

Measuring Lecturer Motivation Scales: A Second-Order Confirmatory Factor Analysis (CFA)

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ABSTRACT

This study explained further about the scale as the solution by using confirmatory factor analysis in testing the lecturer motivation at the Indonesia University of Education (UPI) Regional Campus Tasikmalaya. Quantitative analysis methods were used for data collection and they were analyzed using AMOS. A two-level confirmatory factor analysis technique was used in the hypothesized model with six latent variables, namely career love, salary, promotions and incentives, social factors, ethical codes, and classroom environment. The results of the study revealed an adequate goodness-of-fit index of the hypothesized model using the fit index criteria. From the weight of the dimensions obtained, it can be seen that the dimension of social factors was the most dominant dimension in shaping lecturer motivation. The dimension that gave the least influence in shaping lecturer motivation was the classroom environment. This research implies that lecturers can find out the main characteristics that shape their motivation to be used as reflection and evaluation in the context of self-optimization.

Keywords: Lecturers Motivation, Confirmatory Factor Analysis.

1. INTRODUCTION

Every organization or individual can survive, grow, and develop because it is supported by its human resources [1]. Generally, the organization consists of the three most important main components, namely the physical aspect in the form of equipment support and the financial aspect in the form of financial support as well as the human resource aspect. The human resource aspect is closely related to motivation which is widely studied and defined in various literature. According to Vroom [2]; Gumbert [3], motivation is defined as a process that regulates the choice between alternative forms of voluntary and non-coercive activities carried out by each individual. Every organization member or individual motivation is very important for the success of any institution. Good organizations always try to keep their members motivated and satisfied with their work [4]. In the higher education field, teachers or lecturers can be considered as pillars of community development because they bear the responsibility of educating and training students until they become important agents to develop

their country [5]. Findings in previous research revealed that organization members who were motivated in their work tended to be more creative, innovative, and have breakthroughs that can improve their performance [6]. According to Garcia et al., [7] it was concluded that an organization was not able to achieve a competitive level of quality, both in the product level or the level of service produced, if their organizational members did not feel motivated to work.

Oshagbemi's research [8] showed that an understanding of the factors that influence work motivation was relevant to the improvement of well-being. In the higher education field, it is very important for every educational institution to maintain and support their teaching staff to keep motivated and satisfied with their work [9-11]. In China, for instance, research conducted by Lu [12] on the motivation and involvement of lecturers in Chinese higher education institutions showed that 80% of the lecturers were dissatisfied with their work and 50% said that they would not become a lecturer again if they had a choice. In Lu [12], it was shown that 30% of lecturers tried to change their

profession by following further education. In this study, lecturers had perceptions that pressure increase for academic performance, lack of challenge, lack of self-development opportunities, lack of self-esteem, and limited work autonomy had a negative impact on the quality of their teaching [12].

This study concluded that there was a serious motivation crisis among English lecturers in China [12]. Many targets are expected to be achieved by lecturers so that they achieve a good quality of performance depending on the level of motivation and job satisfaction. According to Shu [13], good teaching skills, good skills for classroom management, communication, research competence, comprehensive knowledge, appropriate personality, and professional dedication are the attributes expected owned by a lecturer. With the various expectations to be achieved by university lecturers for the sake of country development, it is very important to motivate lecturers to be interested and satisfied with their work [14], [11]. This study was conducted to investigate the current level of lecturer motivation and find out the factors related to lecturer motivation at Regional Campus Tasikmalaya, Indonesia University of Education (UPI).

2. METHODS

Factors underlying the measurement of lecturer motivation were compiled and tested using confirmatory factor analysis. Confirmatory factor analysis is a form of factor analysis by confirming several empirical constructs that are assumed to be factors of the latent construct which in this study is the lecturer motivation. The construct model of lecturer motivation as a latent variable consists of six underlying variables as the dimensions of forming or characterizing lecturer motivation, namely career love, salary, promotions and incentives, social factors, ethical codes, and classroom environment. This variable was adapted and modified from the motivation scale that has been studied [1].

Data were collected from lecturers at UPI Regional Campus, Tasikmalaya. The questionnaire given has six relevant variables which were adapted from previous research. The measurement of lecturer motivation was a second-order confirmatory factor analysis model, which was a two-step measurement, and the measurement of latent variables was not only based on the indicators but also involved the dimensions of measured latent variables.

In revealing the aspects or variables being studied, validity and reliability tests were carried out, in order to produce accurate research conclusions and provide a clear picture of the actual situation. Afterward, the measurement model was compiled and translated into equations and path diagrams representing the measurement model. The form of the equation of the

lecturer motivation measurement model is formulated in the following format:

Table 1. Measurement model of lecturer motivation.

