

The Influence of Organizational Commitment in Climate for Innovation and Employee Retention Relationship: An Empirical Study in Higher Education Institutions

Fatimah Pa'wan*

Universiti Teknologi, Malaysia

Rosmini Omar

Universiti Teknologi, Malaysia

Farzana Quoquab Habib

Universiti Teknologi, Malaysia

Jihad Mohammad

Universiti Teknologi, Malaysia

Abstract

Organizational commitment is one of the most widely used variables in the research of management and Organizational Behaviour (OB). However, lapses examine its mediating role, specifically between climate for innovation and employee retention relationship. This research sets out as a cross sectional study that incorporates several theories, namely Social Exchange Theory (SET), Three Component Model (TCM) of organizational commitment, and Life-span theory. Judgemental nonprobability sampling was adopted as the method for data collection. A total of 444 academics from both public and private Higher Education Institutions (HEIs) all over Malaysia participated in this research. Data was analyzed using SmartPLS 3.25. Bootstrapping procedure was used to test the mediating effect of climate for innovation. One of the major findings of this research expressed a positive significant association of climate for innovation, organizational commitment, and employee retention. On top of that, climate for innovation was discovered to have a mediating effect on this relationship. This research is significant in terms of theoretical and practical contribution. This study adds to the growing body of research by making up for the absence of reliable evidence in the literature particularly the mediating role of organizational commitment. Together, this paper enlightens practitioners in employee retention planning.

Keywords: Climate for innovation; Organizational commitment; Employee retention; Higher education institutions (heis); Academics.

CC BY: [Creative Commons Attribution License 4.0](https://creativecommons.org/licenses/by/4.0/)

1. Introduction

1.1. Research Question

1. To what extent does climate for innovation positively related to employee retention?
2. To what extent does climate for innovation positively related to organizational commitment ?
3. To what extent does organizational commitment positively affect employee retention?
4. Does organizational commitment mediate the relationship between climate for innovation and employee retention?

1.2. Research Objective

1. To examine the extent of relationship between climate for innovation and employee retention.
2. To examine the extent of relationship between climate for innovation and organizational commitment.
3. To examine the effect of the relationship between organizational commitment and employee retention.
4. To examine the mediating effect of organizational commitment in the relationship between climate for innovation and employee retention.

2. Literature Review

2.1. Theoretical Underpinning

2.1.1. Social Exchange Theory (SET)

SET highlights the norm of reciprocity (Blau, 1964) which leads to the evolvement of trust and loyalty (Cropanzano and Mitchell, 2005). Moreover, the psychological contract between employee and employer reflects the mutual expectations of inputs and outcomes. Accordingly, it is indicated that employee will be committed to continuously serve the organization when they found that they are treated well through practices.

2.1.2. Three Component Model of Organizational Commitment (TCM)

The present study employed organizational commitment theory developed by Meyer and Allen (1997). The theory is used based on the consideration that employees tend to experience different commitment (affective, normative and continuance commitment) to the goals and values of different groups (Reichers, 1985). Hence, it is important to understand the status of organizational commitment of employees in maintaining or improving organizational practices which may promote greater organizational commitment.

2.1.3. Life-Span Theory

Life-Span theory explained that human growth go through a few stages throughout the period of life, and there are factors known as predictable features, tensions, and changes that stimulate movement to each growth stage (Robbin *et al.*, 1999); (Robbins *et al.*, 2011); Hence, the existence of a supportive workplace climate particularly climate for innovation are highly necessary to allow the enhancement of knowhow, expertise, and employees' capacity to meet current and future roles expectations despite of increase in age. Moreover, it contributes to human capacity to perform. Therefore, employing Life-Span theory to examine climate for innovation influence on organizational commitment and employee retention is deemed timely.

2.2. Employee Retention

Employee retention has been carefully defined as a voluntary move made by an organization by initiating a proper environment for a long term engagement (Chiboiwa *et al.*, 2010). Meanwhile, Neog and Barua (2014) referred it as policies and practices crafted by an organization in an effort to motivate employees to keep stay in their job. Furthermore, it is also described as a proactive and consistent effort to pull knowledgeable and competent workforce (Shakeel and But, 2015) to remain serving an organization for a maximum period (Lyria *et al.*, 2017). In relation to this, an established study defined employee retention as a systematic effort which concern on diverse needs of employees for the purpose of earning long term employment relationship (Kumar and Mathimaran, 2017). In this research, employee retention is referred as the decision of academics to keep serving the university as a result of the university's ability to nurture the right environment (Das and Baruah, 2013); (Kyndt *et al.*, 2009).

2.2.1. Review of Employee Retention Studies in Higher Education Industry

According to the recent evidence, various factors concerning the improvement of employee retention in higher education sector have been studies which include organizational climate (leadership, organizational citizenship, compensation, interpersonal relationships and clients, capacity and values) (Erasmus *et al.*, 2015), total rewards (Akhtar *et al.*, 2015), academic growth, intrinsic and extrinsic factors, job satisfaction factors (Selesho and Naile, 2014), organizational factors (culture, and communication) and individual factor such as motivation, opportunity for growth and development, work life balance, engagement (Ngobeni and Bezuidenhout, 2011), and organizational commitment (Darougheha *et al.*, 2013). However, previous studies of employee retention have not dealt with climate for innovation and organizational commitment. To date, the issue related to the evaluation of organizational commitment as a mediator between climate for innovation and employee retention has received scant attention in the research literature.

2.3. Climate for Innovation

Commonly, the definition of climate for innovation is revolved around the concept of shared perception about employees' working to happen and reward related innovative behaviours practice (Schneider, 1990). On another note, (Scott and Bruce, 1994) indicated that accepted values, norms and expectations of innovative behavior are normally put into climate for innovation criteria set by certain organization. According to Somech and Drach-Zahavy (2013), climate for innovation was referred to a factor that complement team creativity and innovation practice. In the context of this research, climate for innovation is described as two dimensional aspects focusing on support for innovative behaviour aspect and as availability of adequate resources to be innovative enable them to be innovative (Holliman, 2012); (Scott and Bruce, 1994).

2.4. Organizational Commitment

Organizational commitment is expressed as the extent of employees' willingness to exert their effort for the success of the organization as well as the degree of fit between employees' values and organization's value (Mowday *et al.*, 1979). It is also described as multidimensional in nature and strongly related to employee's loyalty (Iqbal *et al.*, 2015). Existing research defines organizational commitment as a dynamic process among staff, organization, and environment (Yigit, 2016), including the feeling of deep attachment to an organization or some of its members as a result of improvement in of job satisfaction (Mitić *et al.*, 2016). In the context of this research, the definition of organizational commitment is described as the willingness to put certain efforts as employees have a clear and accepted belief, values and goals as a result of positive mindset towards university (Becker T. E. *et al.*, 1995); (Meyer and Allen, 1997).

