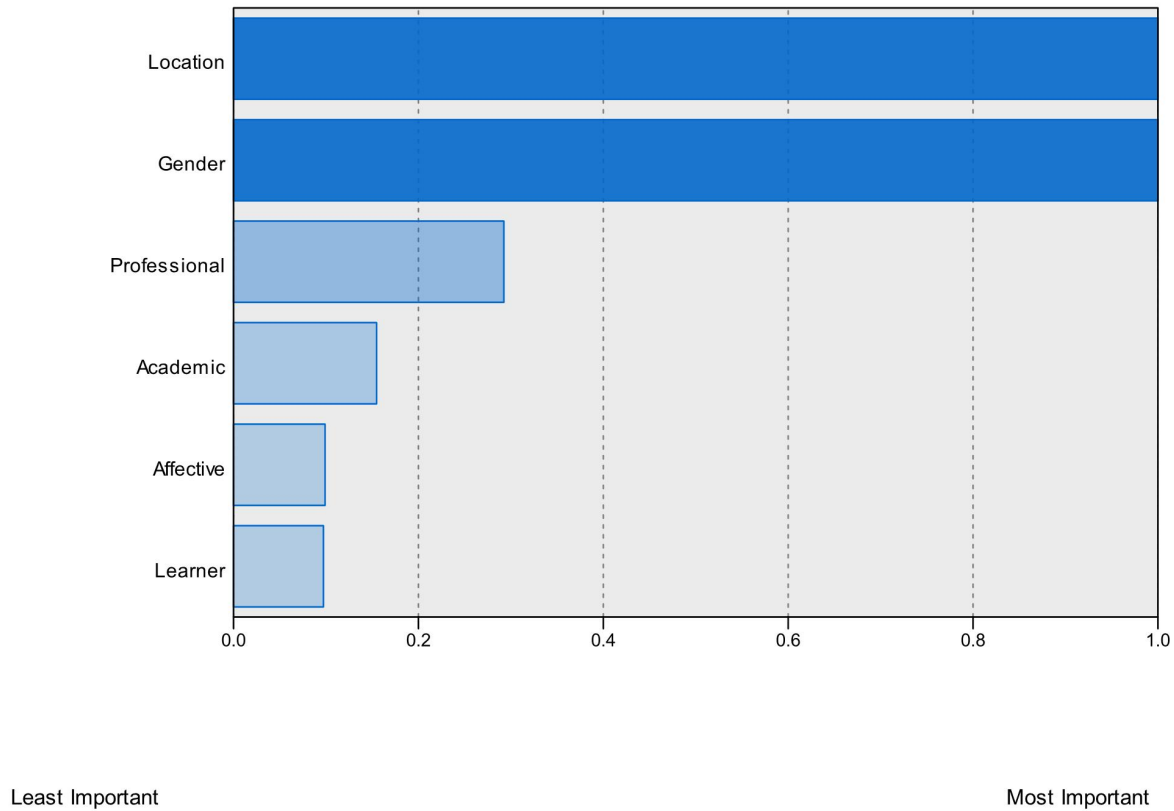


Cluster	4	5	2	3	1
Label					
Description					
Size	 28.5% (114)	 24.2% (97)	 19.0% (76)	 17.0% (68)	 11.2% (45)
Inputs	Gender Female (100.0%)	Gender Male (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)	Gender Male (100.0%)
	Location Urban (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Rural (100.0%)	Location Rural (100.0%)
	Professional 49.56	Professional 51.01	Professional 46.61	Professional 51.44	Professional 53.22
	Academic 44.25	Academic 46.01	Academic 42.04	Academic 45.43	Academic 47.09
	Affective 55.40	Affective 55.49	Affective 51.95	Affective 53.29	Affective 57.18
	Learner 41.61	Learner 41.86	Learner 40.24	Learner 41.97	Learner 44.24

**Table 3: Formation of 5 Clusters**



**Predictor Importance**



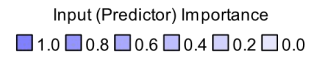
**Figure 2: Predictor Importance of Clusters mentioned in Table 3**