Dimension of Lecturer motivation	Measurement Equation	Indicator	Measurement Equation
Career Love (MD1)	$MD1 = \lambda_1 MD + d_1$	I have clear goals and objectives every time I teach (X11)	$X11 = \lambda_{11} MD1 + d_{11}$
		there are no other factors and motives that encourage me to choose a teaching profession other than my interest in the academic field (X12)	$X12 = \lambda_{21} MD1 + d_{21}$
		I chose to pursue an academic career because I like it. (X13)	$X13 = \lambda_{31} MD1 + d_{31}$
		When I teach, I feel very motivated (X14)	$X14 = \lambda_{41} MD1 + d_{41}$
		I'm not interested in looking for another job because I like being a lecturer (X15)	$X15 = \lambda_{51} MD1 + d_{51}$
		I have no intention of changing my career path because becoming an academic has been my choice and my dream since childhood (X16)	$X16 = \lambda_{61} MD1 + d_{61}$
		my profession as an academic is not dependent on salary, even if I experience a salary drop, I will not change my career path (X17)	$X17 = \lambda_{71} MD1 + d_{71}$

Salary (MD2)	MD2 = λ_2 MD + d ₂	I always receive my salary on time (X21)	X21 = λ_{82} MD2 + d ₈₂
		With my salary, I hope to improve and realize my plans and dreams in my life (X22)	X22 = λ_{92} MD2 + d ₉₂
		my salary does not depend on my boss (X23)	X23 = λ_{102} MD2 + d ₁₀₂
		My salary does not reduce my integrity in teaching (X24)	X24 = λ_{112} MD2 + d ₁₁₂
		My boss helps me to get a salary hike (X25)	X25 = λ_{122} MD2 + d ₁₂₂
		My salary fulfills my needs and my family's (wife, children, and relatives) needs (X26)	X26 = λ_{132} MD2 + d ₁₃₂
		My salary equals to my workload and work responsibilities (X27)	X27 = λ_{142} MD2 + d ₁₄₂
		my salary motivates me to work hard (X28)	X28 = λ_{152} MD2 + d ₁₅₂
		I receive proper and reasonable salary (X29)	X29 = λ_{162} MD2 + d ₁₆₂
Promotions and Incentives (MD3)	MD3 = λ_3 MD + d ₃	the rules for the promotion of positions are determined based on the lecturer's performance (X31)	X31 = λ_{173} MD3 + d ₁₇₃
		the determined promotion rules motivate me to work hard so I can get promoted (X32)	X32 = λ_{183} MD3 + d ₁₈₃

		The incentives provided are relevant to my workload (X33)	X33 = λ_{193} MD3 + d ₁₉₃
		I agree with the provisions and rules of the lecturers' promotion (X34)	X34 = λ_{203} MD3 + d ₂₀₃
		I am very motivated to work better because of the good incentive system for every work achievement in my institution (X35)	X35 = λ_{213} MD3 + d ₂₁₃
Social Factors (MD4)	MD4 = λ_4 MD + d ₄	Students' efforts and their ambitions in learning motivate me to help them pursue their success (X41)	X41 = λ_{224} MD3 + d ₂₂₄
		I am motivated by the students' respect towards me. (X42)	X42 = λ_{234} MD3 + d ₂₃₄
		I am interested in helping students because they show their interest in learning. (X43)	X43 = λ_{244} MD3 + d ₂₄₄
		Students' discipline motivates me to do my job. (X44)	X44 = λ_{254} MD4 + d ₂₅₄
		I am motivated by society's point of view that the academic profession is a respectable profession (X45)	X45 = λ_{264} MD4 + d ₂₆₄
		I am considered an important person in society	X46 = λ_{274} MD4 + d ₂₇₄
Kode etik, dan (MD5)	MD5 = λ_5 MD + d ₅	I did my job well to avoid suspension or other forms of	X51 = λ_{275} MD5 + d ₂₇₅

		punishment. (X51)	
		I don't mind the ethical code implemented in my institution (X52)	$X52 = \lambda_{285}MD5 + d_{285}$
		Every lecturer is involved in decision making in my institution (X53)	$X53 = \lambda_{295}MD5 + d_{295}$
		Lecturers are treated well in my institution (X54)	$X54 = \lambda_{305}MD5 + d_{305}$
		every individual in my institution is treated fairly and appropriately (X55)	$X55 = \lambda_{315}MD5 + d_{315}$
Class Environment (MD6)	$MD6 = \lambda_6 MD + d_6$	I am a confident person in terms of class management	$X61 = \lambda_{326}MD6 + d_{326}$
		The number of students does not affect my motivation in teaching activities. (X62)	$X62 = \lambda_{336}MD6 + d_{336}$
		the atmosphere and facilities in the classroom do not affect my motivation in teaching activities. (X63)	$X63 = \lambda_{346}MD6 + d_{346}$
		The university provides all the necessary teaching materials. (X64)	$X64 = \lambda_{356}MD6 + d_{356}$
		Student achievement and student activity motivate my lectures. (X65)	$X65 = \lambda_{366}MD6 + d_{366}$

3. RESULTS AND DISCUSSION

After the measurement model had been successfully formulated, based on the sample dataset, the model parameters were estimated and tested for suitability with the data. The evaluation aims to determine whether or not the proposed measurement model fits the data.