2.5. Climate for Innovation and Organizational Commitment Relationship

Organizational support perceived by an individual employee in relation to physical and psychological environment is found to influence the feeling of belongingness and commitment to organization (Luchak and Gellatly, 2007); (Reid *et al.*, 2008). Meanwhile, result from the other researches revealed that, supportive environment for innovation was a good indicator to organizational commitment (Holliman, 2012); (Riad *et al.*, 2016). In relation to this, climate for innovation is expected to be a well-established contributing factor for the sense of belonging and organizational commitment. Thus, the following hypothesis is developed:

H1: There is a positive relationship between climate for innovation and organizational commitment.

2.6. Organizational Commitment and Employee Retention Relationship

A number of published studies (Jehanzeb *et al.*, 2013); (Slattery and Rajan, 2005); (Wu, 2012) reported that highly committed manpower was discovered to have low turnover intention (positively related to employee retention). According to Young (2012), most of these individuals wish to remain active in their current workplace to expand the organizational goals Young (2012) hence, they seems to have no intention to exit. On the other note, employee retention has been observed to be influenced by affective, normative, and continuance forms of commitment (Van and Coetzee, 2012). This finding is further supported by a well-established stream of research rooted in Social Exchange Theory (SET) which revealed that employees' commitment to the organization is mainly derived and motivated by their perceptions regarding the employers' commitment in supporting them, or in other words, how employees perceive their organization is able to reflect the same way they do (Harrison *et al.*, 2006). Hence, it is hypothesized that:

H2: There is a positive relationship between organizational commitment and employee retention.

2.7. Climate for Innovation and Employee Retention Relationship

2.8. Relationship between Climate for Innovation, Organizational Commitment, and Employee Retention

According to Thakare and Prakash (2015), organizational climates tend to have a strong effect on organizational outcomes based on the influence of organizational processes such as the level of motivation and commitment. Govaerts *et al.* (2011) in their research indicated that support for innovation such as learning and open climate which encourage creativity tend to be regarded as the strong prediction in the intention to stay. However, employees' perceptions may be different subjected to their evaluation on the support that the organization gives. This is in agreement with the study by Holliman (2012) which states that the degree of organizational support in the aspects of support for innovation and resource supply strongly influence the participation and involvement of different level of employee, including their longevity with the organization. All in all, this further implies that employees' organizational commitment level is highly dependent on the perceived climate for innovation supported by their organization, in which both will reflect their decision to stay in their current organization. Thus, the following hypothesis is developed:

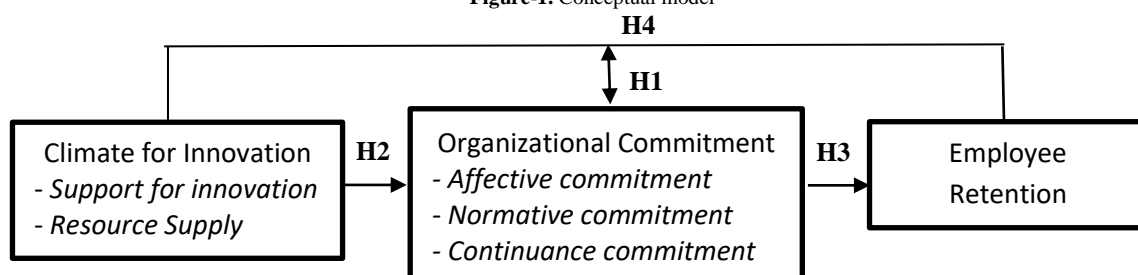
H3: Organizational commitment mediates the relationship between climate for innovation and employee retention.

3. Proposed Conceptual Framework

The framework for the present study utilizes SET, TCM, and Life-span theory as the basis to describe the influence of organizational commitment on the relationship of climate for innovation and employee retention. It is important to note that social exchange develops emotional level/mindset towards positive behavior. Hence, climate for innovation is expected to lead to organizational commitment and employee retention. Figure 1 shows conceptual framework of this research.

In relation to this, an understanding of the employees' expectations on perceived organizational support in terms of climate for innovation tend to assist employers in improving organizational commitment, which is in line with SET (Blau, 1964). Meanwhile, TCM channels the researcher to access information on the three levels of organizational commitment. Most of the established studies affirmed that affective commitment has a strong effect on employee retention. Therefore, it is strongly recommended to fully understand the status of organizational commitment of employees for the purpose of assessing and enhancing organizational practices that is believed to strengthen their emotional attachment which influence their decision to remain in the same organization.

Figure-1. Conceptual model



3.1. Participants and Procedures

The population of this research was permanent academics who are working on full-time basis and have served for at least six months at their current workplace. These requirements enable them to describe their perception of talent management practice at their institutions. The purpose of choosing judgmental nonprobability sampling based on the fact that the researcher knows a reliable professional or authority that he thinks is capable of assembling a representative sample (Colman and Briggs, 2002). A total of 870 questionnaires were distributed to Malaysian Higher Education Institutions (HEIs). A “drop-off” and “pick-up” method was employed as a result of Higher Education Institutions (HEIs) proximity to the researcher. Out of the 870 questionnaires distributed, a total of 468 were returned but only 444 questionnaires were usable for further analysis, which yielded a 53.8% response rate.

3.2. Measurement

In this research, the dependent variable which refers to employee retention was adopted from Kyndt *et al.* (2009). There were 11 items in the original scale with a Likert scale 1-5 represented by strongly disagree to strongly agree.

On another note, an independent variable of climate for innovation was measured by adopting 22 items from (Scott and Bruce, 1994). With a Likert scale 1-5 represented by strongly disagree to strongly agree. Support for innovation measures to what extent individuals perceive their organization is supportive and tolerant of creative ideas, innovational changes and diversities of its members in problem solving. Meanwhile, resource supply measures the adequacy of the resources (personnel, funding, time) provided by the university.

Meanwhile, organizational commitment was measured by adopting organizational commitment theory developed by Meyer and Allen (1997). The theory comprised of three dimensions, namely affective, normative, and continuance commitment. The items were illustrated into 22 questions with the Likert scale 1-7 ranging from strongly disagree to strongly agree.