Table 3 represents five clusters. Cluster 4 (28.5%) is the largest cluster consisting of Female teachers (100%). Cluster 5 is the second largest (24.2%) cluster consisting of Male teachers (100%) of institutions located in the Urban area (100%). Cluster 2 (19.0%) is the third largest cluster consisting of Male Teachers (100%) located in the Rural area (100%). Cluster 3 (17.0%) is the fourth largest cluster consisting of Female teachers (100%) located in the Rural area (100%). Cluster 1 (11.2%) is the smallest cluster consisting of Male teachers (100%) located in the Rural area (100%). Here also, from Figure 2 it is found that Location and Gender are two important predictors of the clusters mentioned in Table 3. Here, contribution of the other



predictors (Professional, Academic, Affective, Learner) increases. So, when clusters increase from four to five the values of the predictors other than Location and Gender increases.

**Clusters**

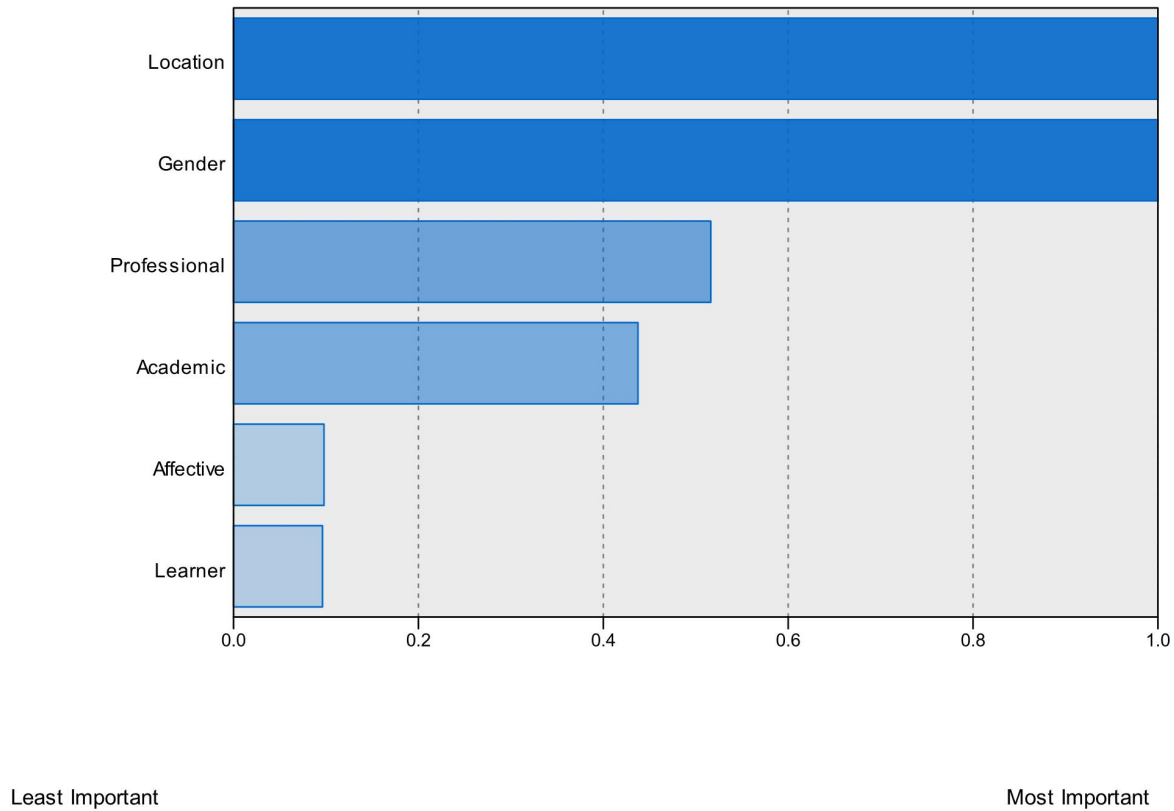


Cluster	6	2	5	3	1	4
Label						
Description						
Size	 24.2% (97)	 19.0% (76)	 18.2% (73)	 17.0% (68)	 11.2% (45)	 10.2% (41)
Inputs	Gender Male (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)	Gender Female (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)
	Location Urban (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)
	Professional 51.01	Professional 46.61	Professional 51.67	Professional 51.44	Professional 53.22	Professional 45.80
	Academic 46.01	Academic 42.04	Academic 46.85	Academic 45.43	Academic 47.09	Academic 39.61
	Affective 55.49	Affective 51.95	Affective 54.95	Affective 53.29	Affective 57.18	Affective 56.22
	Learner 41.86	Learner 40.24	Learner 41.92	Learner 41.97	Learner 44.24	Learner 41.07

