

## Confirmatory Factor Analysis on Educational Employees' Engagement

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### Abstract

An organization needs employees with high employee engagement with their organization to achieve goals. This study aims to determine employee engagement of the educational employees of X University. The research population was all educational employees at X University, with a total sample of 202 subjects. The sampling technique used was a simple random sampling method. The measurement instrument is the employment engagement scale. The analysis was done using Structural Equation Modelling (SEM) with Second-Order Confirmatory Factor Analysis (2nd Order CFA). The results of the research show that the educational employees of X University show high employee engagement. The most dominant aspect which reflects employee engagement is management support, and the lowest aspect which reflects employee engagement is the sense of belonging.

**Keywords:** *confirmatory factor analysis, employee engagement, structural equation modelling.*

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### Introduction

Human resource is one of the important factors in an organization because it determines its success (Yukl, 2001). An organization needs employees with high employee engagement with their organization to achieve goals. Employee engagement can give competitive advantages such as high productivity, making it possible for the employees to work extra roles in achieving the goals (Vance, 2006). Thus, employee engagement is the involvement of employees in contributing to the organization significantly through their work.

In addition to achieving organizational goals, employee engagement also has several benefits, namely increasing productivity, increasing profits, increasing efficiency, reducing turnover, reducing absenteeism, reducing fraud, increasing customer satisfaction, reducing workplace accidents, and minimizing employee complaints (Marciano, 2010). Utilization of resources by involving employees will have an impact on quality production. In addition, improving and managing employees will create a comfortable job and high morale (Choudhury & Kumar Mohanty, 2018). Based on the research results of Ang and Rabo (2018), Employee engagement positively impacts various fields of job satisfaction such as career development, compensation and benefits, relations with management, and work environment. Employees enjoy a positive impact on their involvement with an organization's management, such as rewarding work. Building engagement is an endless process that places the basis for questionable and emotionally enriching work experiences. It's more than paying to make people happy and pay more money for them. The level of employee participation in organizations reverses the high level of participation offered by the organization (Shukla et al., 2015). Bakker and Demerouti (2007) added that employees with higher engagement tend to be more creative and productive and want to work extra.

Employee engagement will make employees work extra roles (Avey et al., 2008; Ehigie & Otukoya, 2005; Roberson & Strickland, 2010). Engaged employees will be seen proactively; focusing on goals consistent with organizational success will widen their thinking and extend the role of what needs to be done by changes in job demands and in line with new job demands. This means that employees develop themselves not only for their interests but employees develop themselves to be able to contribute more effectively to the organization. Jones (2018) states that research on increasing employee involvement has reasons for making commitments to the company and creating job satisfaction involving employees. Implementing this employee participation strategy will improve the organization and produce a productive workforce. Based on the results of Bonilla's research (2018), creating a culture of employee engagement for a company will create shared responsibility as a whole. In addition, this involvement will make transparency a mechanism for developing an organization or company. Employees can develop and be fully dedicated to their personal and organizational development needs. Employee engagement results from a two-way interaction process between the organization and employees. Employee engagement shows more about the process of giving and

receiving that benefits employees and organizations (Rafferty et al., 2005). The results of Funminiya's research (2018) state that a system in an organization or company where managers collaborate with subordinates will contribute to the right decision-making for a company's management. Employee engagement facilitates the operational process and achieves strategic goals; on the other hand, employees will also be more receptive to being recognized and ready to accept responsibility for the results of the tasks given to be done.

Robbins (2003) states that employee engagement is the employees' positive attitude towards the organization and organizational values. Hewitt et al. (2004) state that employee engagement is the employees' desire to say (positively about the organization), stay (tightly bound to the organization), and strive (work exceedingly for the organization than expected). Schaufeli and Bakker (2004) explain that employee engagement is a positive, fulfilling, work-related state of mind. The employees can understand and care for the organizational environment and can cooperate with each other. Employee engagement indicates the process of taking and giving, which is advantageous for both the employees and the organization (Rafferty et al., 2005). Saks (2006) extends the concept of employee engagement by incorporating two important aspects: job engagement and organization engagement. Employee engagement as a composite of three employee behaviors is their performance in work, citizenship behavior, and involvement (Newman & Harrison, 2008).