The present study utilized Partial Least Squares (PLS) to predict and maximize the explained variance in employee retention (Urbach and Ahlemann, 2010). Anderson and Gerbing (1988) two step analytical procedures were adopted to analyse data in PLS. The first step involves the evaluation of the measurement model followed by tests for all hypotheses using structural model. The measurement model was assessed using two types of validity, namely convergent validity and discriminant validity (Hair J. F. *et al.*, 2011). The convergent validity of the measurement is usually ascertained by examining the loadings, average variance extracted (AVE), and the CR (Hair J. F. *et al.*, 2014). On the other hand, the discriminant validity of the measures (the degree to which items differentiate among constructs or measure distinct concepts) was assessed based on three criteria including cross-loadings, Fornell-Larcker criterion, and HTMT as suggested by Hair J. J. F. *et al.* (2016). In assessing the cross loading, the outer loadings of each indicator on its respective latent construct must be greater than its loadings on any other constructs (Chin, 1998). The second approach to examine discriminant validity is Fornell-Larcker Criterion. The square root of the AVE for all constructs should be greater than the correlation between the constructs (Fornell and Larcker, 1981). Finally, Hair J. F. *et al.* (2014) suggested looking at the coefficient of determination R^2 , estimation of path coefficient (β), and the corresponding t-values via a bootstrapping procedure with a resample of 5,000. In addition to these basic measures, it was further recommended for the researchers to report the predictive relevance (Q^2) and the effect sizes (f^2).

4. Result and Findings

4.1. Demographic Background of the Respondent

Table 1 presents the demographic characteristics of the respondents. The total of male respondents is 229 which are represented by 51.6%. Majority of the respondents represented by 45.9% are in the age range of 26 to 35 years old. Most of the respondents (46.2%) possess Master's degrees. Meanwhile, about 65.5% hold the lecturer position. In terms of work experience, majority (29.9%) of the respondents possess five to ten years work experience. In relation to the length of service, majority (48.4%) of the respondents have been working for their current institutions for duration of less than five years. In terms of marital status, 60.6% of the respondents are married. Finally, 56.5% of the respondents are working in the public university.

Table-1. Demographic Characteristics (N=444)

Demographic Variables	Classifications	Frequency	Percent (%)
Age	Below 25 years	25	5.6
	26 - 35 years	204	45.9
	36 - 45 years	131	29.5
	46 - 55 years	67	15.1
	56 years and above	17	3.8
Gender	Male	229	51.6
	Female	215	48.4
Marital Status	Single	157	35.4
	Married	269	60.6
	Divorce	12	2.7
	Widow/Widower	6	1.4

Highest qualification	Bachelor degree	122	27.5
	Professional certificate	9	2.0
	Master's degree	205	46.2
	Doctoral degree	104	23.4
	Others	4	0.9
Length of service	Less than 5 years	215	48.4
	5 years - 10 years	139	31.3
	11 years - 15 years	48	10.8
	16 years - 20 years	9	2.0
	More than 20 years	33	7.4
Working experience	Less than 5 years	127	28.2
	5 years - 10 years	135	29.9
	11 years - 15 years	78	17.3
	16 years -20 years	45	10.0
	More than 20 years	66	14.6
Position	Lecturer	291	65.5
	Senior Lecturer	123	27.7
	Assoc. professor	20	4.5
	Professor	10	2.3
Respondent's Institutions	Public university	251	56.5
	Private university	193	43.5

4.2. Common Method Variance (CMV)

In this research, there were no issues on common method bias based on the results of the analysis obtained from Harman One-factor test as recommended by Podsakoff *et al.* (2003). On top of that, the Principal Components Analyses returned eleven factors emerging using the eigenvalue greater-than-one rule (Kleinbaum *et al.*, 1988) with a total variance of 74.46%, with the first factor accounting for 28.33%.

4.3. Model Evaluation

4.3.1. Evaluation of Measurement Model at the First Order

4.3.1.1. Convergent Validity

The convergent validity results illustrated in Table 2 show that the loadings are above 0.5 specifically in the range of 0.636 to 0.982, which further demonstrate that all indicators are reliable (Hulland John, 1999a). Meanwhile, the composite reliabilities (CR) are recorded to be higher than 0.7 (ranging from 0.908-0.977), thus suggesting acceptable internal consistency reliability (Henseler Jörg *et al.*, 2009). Finally, the AVE for the two constructs are found to be higher than 0.5 that is in the range of 0.622-0.879, which managed to satisfy the conditions of convergent validity (Bagozzi and Yi, 1988); (Fornell and Larcker, 1981).

Table-2. Results of Factor Loading, Average Variance Extracted (AVE) and Composite Reliability (CR) for First Order Reflective Construct

Construct	Item	Loading	AVE	CR
Affective commitment	AC1	0.838	0.734	0.95
	AC2	0.926		
	AC3	0.696		
	AC5	0.859		
	AC6	0.924		
	AC7	0.813		
	AC8	0.917		
Normative commitment	NC9	0.928	0.759	0.949
	NC10	0.932		
	NC11	0.733		
	NC12	0.949		
	NC13	0.729		
	NC14	0.925		
Continuance commitment	CC16	0.967	0.879	0.977
	CC17	0.756		
	CC19	0.979		
	CC20	0.948		

	CC21	0.972		
	CC22	0.982		
Resource Supply	RS17	0.691	0.622	0.908
	RS18	0.754		
	RS19	0.937		
	RS20	0.83		
	RS21	0.733		
	RS22	0.879		
Support for Innovation	SI1	0.752	0.636	0.95
	SI2	0.803		
	SI3	0.88		
	SI4	0.636		
	SI7	0.929		
	SI8	0.669		
	SI9	0.942		
	SI10	0.776		
	SI12	0.899		
	SI14	0.792		
	SI15	0.611		
Employee Retention	ER1	0.749	0.627	0.944
	ER2	0.813		
	ER3	0.781		
	ER4	0.822		
	ER6	0.741		
	ER7	0.751		
	ER8	0.791		
	ER9	0.857		
	ER10	0.858		
	ER11	0.743		

Note: ED16, AC4, CC15, CC18, ER5, SI5, SI6, SI11, SI13, SI1 were excluded due to lower loading value as compared to minimum threshold.

4.3.1.2 Discriminant Validity, Cross Loading and Heterotriate-Monotrait ratio of correlations (HTMT))

Generally, comparison is made between loadings of the construct and other construct. The value must be greater than the value of loading of other constructs. In this case, AVE was utilized to evaluate discriminant validity. On top of that, the square root of the AVE of each diagonal construct should exceed the correlation that is shared between the construct and other constructs in the model (Fornell and Larcker, 1981); (Fornell and Cha, 1994). The result of the analysis confirmed that all constructs exceed the threshold value of 0.5 (Bagozzi and Yi, 1988). The AVE values are in the range of 0.622 and 0.879, whereas the square roots of AVE that appears in the diagonal line are found to be larger than any correlation between the associated construct and other constructs (Chin, 1998). Table 3 depicts the discriminant validity results.