**Table 4: Formation of 6 Clusters**



**Predictor Importance**



**Figure 3: Predictor Importance of Clusters mentioned in Table 4**








Table 4 represents six clusters. Cluster 6 (24.2%) is the largest cluster consisting of Male teachers (100%) of Urban Institution (100%). Cluster 2 is the second largest (19.0%) cluster consisting of Male teachers (100%) of institutions located in the Rural area (100%). Cluster 5 (18.2%) is the third largest cluster consisting of Female Teachers (100%) located in the Urban area (100%). Cluster 3 (17.0%) is the fourth largest cluster consisting of Female teachers (100%) located in the Rural area (100%). Cluster 1 (11.2%) is the fifth largest cluster consisting of Male teachers (100%) located in the Rural area (100%). Cluster 4 (10.2%) is the smallest cluster



consisting of Female teachers (100%) located in the Urban area (100%). Here, two predictors Professional and Academic increase more than .4 where number of clusters increased to six.

**Clusters**

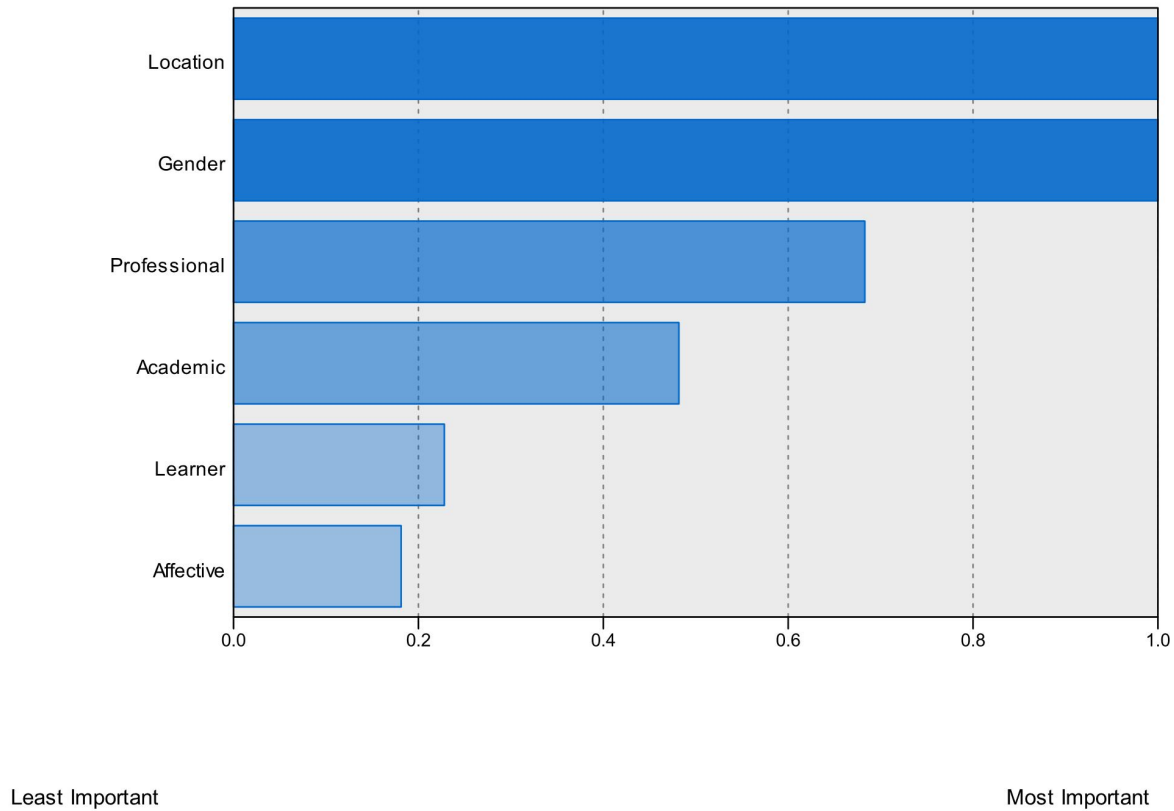
Input (Predictor) Importance  
 ■ 1.0 ■ 0.8 ■ 0.6 ■ 0.4 ■ 0.2 ■ 0.0