The advantages of employee engagement include: firstly, improving better decisions, plans, or anything, which covers standpoints and judgments from others, which are directly related to the situation of work, and secondly, improving employees' sense of belonging and responsibility for the decisions, which involve the people, who will execute them (Fandy & Anastasia, 2003). Employee involvement shows gradual improvement in company performance; the employees involved do more than active involvement and encourage the productivity of an organization. Asking ideally to be an initiative from the leader to invite employees to the forefront. With this, the companies involved will be inspired for loyalty and also grow in self-confidence, and for building an organization (Wellins et al., 2015). Employee engagement seems to give employees professionalism at work. Continuous employees praise themselves against organizations with their abilities. Employee involvement is something that must be considered and developed considering the impact on employee productivity

and a positive impact on the organization (Shehri et al., 2017). In addition, employee involvement leads to increased employee commitment. Relating to work and thus creating a motivated workforce and working together to achieve the organization's common goals. A highly engaged workforce will definitely produce more successful organizations in financial and non-financial terms (Singh, 2016). Related to the importance of employee engagement, it is important to know aspects and indicators which contribute to the formation of employee engagement variables.

According to Gallup (2006), some aspects reflect employee engagement, among others basic needs, management support, a sense of belonging, and development and growth. Basic needs are things necessary for the contribution to the organization. This can be done when the employees have already known clearly what to do, i.e., job description in relation to their responsibility for the organization. This aspect describes materials or equipment needed by the employees in carrying out their work. They can cover physical needs (computer/laptop), communication instruments, and basic and specific knowledge in relation to their posts.

Management support is whether the employees' contribution to the company is appreciated by the company's management or not. Sense of belonging covers feeling proud to be part of the teamwork and company, which in the end results in good teamwork. Development and growth show if an organization has a program or creates a program, which gives an opportunity for the employees to grow and develop themselves so that it can have a good impact on the company. The conceptual model of employee engagement is shown in Figure 1 below.

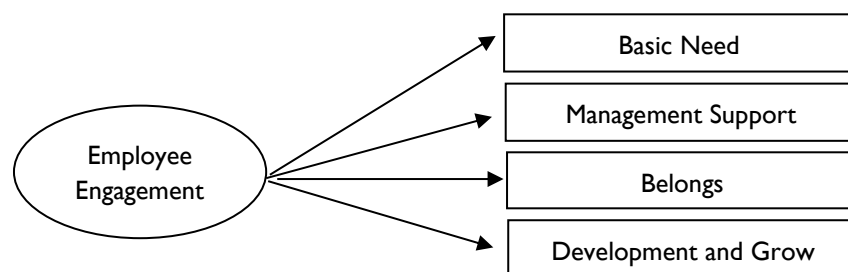


Figure 1. Conceptual Model of Employee Engagement

This research aims to firstly describe employee engagement of the educational employees of X university, second test the validity and reliability constructs of the measurement instrument, i.e., the employee engagement scale, and third find the contribution of aspects and factors of employee engagement in measuring employee engagement, and fourthly describing how a confirmation model, which is a hypothesis, is checked by the data.

### *Confirmatory Factor Analysis (CFA)*

*Confirmatory Factor Analysis (CFA)* is one of the main approaches to testing the dimensionality construct. The test is used to measure a model, which best describes aspects useful to describe latent variable measurement, i.e., employee engagement. *Confirmatory Factor Analysis (CFA)* is also used to test the validity and reliability of indicators or items which form latent constructs (Latan, 2012).

This CFA research uses *Second-Order Confirmatory Factor Analysis (2<sup>nd</sup> Order CFA)*, whose measurement model involves two levels. The first level is addressed to latent aspect construct with its indicators, and the second level is done through an analysis of the latent construct to its aspects (Latan, 2012). From these analyses, the employee engagement of the educational employees, the employee engagement validity and reliability constructs, contributive aspects and indicators for employee engagement in employee engagement measurement, and the confirmatory model being the hypothesis are checked and known.

## **Method**

### *Research Subject*

The population of the research was all educational employees at X University, with a total sample of 202 subjects. The sampling technique used in the research was probability sampling, i.e., a simple random sampling.

### *Measurement Instrument*

The measurement instrument to measure employee engagement in this research is the employment engagement scale, which was constructed based on its aspects referring to Gallup's theory (2006).

The aspects include basic needs, management support, a sense of belonging, and development and growth. Blue print scale of employee engagement is shown in Table 1.