Table-3. Result of Discriminant Validity, Fornell-Larcker Criteria

	AC	CC	ER	NC	RS	SI
AC	0.857					
CC	0.247	0.937				
ER	0.678	0.299	0.792			
NC	0.512	0.407	0.604	0.871		
RS	0.398	0.259	0.307	0.374	0.789	
SI	0.399	0.268	0.443	0.365	0.405	0.798

* **Note:** Square root of the Average Variance Extracted (AVE) on the diagonal (bold)

The assessment of the loadings for each construct at the first order signifies that the measures are adequate in terms of individual validity. However, Hulland J. (1999b) suggested the use of cross loading to test discriminant validity as the second assessment in determining whether the items were loaded on another construct equally to their theorized construct. Table 4 illustrates the result of cross-loadings. It can be observed that the loading clearly separate each latent variable as theorized in the conceptual model and the correlations between indicators and latent variable are higher compared to other constructs. Hence indicates discriminant validity have been satisfied.

Table-4. Results of Cross Loading

	AC	CC	ER	NC	RS	SI
AC1	0.838	0.291	0.676	0.521	0.322	0.303
AC2	0.926	0.184	0.565	0.406	0.382	0.379
AC3	0.696	0.152	0.476	0.391	0.304	0.266
AC5	0.859	0.279	0.642	0.494	0.323	0.301
AC6	0.924	0.184	0.557	0.404	0.374	0.378
AC7	0.813	0.188	0.558	0.434	0.302	0.384
AC8	0.917	0.184	0.566	0.41	0.375	0.375
CC16	0.263	0.967	0.292	0.378	0.245	0.254
CC17	0.244	0.756	0.279	0.31	0.24	0.224
CC19	0.215	0.979	0.293	0.41	0.247	0.274
CC20	0.202	0.948	0.253	0.382	0.243	0.225
CC21	0.243	0.972	0.292	0.407	0.242	0.259
CC22	0.219	0.982	0.266	0.394	0.236	0.265
ER1	0.393	0.282	0.749	0.433	0.211	0.3
ER10	0.652	0.188	0.858	0.498	0.267	0.407
ER11	0.484	0.216	0.743	0.423	0.148	0.276
ER2	0.578	0.242	0.813	0.433	0.284	0.369
ER3	0.513	0.213	0.781	0.51	0.27	0.386
ER4	0.555	0.323	0.822	0.512	0.307	0.35
ER6	0.543	0.262	0.741	0.516	0.233	0.259
ER7	0.461	0.16	0.751	0.381	0.155	0.341
ER8	0.477	0.289	0.791	0.562	0.261	0.389
ER9	0.652	0.199	0.857	0.495	0.266	0.41
NC10	0.466	0.344	0.553	0.932	0.366	0.336
NC11	0.394	0.396	0.465	0.733	0.295	0.303
NC12	0.53	0.334	0.57	0.949	0.39	0.348
NC13	0.407	0.336	0.505	0.729	0.224	0.254
NC14	0.406	0.35	0.499	0.925	0.311	0.306
NC9	0.456	0.375	0.55	0.928	0.349	0.347
RS17	0.252	0.222	0.266	0.277	0.691	0.373
RS18	0.24	0.242	0.204	0.281	0.754	0.301
RS19	0.361	0.18	0.259	0.321	0.831	0.278
RS20	0.385	0.182	0.277	0.321	0.83	0.306
RS21	0.22	0.222	0.163	0.213	0.733	0.318
RS22	0.39	0.191	0.264	0.337	0.879	0.34
SI1	0.348	0.247	0.384	0.318	0.326	0.752
SI10	0.288	0.258	0.444	0.34	0.24	0.776
SI12	0.31	0.176	0.335	0.274	0.326	0.899
SI14	0.454	0.207	0.434	0.37	0.467	0.792
SI15	0.295	0.131	0.248	0.203	0.357	0.611
SI2	0.342	0.259	0.421	0.334	0.296	0.803
SI3	0.298	0.174	0.293	0.231	0.319	0.88
SI4	0.254	0.204	0.183	0.187	0.308	0.636
SI7	0.329	0.22	0.343	0.273	0.343	0.929
SI8	0.177	0.241	0.345	0.316	0.198	0.669
SI9	0.334	0.209	0.357	0.284	0.343	0.942

In the third assessment, the HTMT was tested to assess discriminant validity: (i) as a criterion, the figure was compared with a predefined threshold HTMT value of HTMT.90 (Clark and Watson, 1995); (Kline, 2015). According to the results, the correlations between factors in the measurement model of all items are less than HTMT. 90, which further indicates the difference in the true correlation between the two constructs. Apart from that, the result also suggests that the discriminant validity has been ascertained. (ii) As a statistical test, the null hypothesis ($H_0: HTMT \geq 1$) was tested against the alternative hypothesis ($H_1: HTMT < 1$). The results of the HTMT inference revealed that the confidence interval values did not contain the value of one. The HTMT and confidence interval results of the research are depicted in Table 5 (in Appendix). Thus, The result of the AVE analysis, cross loadings, and HTMT managed to illustrate that the measurement model successfully displayed discriminant validity, which fulfils the criteria of Fornell-Larcker and HTMT Kline (2015).

4.3.2. Evaluation of Formative Model at the Second Order

This research adopted a two-stage analysis to measure the indicator weight and VIF based on the recommendation of [Becker J.-M. et al. \(2012\)](#). Next, the inter-construct validation was tested to determine the construct validity.

4.3.2.1. Variance Inflation Factor (VIF)

The purpose of testing VIF is to identify collinearity to indicate to which extent the variance of an indicator can be explained by other factors. As can be observed in [Table 5](#), the VIF for five indicators of two formative second order constructs are in the range of 1.233 to 1.899, which is far below the conservative threshold value of 5. Hence, no issue of multicollinearity was detected across the indicators. Hence, there was no difficulty with the estimation of PLS model.

4.3.2.2. Indicator Validity

In this research, indicator validity is determined by testing the significance of each dimension. [Table 5](#) shows that the weights of all items (the relationship within formative measurement model from indicator to latent variable) are above the value of 0. Several researchers seem to suggest that the path coefficient (estimation) should be greater than 0.10 or 0.20 ([Chin, 1998](#)); ([Lohmöller, 1989](#)). There is a presence of empirical support to retain the indicator based on the significant results at the respective t-value. Moreover, the indicator will only be dropped when both the outer loading and weight are insignificant (no empirical support) and the presence of weak conceptual support for an indicator inclusion as suggested by [Ringle et al. \(2013\)](#). Smart PLS version 3.2.5 recommended by [Ringle et al. \(2013\)](#) was utilised to examine the significance and relevance of indicators' weights. The bootstrapping procedure conducted using 5000 resamples was used to assess the significance of weights of the formative indicators ([Hair J. F. et al., 2011](#)); ([Hair J. F. et al., 2014](#)). [Table 5](#) depicts the validity results for second-order formative construct.