Cluster	2	5	3	6	1	7	4
Label							
Description							
Size	 19.0% (76)	 18.2% (73)	 17.0% (68)	 13.2% (53)	 11.2% (45)	 11.0% (44)	 10.2% (41)
Inputs	Gender Male (100.0%)	Gender Female (100.0%)	Gender Female (100.0%)	Gender Male (100.0%)	Gender Male (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)
	Location Rural (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)	Location Urban (100.0%)
	Professional 46.61	Professional 51.67	Professional 51.44	Professional 48.85	Professional 53.22	Professional 53.61	Professional 45.80
	Academic 42.04	Academic 46.85	Academic 45.43	Academic 44.72	Academic 47.09	Academic 47.57	Academic 39.61
	Learner 40.24	Learner 41.92	Learner 41.97	Learner 39.77	Learner 44.24	Learner 44.36	Learner 41.07
	Affective 51.95	Affective 54.95	Affective 53.29	Affective 52.89	Affective 57.18	Affective 58.64	Affective 56.22

**Table 5: Formation of 7 Clusters**



**Predictor Importance**



**Figure 4: Predictor Importance of Clusters formed by Table 6**

Table 5 represents seven clusters. Cluster 2 (19.0%) is the largest cluster consisting of Male teachers (100%) of Rural Institution (100%). Cluster 5 is the second largest (18.2%) cluster consisting of Female teachers (100%) of institutions located in the Urban area (100%). Cluster 3 (17.0%) is the third largest cluster consisting of Female Teachers (100%) located in the Rural area (100%). Cluster 6 (13.2%) is the fourth largest cluster consisting of Male teachers (100%) located in the Urban area (100%). Cluster 1 (11.2%) is the fifth largest cluster consisting of Male teachers (100%) located in the Rural area (100%). Cluster 7 (11%) is the sixth largest cluster consisting of Male teachers (100%) located in the Urban area (100%). Cluster 4 (10.2%) is the





smallest cluster consisting of Female teachers (100%) located in the Urban area (100%). Here, predictors professional and academic are increased from .4 to .7 (approx.) and .4 to .45 (approx.) respectively. Other two predictors Affective and Learner increased by .1 (approx.). Therefore, predictors other than Location and Gender increased with the increase of the number of clusters.