**Table 1**  
*Blue Print Scale of Employee Engagement*

No	Aspect	Indicator
1	Basic needs	Employees' contribution to the organization by means of understanding clearly the job description related to their task and responsibility. Employees' contribution to the organization through the provision of materials or equipment needed by the employees to carry out their work.
2	Management support	Employees' contribution to the organization is fairly supported by the company's management. Supervisors and colleagues who support the employees' work.
3	Sense of belonging	Feeling proud to become a part of the organization. Good teamwork at work
4	Development and growth	Giving the opportunity for the employees to develop and grow. Providing training programs to improve the employees' competence.

#### *Validity and Reliability Construct*

Validity and reliability constructs of items form latent construct by means of Confirmatory Factor Analysis (CFA) (Latan, 2012). The validity and reliability test is done to get valid and reliable data. In other words, the test is done to carry out a model measurement to describe how well aspects and indicators can be used to measure employee engagement.

Second-Order Confirmatory Factor Analysis (2nd Order CFA) is a measurement model which consists of two levels. At the first level, the analysis is done from a latent construct aspect to its indicators, and the second analysis is done from a latent construct to its construct aspects (Latan, 2012).

#### *Data Analysis*

The analysis is done by means of Structural Equation Modeling (SEM) with Linear Structural Model (LISREL) version 8.71 of Joreskog and Sorbom (2008).

## Result

The analysis in this study includes statistical descriptive analysis and Second-Order Confirmatory Factor Analysis (2nd Order CFA). Based on the analysis, the description of research data is shown in the following Table 2.

Table 2  
*Descriptive statistics of Employee Engagement*

		Statistics				
		Basic needs	Management support	Sense of belonging	Development and growth	Employee Engagement
N	Valid	202	202	202	202	202
	Missing	0	0	0	0	0
Mean		3.1968	3.0693	3.2252	3.1968	3.1720
Median		3.2500	3.0000	3.2500	3.2500	3.1250
Mode		3.00	3.00	3.25	3.00	3.06
Std. Deviation		.42242	.49263	.49312	.47508	.35442
Variance		.178	.243	.243	.226	.126

a. Multiple modes exist. The smallest value is shown

The above Table 2 shows that the employee engagement score means 3.1968 for basic needs, 3.0693 for management support, 3.2252 for a sense of belonging, and 3.1968 for development and growth aspects. Based on the above-mentioned data, the mean of total employee engagement is 3.1720, which means the employee engagement of the educational employees is said to be high. The height determines how the employees work. Gallup (Dernovsek, 2008) says employee engagement is the employees' participation and enthusiasm to work. Employee engagement is also a factor that affects the employees' extra work behavior at an organization (Roberson & Strickland, 2010; Rurkkhum, 2010; Truss et al., 2006). The height of employee engagement is necessary to consider for other different aspects, and indicators may need further analysis.

### *Testing by Means of Second-Order Confirmatory Factor Analysis (2<sup>nd</sup> Order CFA)*

The testing by means of 2<sup>nd</sup> Order CFA was done by checking the loading factor (>0.5) and t-score (>1.96). A weight loading factor of 0.50 or more is considered to have strong enough validity to explain latent construct (Hair et al., 2010; Ghazali & Fuad, 2012). But another source (Sharma, 1996) says that the weakest acceptable weight loading factor is 0.40.

The data analysis was done by using the LISREL program considering the weight loading factor (>0.5) and the score t-value (>1.96), and the results can be seen in Figure 2 and 3 below:

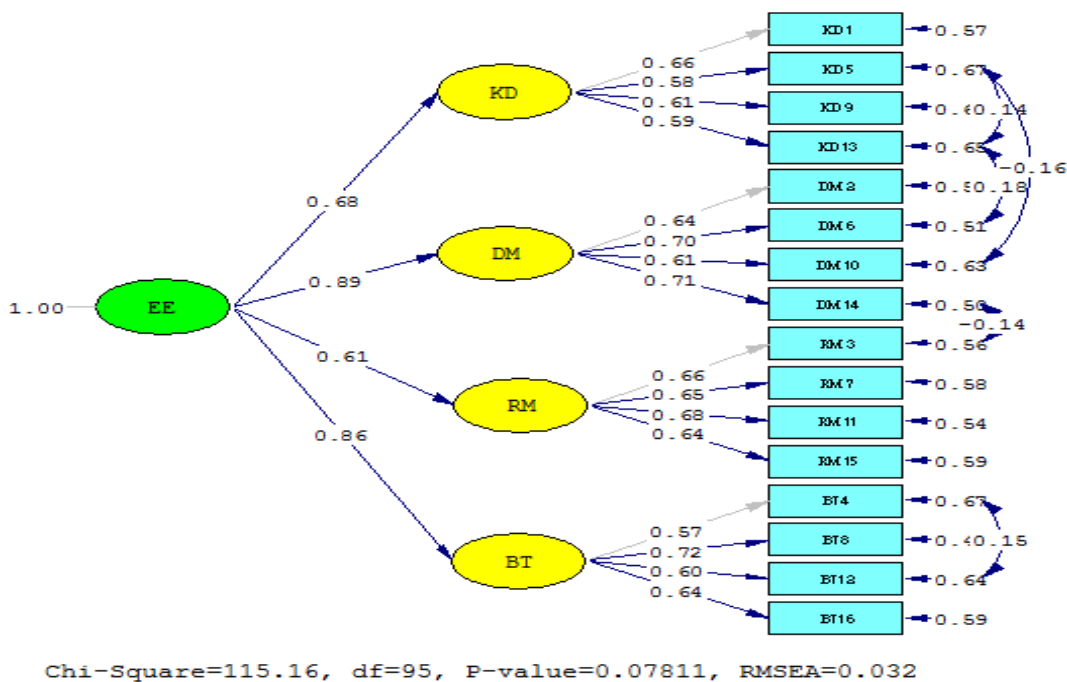


Figure 2. Loading Factor 2<sup>nd</sup> Order CFA Employee Engagement

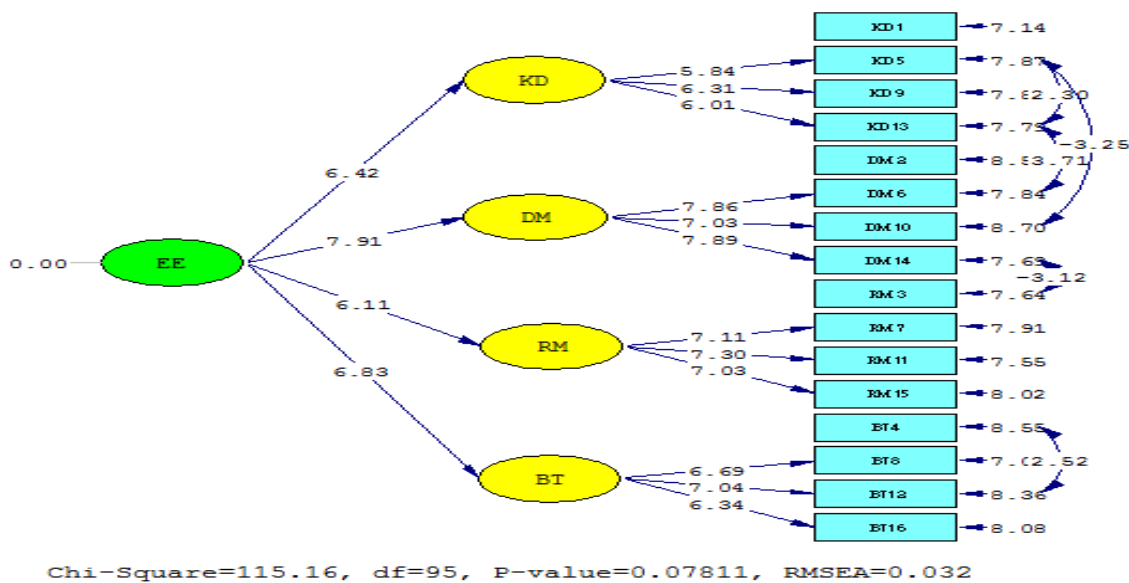


Figure 3. t-Value 2<sup>nd</sup> Order CFA Employee Engagement



The first level of analysis was done from the latent construct aspect to its indicators. Based on the above analysis, the loading factor item was  $>0.5$ , and all score t-value, which were necessary to measure the significant loading factor, was more than 1.96. This meant that 16 items used for employee engagement proved to be valid and significant items. The summary of the result can be seen in the following Table 3.