Table-5. Validity Results for Second-Order Formative Construct

Construct of Second Order (Formatively measured)	Construct of First Order	Indicator weight	t-value	Loadings	VIF
Climate for innovation	Resource Supply	0.423	5.449***	0.727	1.243
	Support for innovation	0.751	11.971***	0.922	1.532
Organizational commitment	Affective commitment	0.692	15.862***	0.921	1.661
	Normative commitment	0.438	7.441***	0.794	1.633
	Continuance commitment	0.114	2.44**	0.444	1.233

*P<0.05 ***p<0.001, VIF-Variance Inflation factor

According to the analysis, significant t values was detected in resource supply, support for innovation, and affective, normative, and continuance commitment, which provide an empirical support to retain the indicators ([Hair J. F. et al., 2011](#)). The results further suggested that the two dimensions of climate for innovation as well as the three dimensions of organizational commitment have a significant contribution on the overarching construct. On another note, the strong-tie support for innovation acts as a more important contributor to climate for innovation, whereas affective commitment is regarded as the most important contributor to organizational commitment. Hence, the utilization of operationalization in this research has confirmed the uniqueness of various dimensions of climate for both innovation and organizational commitment.

As suggested by [Henseler J. et al. \(2015\)](#), another discriminant validity test was performed using HTMT as prescribed in the measurement model, in terms of the criterion and statistical test. As shown in [Table 6](#), all the values suggest that the discriminant validity is ascertained.

Table-6. Heterotrait-Monotrait Ratio of Correlations (HTMT) - Second Order

	Climate for Innovation	Employee Retention	Organizational commitment
Climate for Innovation			
Employee Retention	0.463 CI ₉₀ (0.399,0.524)		
Organizational Commitment	0.529 CI ₉₀ (0.471, 0.584)	0.74 CI ₉₀ (0.7, 0.779)	

Hence, the figures indicated that reliability and validity results of each construct and its dimensions are confirmed to be categorized as formative construct the measurement model adopted in this research is valid and fit. Therefore, the hierarchical conceptualization of climate for innovation and organizational commitment have been justified for structural model estimation.

4.4. Evaluation of Structural Model

4.4.1. Coefficient of Determination (R^2)

In the current study, PLS bootstrapping function was utilized to generate the t-statistics values. It has been well-established that the bootstrapping is able to generate 5000 samples from 444 cases. This evaluation was guided by Chin (1998) with the coefficient of determination (R^2) value around 0.67, 0.333, and 0.19 which are considered substantial, average, and weak, respectively. On the other hand, the minimum coefficient of determination (R^2) should be 0.10 (Falk and Miller, 1992), which ensures the nomological validity of the model. Table 7 displays the coefficient of determination (R^2) value for the current research. The results demonstrate that the overall model explained 57.6% of the variance in employee retention. Climate for innovation (CI) and organizational commitment (OC) explained 57.6% of the variance in employee retention (ER). Meanwhile, climate for innovation (CI) explained 35.2% of the variance in organizational commitment (OC).

Table-7. Level of Coefficient of Determination (R^2)

Construct	R Square	R Square Adjusted
Employee retention (ER)	0.576	0.573
Organizational commitment (OC)	0.352	0.349

While as shown in Table 8, results of path coefficient and bootstrapping illustrate that employee retention can be seen to have no direct influence with climate for innovation (CI) ($\beta=0.022$, $t=0.542$, not significant), thus indicating that H1 is not supported. On the other hand, organizational commitment was discovered to be influenced by climate for innovation ($\beta=0.342$, $t=7.516$, $p<0.001$) which proves that H2 is supported. Meanwhile employee retention is directly influenced by organizational commitment ($\beta=0.63$, $t=16.632$, $p<0.001$) which suggests that H3 is supported.

Table-8. Path Coefficients, T- Statistics for All Hypothesized Paths

Hypotheses	Relationship	Path Coefficient	Standard Error	T Statistics (O/Std Dev)	Decision
H1	CI \rightarrow ER	0.022	0.041	0.542	Not supported
H2	CI \rightarrow OC	0.342	0.046	7.516***	Supported
H3	OC \rightarrow ER	0.63	0.038	16.632***	Supported

*** $p<0.001$

4.4.2. Effect Sizes (f^2)

In this research, employee retention was predicted by climate for innovation at f^2 value 0.001, while organizational commitment at the f^2 value of 0.607. In addition, organizational commitment was predicted by climate for innovation at the f^2 value of 0.122. According to Cohen (1988), the f^2 value of 0.001 was less than a small threshold value of 0.02. On another note, the f^2 value of 0.122 was indicated to be higher than the medium threshold value of 0.15, whereas the f^2 value of 0.607 was revealed to be higher than a large threshold value of 0.35.

The present research validated strong significant effect of climate for innovation represented by ($\beta=0.342$, $t=7.516$, $p<0.001$) on organizational commitment of academics in Higher Education Institutions (HEIs). This finding broadly supports the work of established studies in this area. Hence, climate for innovation was found to be important to ensure the commitment of the academics in their profession.

Referring to Table 9, strong significant effect of organizational commitment on employee retention was also confirmed ($\beta=0.63$; t -statistic=16.632, $p<0.001$). As supported by a well-established stream of research rooted in SET, employees' commitment to the organization was revealed to be derived from their perceptions of the employers' commitment in supporting them, or concerning the perception of employees regarding the same reflection from the part of organization (Hutchison and Garstka, 1996). Hence, committed employees who are not looking for employment elsewhere will remain longer with a positive perception about the organization (Eshiteti *et al.*, 2013) and will be inclined to exhibit more positivity on-the-job behaviors (Harrison *et al.*, 2006).

It is clear that the present study has validated the insignificant association of climate for innovation on employee retention in Higher Education Institutions (HEIs). On top of that, climate for innovation was measured through the two aspects of support for innovation and resource supply and proven to be important to climate for innovation at the significant weightage of $\beta=0.751$; t -statistic=11.971 and $\beta=0.423$; t -value=5.449, respectively. However, the t effect of climate for innovation on employee retention was found to be insignificant ($\beta=0.022$, $t=0.542$). Meanwhile, the omission of this predictor had 0.001 effects on employee retention. In other words, the retention of academics was 0.001 attributable to the presence of climate for innovation. As suggested by Cohen (1988), the figure is far from a smaller effect size of 0.02. Considering the demographic background, majority (45.9%) of the respondents were categorized as Generation Y who are generally known to be easily comfortable and confident with technology advancement (Queiri *et al.*, 2015) and put priority more to themselves rather than to their organizations (Solnet *et al.*, 2012); (Twenge *et al.*, 2010). As claimed by Daly and Dee (2006), heavy workload for instance large class capacity may cause dissatisfaction and reduce commitment to organization. Other factors were most probably came from improper administration of courses, schedule and additional administrative tasks such as assignment of new courses, frequent changes of timetable, long hours of work, irregular breaks, handling students' discipline and challenging targets or deadlines, Oredein and Alao (2010). The mentioned factors are believed to harm the academics wellbeing (Metcalf *et al.*, 2005). On top of that, a concern should also be on work-life balance as it

reflects the academics retention among Higher Education Institutions (HEIs) (Karatepe, 2013); (Mukhtar, 2012). Hence, further studies should investigate factors that may align the three variables; climate for innovation that can lead to organizational commitment and employee retention.