Clusters

Input (Predictor) Importance  
 ■ 1.0 ■ 0.8 ■ 0.6 ■ 0.4 ■ 0.2 ■ 0.0











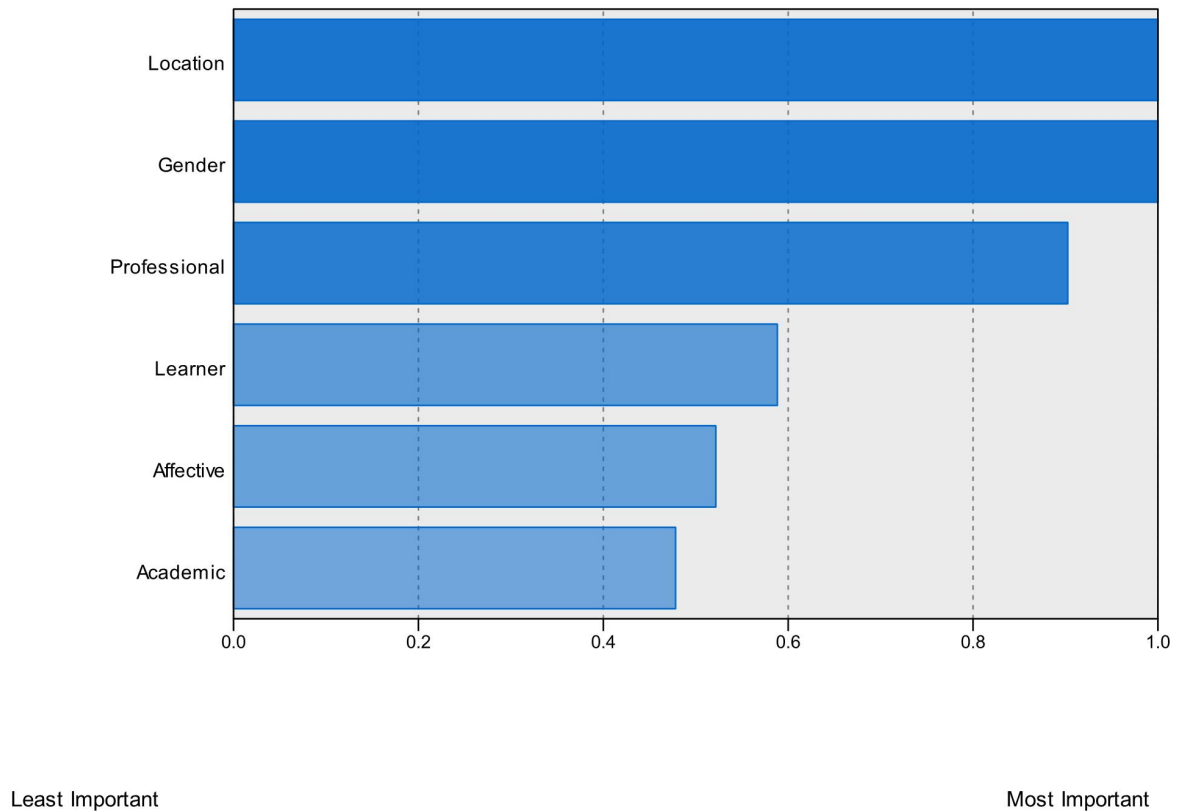
Cluster	9	2	1	10	4	6	7	8	5	3
Label										
Description										
Size	 13.2% (53)	 11.8% (47)	 11.0% (44)	 11.0% (44)	 10.8% (43)	 10.2% (41)	 9.5% (38)	 8.8% (35)	 7.5% (30)	 6.2% (25)
Inputs	Gender Male (100.0%)	Gender Male (100.0%)	Gender Male (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)	Gender Female (100.0%)	Gender Female (100.0%)	Gender Female (100.0%)	Gender Male (100.0%)	Gender Female (100.0%)
	Location Urban (100.0%)	Location Rural (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Urban (100.0%)	Location Urban (100.0%)	Location Urban (100.0%)	Location Rural (100.0%)	Location Rural (100.0%)
	Professional 48.85	Professional 47.89	Professional 53.36	Professional 53.61	Professional 52.70	Professional 45.93	Professional 53.29	Professional 49.77	Professional 44.60	Professional 49.28
	Learner 39.77	Learner 38.47	Learner 44.30	Learner 44.36	Learner 43.58	Learner 41.10	Learner 44.00	Learner 39.63	Learner 43.07	Learner 39.20
	Affective 52.89	Affective 49.57	Affective 57.11	Affective 58.64	Affective 55.42	Affective 56.46	Affective 58.74	Affective 50.54	Affective 55.93	Affective 49.64
	Academic 44.72	Academic 42.19	Academic 47.07	Academic 47.57	Academic 44.93	Academic 39.54	Academic 46.92	Academic 46.86	Academic 42.00	Academic 46.28

Table 6: Formation of 10 Clusters



**Predictor Importance**



**Figure 5: Predictor Importance of Clusters formed by Table 6**

In Table 6, there are ten clusters. In all the clusters Gender and Location are separated, which means Male and Female teachers are not present in the same cluster and Rural and Urban institutions are not present in the same clusters. From Figure 5, it is clear that all the predictors have significant effect in the formation of the clusters.



## Conclusion

The clusters formed in the research work displayed a tendency to club themselves into Female (Rural Institutions), Female (Urban Institutions), Male (Rural Institutions) and Male (Urban Institutions) to bring forward certain notions on the Institutional Climate. The influence of the Predictors- Professional Commitment, Academic Commitment, Affective Commitment, Commitment to the Learner, increase with the increase of cluster number. Professional Commitment is the most influential dimension of the Institutional Commitment regarding the formation of the clusters.

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