**Table 3.**  
*2<sup>nd</sup> Order CFA Construct Validity of Employee Engagement (Aspect-Item)*

No.	Item	Loading Factor	t-Value	Note
1	KD1	0.66		
2	KD5	0.58	5.84	Sig.
3	KD9	0.61	6.31	Sig.
4	KD13	0.59	6.01	Sig.
5	DM2	0.64		
6	DM6	0.70	7.86	Sig.
7	DM10	0.61	7.03	Sig.
8	DM14	0.71	7.89	Sig.
9	RM3	0.66		
10	RM7	0.65	7.11	Sig.
11	RM11	0.68	7.30	Sig.
12	RM15	0.64	7.03	Sig.
13	BT4	0.57		
14	BT8	0.72	6.69	Sig.
15	BT12	0.60	7.04	Sig.
16	BT16	0.64	6.34	Sig.

The second level of analysis was done from the latent construct to its aspects. Based on the above analysis, the loading factor item was  $>0.5$ , and all score t-value, which were necessary to measure the significant loading factor, was more than 1.96. The summary of the result can be seen in the following Table 4.

**Table 4.**  
*2<sup>nd</sup> Order CFA Construct Validity of Employee Engagement (Latent-Aspect)*

No.	Aspect	Loading Factor	t-Value	Note
1	Basic needs	0.68	6.42	Sig.
2	Management support	0.89	7.91	Sig.
3	Sense of belonging	0.61	6.11	Sig.
4	Development and growth	0.86	6.83	Sig.

The result shows that the four-employee engagement aspects, which cover basic needs, management support, sense of belonging, and development and growth, are valid and significant for the employee engagement-latent variable. The validity result is supported by the resulting chi-square ( $\chi^2$ ) value, which shows a score of 115.16 with a p-value of 0.781 ( $p > 0.05$ )

According to Hair et al. (2010), CFA is not only used to measure construct validity but also used to measure construct reliability. Hair et al. (2010) say that the construct shows good reliability if construct reliability (CR)  $\geq 0.07$  and variance extracted score  $\geq 0.05$ . Nevertheless, Hair et al. (2010) add that interpretation of the reliability construct score is said to be good if the score is more than 0.40. Based on the 20 selected items for construct reliability, it is known that CR= 0.92 and VE= 0.42, which means the employee engagement variable shows good reliability. The results of the construct reliability and variance extracted analysis can be seen in the Table 5.

**Table 5.**  
*Construct Reliability and Variance Extracted from Employee Engagement*

No.	Item	Loading Factor	Error	CR	VE
1	KD1	0.66	0.57		
2	KD5	0.58	0.67		
3	KD9	0.61	0.60		
4	KD13	0.59	0.65		
5	DM2	0.64	0.50		
6	DM6	0.70	0.51		
7	DM10	0.61	0.63		
8	DM14	0.71	0.50	0.92	0.42
9	RM3	0.66	0.56		
10	RM7	0.65	0.58		
11	RM11	0.68	0.54		
12	RM15	0.64	0.59		
13	BT4	0.57	0.67		
14	BT8	0.72	0.40		
15	BT12	0.60	0.64		
16	BT16	0.64	0.59		

Furthermore, the model fit is fairly good. The criteria are shown in the following Table 6.

**Table 6.**  
*Fit Model Criteria*

No	Fit Index	Score	Standard Score	Note
1	Chi-Square p	115.16(P = 0.078)	>0.05	Fit
2	RMSEA	0.032	<0.08	Fit
3	NFI	0.94	>0.90	Fit
4	NNFI	0.98	>0.90	Fit
5	CFI	0.99	>0.90	Fit
6	IFI	0.99	>0.90	Fit
7	GFI	0.93	>0.90	Fit
8	AGFI	0.90	>0.90	Fit

Based on the above Table, it is known that eight fit indexes indicate the model fit. This shows that the variable theoretical model of employee engagement fits the empirical data.

## **Discussion**

Based on the analysis, the educational employees of X University show high employee engagement. All aspects and items which comprise their employee engagement are said to be valid and reliable so that all aspects and indicators reflect and form employee engagement.

The most dominant aspect reflecting employee engagement is management support. The main indicator is that the employees' contribution to the organization gets equal support from the company's management, either from the supervisors or colleagues. The specific behavior is giving the best result for the organization as far as they are trusted to overcome and solve problems by themselves at work with guidance from the supervisors.

In addition, the lowest aspect, which reflects employee engagement, is a sense of belonging, with the main indicator of being proud of becoming part of the organization because the organization and the teamwork accept them. The specific behavior is being proud of working in the organization for their work and work team is highly appreciated. Kirsch (2000) argues that employee engagement is a strong employee attitude of emotional attachment to corporate goals, teamwork, job design, occupational

conditions, organizational characteristics, relationships with colleagues, and relationships with superiors.