4.4.3. Blindfolding and Predictive Relevance (Q^2)

This research employed the blindfolding procedure to obtain predictive relevance (Q^2) value. The Q^2 value determined the level of predictive relevance that the exogenous/predictor has for the endogenous/ dependent constructs. There is path model's predictive relevance for a particular construct when Q^2 values are larger than zero for a certain endogenous latent variable. The results of Q^2 value implied that all path models possessed predictive relevance for all endogenous construct. Following Hair *et al.*, (2014) a threshold value of 0.02, 0.15, and 0.35 are respectively considered as small, medium, and large. Thus, Q^2 value for the two paths (CI \rightarrow ER, and OC \rightarrow ER) showed the presence of 35.3% predictive relevance (considered as large) on employee retention (ER). Finally, the Q^2 value for path model of CI \rightarrow OC demonstrated that climate for innovation (CI) possessed 18.5% predictive relevance (considered as medium) on organizational commitment (OC).

4.5. Mediation Analysis

The adoption of PLS had led to the employment of procedure which is known as indirect effect to assess mediation. Using bootstrapping, by resampling the original data set of N using a computer, followed by the formation of new sample (called a 'resample' or bootstrap sample) known as size N. In this research, 5,000 times for bootstrapping purposes were utilized, the results of mediation are presented in Table 9.

Table-9. Result of Mediation

Hypothesis	Relationship	Indirect Effect	Standard Error	t-value	Bootstrapped Confidence Interval		Decision
					2.5% LL	97.5% UL	
H4	CI \rightarrow OC \rightarrow ER	0.364	0.031	11.892***	0.305	0.423	Supported

***p<0.01

As displayed in Table 9, results from the analysis performed using bootstrapping procedure to test the mediating effect of the respective variable show a significant indirect effect $\beta = 0.364$ (0.529×0.688) with a t -value of 11.892. This indirect effect of 0.364 at 97.5% Boot Confidence interval (CI): [LL = 0.305, UL = 0.423] which does not straddle a 0 in between seems to indicate the presence of mediation (Preacher and Hayes, 2008). Therefore, it can be concluded that the mediation effect was statistically significant, which suggests that H4 is fully supported and validated in this research. Therefore, empirical and theoretical support is provided on the significant role of organizational commitment as a mediator in between climate for innovation and employee retention variables in the context of this study.

5. Conclusion

The notion that expressed climate for innovation was empirically tested and supported, which then led to organizational commitment that enhances employee retention. Hence, these findings make several contributions to the current literature. The result indicating the insignificant association between climate for innovation and employee retention was somewhat counterintuitive and considered as the single most striking observation to emerge from the data which should be further investigated.

Some of the issues emerging from this finding relate specifically to the benefit that can be gained by managers, which lies in the fact that organizational commitment of employees can only increase if climate for innovation is taken care well. In addition, the increase in organizational commitment will also improve employee retention.

There is abundant room for further progress by replicating the proposed conceptual framework to be tested in different sectors. On top of that, this research adopted judgmental nonprobability sampling, which indicates the generalization to the theory of the phenomenon may have wider applicability. Several other types of sampling design can also be considered for population generalizability.

This research was undertaken to investigate the relationship between climate for innovation and employee retention that is mediated by organizational commitment. Furthermore, an intensive literature review was conducted in assisting the development of hypotheses for the relationships. Meanwhile, an exploratory research performed utilizing interview and focus group was extremely encouraged to obtain information that was not discovered which may contribute to a central dimension to both practitioners and academicians.

The insignificant result of the association of climate for innovation on employee retention requires an attention for a thorough study in the aspects of resource supply and support for innovation. The principal limitation of this analysis can be addressed in future studies by examining other variables such as workload. This is consistent with a previous finding that demonstrated workload to be closely related to the intention to stay Ng'ethe *et al.* (2012). On top of that, performance achievement is recommended as one of the constructs considering that decision to remain is

subjected to concern on personal achievement (Saeed *et al.*, 2014). It is strongly connected to employees in generation Y category which is known to be achievement oriented (Alexander and Sysko, 2011).

In this research, climate for innovation was measured using Scott and Bruce (1994). Further research is suggested to revise the items to improve its mediating effect. The items are suggested to be linked with organizational commitment in to the effort of predicting employee retention.

References

- Akhtar, C. S., Aamir, A., Khurshid, M. A., Abro, M. M. Q. and Hussain, J. (2015). Total rewards and retention, Case study of higher education institutions in Pakistan. *Procedia-Social and Behavioral Sciences*, 210: 251-59.
- Alexander, C. S. and Sysko, J. M., 2011. "A study of the cognitive determinants of generation Y's entitlement mentality." In *Paper presented at the Allied Academies International Conference. Academy of Educational Leadership. Proceedings*.
- Anderson, J. C. and Gerbing, D. W. (1988). Structural equation modeling in practice, A review and recommended two-step approach. *Psychological Bulletin*, 103(3): 411.
- Bagozzi, R. P. and Yi, Y. (1988). On the evaluation of structural equation models. *Journal Of The Academy Of Marketing Science*, 16(1): 74-94.
- Becker, J.-M., Klein, K. and Wetzels, M. (2012). Hierarchical latent variable models in PLS-SEM: guidelines for using reflective-formative type models. *Long Range Planning*, 45(5): 359-94.
- Becker, T. E., Randall, D. M. and Riegel, C. D. (1995). The multidimensional view of commitment and the theory of reasoned action, A comparative evaluation. *Journal of Management*, 21(4): 617-38.
- Blau, P. M. (1964). *Exchange and power in social life*. Transaction Publishers.
- Chiboiwa, M. W., Samuel, M. O. and Chipunza, C. (2010). An examination of employee retention strategy in a private organisation in Zimbabwe. *African Journal of Business Management*, 4(10): 2103.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2): 295-336.
- Clark, L. A. and Watson, D. (1995). Constructing validity, Basic issues in objective scale development. *Psychological Assessment*, 7(3): 309.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* lawrence earlbaum associates. Hillsdale, NJ. 20-26.
- Colman, M. and Briggs, R. (2002). *Research methods in educational leadership and management*. Sage: London.
- Cropanzano, R. and Mitchell, M. S. (2005). Social exchange theory, An interdisciplinary review. *Journal of Management*, 31(6): 874-900.
- Daly, C. J. and Dee, J. R. (2006). Greener pastures: Faculty turnover intent in urban public universities. *The Journal of Higher Education*, 77(5): 776-803.
- Darougheha, S., Pashandi, M. A., Hooman, A. and Khanmohammadi, M. (2013). The impact of hr practices on lecturers' turnover intention, A study of educational industry in malaysia. *Interdisciplinary Journal of Contemporary Research in Business*.
- Das, B. L. and Baruah, M. (2013). Employee retention: a review of literature. *Journal of Business and Management*, 14(2): 8-16.
- Erasmus, B., Grobler, A. and Van, N. M. (2015). Employee retention in a higher education institution, An organisational development perspective. *Progressio*, 37(2): 33-63.
- Eshiteti, S. N., Okaka, O., Maragia, S. N., Odera, O. and Akerele, E. K. (2013). Effects of succession planning programs on staff retention. *Mediterranean Journal of Social Sciences*, 4(6): 157.
- Falk, R. F. and Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.
- Fornell, C. and Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error, Algebra and statistics. *Journal of Marketing Research*: 382-88.
- Fornell, C. and Cha, J. (1994). Partial least squares. *Advanced Methods Of Marketing Research*, 407(3): 52-78.
- Govaerts, N., Kyndt, E., Dochy, F. and Baert, H. (2011). Influence of learning and working climate on the retention of talented employees. *Journal of Workplace Learning*, 23(1): 35-55.
- Hair, J. F., Ringle, C. M. and Sarstedt, M. (2011). Pls-sem, Indeed a silver bullet. *Journal Of Marketing Theory And Practice*, 19(2): 139-52.
- Hair, J. F., Hult, G. T. M., Ringle, C. and Sarstedt, M. (2014). A primer on partial least squares structural equation modeling (pls-sem).
- Hair, J. J. F., Hult, G. T. M., Ringle, C. and Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.

- Harrison, D. A., Newman, D. A. and Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, 49(2): 305-25.
- Henseler, J., Ringle, C. M. and Sinkovics, R. R. (2009). 'The use of partial least squares path modeling in international marketing', *New challenges to international marketing* (Emerald Group Publishing Limited), 277-319.
- Henseler, J., Ringle, C. M. and 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): 115-35.
- Holliman, S. L. (2012). *Exploring the effects of empowerment, innovation, professionalism, conflict, and participation on teacher organizational commitment*. The University of Iowa.
- Hulland, J. (1999b). Use of partial least squares (pls) in strategic management research, A review of four recent studies. *Strategic Management Journal*: 195-204.
- Hutchison, S. and Garstka, M. L. (1996). Sources of perceived organizational support, Goal setting and feedback. *Journal of Applied Social Psychology*, 26(15): 1351-66.
- Iqbal, A., Tufail, M. S. and Lodhi, R. N. (2015). Employee loyalty and organizational commitment in Pakistani organizations. *Global Journal of Human Resource Management*, 3(1): 1-11.
- Jehanzeb, K., Rasheed, A. and Rasheed, M. F. (2013). Organizational commitment and turnover intentions, Impact of employee's training in private sector of Saudi Arabia. *International Journal of Business and Management*, 8(8): 79.
- Karatepe, O. M. (2013). High-performance work practices and hotel employee performance, The mediation of work engagement. *International Journal of Hospitality Management*, 32: 132-40.
- Kleinbaum, D., Kupper, L. and Muller, K. (1988). Applied regression analysis and other multivariable methods.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.
- Kumar, A. A. and Mathimaran, K. B. (2017). Employee retention strategies –an empirical research. *Global Journal of Management And Business Research*:
- Kyndt, E., Dochy, F., Michielsens, M. and Moeyaert, B. (2009). Employee retention, Organisational and personal perspectives. *Vocations and Learning*, 2(3): 195-215.
- Lohmöller, J.-B. (1989). *Predictive vs. Structural modeling: Pls vs. Ml latent variable path modeling with partial least squares*. Springer: 199-226.
- Luchak, A. A. and Gellatly, I. R. (2007). A comparison of linear and nonlinear relations between organizational commitment and work outcomes. *Journal Of Applied Psychology*, 92(3): 786.
- Lyria, R. K., Namusonge, G. and Karanja, K. (2017). Role of talent management on organisation performance in companies listed in nairobi securities exchange in Kenya. *Journal of Human Resource and Leadership*, 1(3): 1-17.
- Metcalf, H., Rolfe, H., Stevens, P. and Weale, M. (2005). Recruitment and retention of academic staff in higher education. *National Institute of Economic and Social Research*:
- Meyer, J. and Allen, N. (1997). Commitment in the workplace, Theory, research, and application sage thousand oaks ca google scholar.
- Mitić, S., Vukonjanski, J., Terek, E., Gligorović, B. and Zorić, K. (2016). Organizational culture and organizational commitment, Serbian case. *Journal of Engineering Management and Competitiveness (JEMC)*, 6(1): 21-27.
- Mowday, R. T., Steers, R. M. and Porter, L. W. (1979). The measurement of organizational commitment. *Journal Of Vocational Behavior*, 14(2): 224-47.
- Mukhtar, F. (2012). *Work life balance and job satisfaction among faculty at Iowa State University*. Iowa State University.
- Neog, B. B. and Barua, M. (2014). Factors influencing employee's job satisfaction,, An empirical study among employees of automobile service workshops in Assam. *The SIJ Transactions on Industrial, Financial & Business Management (IFBM)*, 2(7): 305-16.
- Ng'ethe, J., Iravo, M. and Namusonge, G. (2012). Determinants of academic employee retention in public universities in Kenya, Empirical review. *International Journal of Humanities and Social Science*, 13(2): 205-12.
- Ngobeni, E. K. and Bezuidenhout, A. (2011). Engaging employees for improved retention at a higher education institution in South Africa. *African Journal Of Business Management*, 5(23): 9961.
- Oredein, A. O. and Alao, F. T. (2010). Work-family conflict, job satisfaction and labour turnover intentions among state university lecturers. *African Higher Education Review*, 2: 4-18.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y. and Podsakoff, N. P. (2003). Common method biases in behavioral research, A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879.
- Queiri, A., Yusoff, W. F. W. and Dwaikat, N. (2015). Explaining generation-y employees' turnover in malaysian context. *Asian Social Science*, 11(10): 126.
- Reichers, A. E. (1985). A review and reconceptualization of organizational commitment. *Academy Of Management Review*, 10(3): 465-76.
- Reid, M. F., Riemenschneider, C. K., Allen, M. W. and Armstrong, D. J. (2008). Information technology employees in state government: A study of affective organizational commitment, job involvement, and job satisfaction. *The American Review of Public Administration*, 38(1): 41-61.
- Riad, L., Labib, A. and Nawar, Y. S. (2016). Assessing the impact of organisational climate on employees commitment. *The Business & Management Review*, 7(5): 357.
- Ringle, C. M., Sarstedt, M., Schlittgen, R. and Taylor, C. R. (2013). PLS path modeling and evolutionary segmentation. *Journal of Business Research*, 66(9): 1318-24.
- Robbin, S., Chatterjee, P. and Canda, E. (1999). Ideology, scientific theory, and social work practice. Families in society. *The Journal of Contemporary Social Services*, 80(4): 374-84.
- Robbins, S. P., Chatterjee, P. and Canda, E. R. (2011). *Contemporary human behavior theory, A critical perspective for social work*. Pearson Higher Ed.
- Saeed, I., Waseem, M., Sikander, S. and Rizwan, M. (2014). The relationship of turnover intention with job satisfaction, job performance, leader member exchange, emotional intelligence and organizational commitment. *International Journal of Learning and Development*, 4(2): 242-56.
- Schneider, B. (1990). The climate for service, An application of the climate construct. *Organizational Climate And Culture*, 1: 383-412.
- Scott, S. G. and Bruce, R. A. (1994). Determinants of innovative behavior, A path model of individual innovation in the workplace. *Academy Of Management Journal*, 37(3): 580-607.
- Selesho, J. M. and Naile, I. (2014). Academic staff retention as a human resource factor, University perspective. *The International Business & Economics Research Journal (Online)*, 13(2): 295.
- Shakeel, N. and But, S. (2015). Factors influencing employee retention, An integrated perspective. *Journal of Resources Development and Management*, 6: 32-49.
- Slattery, J. P. and Rajan, S. T. (2005). Antecedents to temporary employee's turnover intention. *Journal of Leadership & Organizational Studies*, 12(1): 53-66.
- Solnet, D., Kralj, A. and Kandampully, J. (2012). Generation y employees, An examination of work attitude differences. *Journal of Applied Management and Entrepreneurship*, 17(3): 36.
- Somech, A. and Drach-Zahavy, A. (2013). Translating team creativity to innovation implementation, The role of team composition and climate for innovation. *Journal of Management*, 39(3): 684-708.
- Thakare, V. B. and Prakash, G. (2015). Climate for innovation in public funded R&D laboratory. *Procedia-Social and Behavioral Sciences*, 189: 153-62.
- Twenge, J. M., Campbell, S. M., Hoffman, B. J. and Lance, C. E. (2010). Generational differences in work values, Leisure and extrinsic values increasing, social and intrinsic values decreasing. *Journal of Management*, 36(5): 1117-42.
- Urbach, N. and Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *JITTA, Journal of Information Technology Theory and Application*, 11(2): 5.
- Van, D. J. and Coetzee, M. (2012). Retention factors in relation to organisational commitment in medical and information technology services. *SA Journal of Human Resource Management*, 10(2): 11.
- Wu, X. (2012). *Factors influencing employee turnover intention, The case of retail industry in Bangkok*. University of the Thai Chamber of Commerce: Thailand.
- Yigit, I. (2016). The effect of organizationa commitment on the social exchange and organizational socialization, A study in research and practice hospital of kocaeli university. Kafkas university. *Faculty of Economics and Administrative Sciences. Journal*, 7(12): 25.
- Young, J. A. (2012). *Job embeddedness theory, Can it help explain employee retention*. University of Louisville.