Employee engagement is the result of the reciprocal interaction process between the management/organization and its employees (Rafferty et al., 2005). According to him, employee engagement shows more on the advantageous take and give the relation between the employees and the organization. The process is seen in the involvement of educational employees in contributing to the university through their work due to the clear job description of the university, the availability of equipment or teaching tools to support their work, and the chance to develop themselves through training, seminars, workshop, etc. so that they produce a good impact to the university, for employees and organizational sustainability. The management implications of an organization in cooperation between leaders and employees will be able to retain employees who excel in an organization and can develop employees so that employees will compete to show the best performance for a (Singh organization, 2016). Another finding from the study by Muthike (2017) shows that employee involvement in organizations will increase. The association of employee involvement with the organization can be seen in top-level, lower-level, and top-level decision-making in order to remain competitive to improve performance. Therefore it is important for a company to motivate employees to be involved in carrying out the strategies set. Therefore, it can be denied that employee participation in increasing corporate commitment and thus improves organizational performance. Osborne and Hammoud (2017) suggested that the employees involved provide assistance to increase organizations and individuals. Leaders become more creative and creative at work. Communication Business leaders must win the need for autonomy, intrinsic rewards, and participation to achieve employee achievement. Dajani (2015) argues that Employee engagement is a positive attitude that employees have in their organization and work culture, so the implications of the organization must now actively meet the needs and expectations of employees, thereby creating an impact that directly affects the performance of an organization.

The educational employees having the good engagement tend to invest themselves in their role of work, emotional ties, and preference of working energetically and enthusiastically and fully involved in the work, and these will internalize the university's targets as their targets due to their care for

the university so that they will work maximally to accomplish their work. Companies or organizations that invite employees will know more about the company, and accepting the policy will be better able to recognize the methods for training designated for them (Smith & Markwick, 2009). Engagement can be increased especially when managers can communicate with their staff more broadly on the meaning and importance of work and when line managers provide resources, information, and equipment to their staff to do a good job. In addition to indicators of involvement, opportunities to develop potential in the workplace (Fletcher et al., 2014). Employee engagement to achieve the organization's main goals specifically shows that mutual trust, identification, and norms occur when employee engagement becomes a vision set in an organization. The employees involved feel confident about the feedback given by the organization to be responsible for the performance set (Juan et al., 2018).

Employee engagement shows more about the process of giving and receiving that benefits employees and organizations (Rafferty et al., 2005). The process of giving and receiving a profitable one can be seen from the involvement of employees in contributing to the organization through their work because of the clear job description from the organization, the availability of facilities needed and support in work, a sense of belonging because the organization receives well, the organization tries to support the work / the task given for example is the opportunity to develop the potential of employees through training, seminars, workshops, and others so that it will have a positive impact on employees and organizations. Management must find new ways to engage employees so that they can lead the organization in a new direction at all levels. In addition, the increasing speed of change and a shrinking employee population with the right ability force us to get involved and align all employees quickly. Employee engagement contribution plays an important role in developing for organizational performance (Sun & Bunchapattanasakda, 2019). Organizational identification significantly influences employee involvement. The higher the identification of employee organizations, the stronger their sense of ownership of the organization, and they are more willing to show support to the organization, thus reflecting a higher level of involvement (Dai & Qin, 2016). Managers involved in quality management must be able to foster a feeling of recognition and support from the organization for employee contributions and fully involve them in-role performance.

Sometimes, managers may need special training to deepen their knowledge of the concept of work itself and employee involvement (Wickramasinghe & Perera, 2014).

Employees who engage in engaging will invest more in their job roles, have emotional attachments, enjoy doing their jobs, enthusiasm and drift in carrying out their job roles, able to internalize organizational goals as personal goals because they care about organizational goals that ultimately employees will work optimally in finish the job. Christian et al. (2011) confirm that employee engagement will affect the extra work behavior of employees.

## **Conclusion**

This shows that the variable theoretical model of employee engagement fits the empirical data. The educational employees of X University show high employee engagement. All aspects and items which comprise their employee engagement are valid and reliable so that all aspects and indicators reflect and form employee engagement. The most dominant aspect, which reflect employee engagement, is management support and the lowest aspect, which reflects employee engagement is a sense of belonging.

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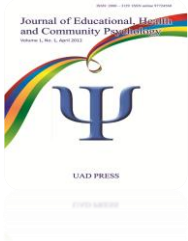
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