Appendix

Table-5. Heterotrait-Monotrait Ratio of Correlations (HTMT)

AC	CC	CO	ED	ER	MP	NC	OCL	RS	RW	SI
----	----	----	----	----	----	----	-----	----	----	----

AC											
CC	0.257 CI.90(0.161, 0.349)										
CO	0.460 CI.90 (0.3, 0.527)	0.165 CI.90 (0.096, 0.246)									
ED	0.471 CI.90(0.391, 0.546)	0.261 CI.90 (0.175, 0.351)	0.639 CI.90 (0.576, 0.701)								
ER	0.716 CI.90 (0.667, 0.813)	0.316 CI.90 (0.227, 0.399)	0.437 CI.90 (0.357, 0.513)	0.535 CI.90 (0.464, 0.603)							
M P	0.382 CI.90 (0.301, 0.461)	0.100 CI.90 (0.061, 0.180)	0.560 CI.90 (0.479, 0.637)	0.625 CI.90(0. 548, 0.696)	0.344 CI.90 (0.269, 0.418)						
NC	0.547 CI.90 (0.472, 0.615)	0.431 CI.90 (0.341, 0.518)	0.272 CI.90 (0.198, 0.347)	0.402 CI.90(0. 321, 0.483)	0.646 CI.90 (0.589, 0.697)	0.237 CI.90 (0.164, 0.316)					
OC L	0.338 CI.90 (0.255, 0.416)	0.152 CI.90 (0.077, 0.234)	0.482 CI.90 (0.404, 0.559)	0.547 CI.90(0. 465, 0.626)	0.304 CI.90 (0.228, 0.381)	0.626 CI.90 (0.556, 0.691)	0.188 CI.90(0. 105, 0.278)				
RS	0.432 CI.90 (0.358, 0.501)	0.285 CI.90 (0.196, 0.37)	0.290 CI.90 (0.206, 0.373)	0.400 CI.90(0. 311, 0.483)	0.331 CI.90 (0.248, 0.413)	0.334 CI.90 (0.259, 0.409)	0.407 CI.90(0. 331, 0.482)	0.304 CI.90(0. 210, 0.393)			
R W	0.386 CI.90 (0.306, 0.466)	0.085 CI.90 (0.043, 0.172)	0.471 CI.90 (0.396, 0.542)	0.465 CI.90(0. 383, 0.541)	0.358 CI.90 (0.286, 0.430)	0.514 CI.90 (0.441, 0.583)	0.243 CI.90(0. 164, 0.326)	0.420 CI.90(0. 340, 0.497)	0.271 CI.90(0.187, 0.348)		
SI	0.421 CI.90 (0.347, 0.488)	0.280 CI.90 (0.19, 0.363)	0.489 CI.90 (0.401, 0.563)	0.522 CI.90(0. 433, 0.603)	0.462 CI.90 (0.387, 0.533)	0.416 CI.90 (0.336, 0.493)	0.384 CI.90(0. 303, 0.461)	0.470 CI.90(0. 391, 0.548)	0.447 CI.90 (0.365, 0.523)	0.344 CI.90(0.263, 0.425)	