Table 2. Model fit summary.

CMIN

Model	NPART	CMIN
Default model	80	222.518

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.285	.268		

AIC

Model	AIC	BCC	BIC	CAIC
Default model	382.518		458.073	538.073

The CMIN/Df value of this research model was 222.5/623 which was 0.37. Thus, this model considers as a very good fit because the CMIN/DF value was less than 2.0. CMIN/DF is one indicator to measure the fit level of a model. In this case, CMIN/DF is the Chi-Square statistic divided by the DF relative value which is less than 2.0 or less than 3.0 is an indication of an acceptable fit between the model and the data.

GFI is a non-statistical measure that has a range of values from 0 (poor fit) to 1.0 (perfect fit). A high value in the index indicates a "better fit" and a model can be said to be very good if the GFI value is greater than or equal to 0.90. The value generated in this study was 0.268 so it is not a very good fit. The values of AIC, BIC, and CAIC are very large and very far from zero, this indicates poor parsimony.

Table 3. Computation of degrees of freedom (default model).

Several distinct sample moments:	703
A number of distinct parameters to be estimated:	80
Degrees of freedom (703 - 80):	623

The AMOS output showed the df of the model which was responsible for 623. This indicates that the model is in the overconfident category because it has a positive value.

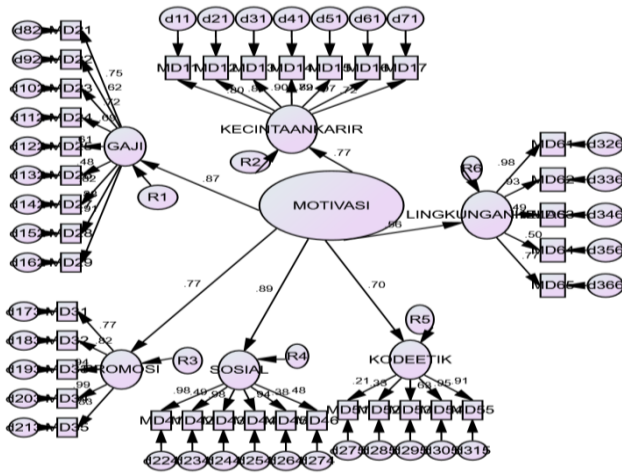


Figure 1. Results of confirmatory analysis of lecturer motivation conceptual model.

3.1 Results of Testing the Relationship of Variable Forming Indicators

Referring to Table 4, it can be concluded that the highest estimation result of career love model measurement (MD1) was MD16, which is “I have no intention of changing my career path because becoming an academic has been my choice and my dream since childhood”.

Table 4. Career love model measurement results (MD1).

			est std weight
MD16	<---	CAREERLOVE	0.975
MD13	<---	CAREERLOVE	0.896
MD12	<---	CAREERLOVE	0.892
MD14	<---	CAREERLOVE	0.885
MD11	<---	CAREERLOVE	0.804
MD17	<---	CAREERLOVE	0.723
MD15	<---	CAREERLOVE	0.722

Regarding Table 5, it can be concluded that the highest estimation result of salary model measurement (MD2) was reflected by MD29, which is “I receive a proper and reasonable salary” (X29).

Table 5. Salary model measurement results (MD2).

			est std weight
MD29	<---	SALARY	0.907
MD28	<---	SALARY	0.88
MD27	<---	SALARY	0.824
MD21	<---	SALARY	0.75
MD23	<---	SALARY	0.72
MD24	<---	SALARY	0.691
MD22	<---	SALARY	0.618
MD25	<---	SALARY	0.606
MD26	<---	SALARY	0.482

Based on Table 6, it can be concluded that the highest estimation result of promotions and incentives model measurement (MD3) was shown by MD34, the provisions and rules of the lecturer’s promotion.

Table 6. Promotion and incentive model measurement results (MD3).

			est std weight
MD34	<---	PROMOTION	0.991
MD33	<---	PROMOTION	0.941
MD35	<---	PROMOTION	0.826
MD32	<---	PROMOTION	0.822
MD31	<---	PROMOTION	0.767

Referring to Table 7, it can be concluded that the highest estimation result of social factors model measurement (MD4) was characterized by MD43, namely the passion in helping students because they show their interest in learning.

Table 7. Social factors model measurement results (MD4).

			est std weight
MD43	<---	SOCIAL	0.977
MD41	<---	SOCIAL	0.976
MD44	<---	SOCIAL	0.943
MD42	<---	SOCIAL	0.485
MD46	<---	SOCIAL	0.484
MD45	<---	SOCIAL	0.384

Referring to Table 8, it can be concluded that the highest estimation result of ethical codes model measurement (MD5) was MD54, lecturers are treated well in my institution.

Table 8. Ethical codes model measurement results (MD5).

			est std weight
MD54	<---	ETHICAL CODES	0.948
MD55	<---	ETHICAL CODES	0.913
MD53	<---	ETHICAL CODES	0.631
MD52	<---	ETHICAL CODES	0.327
MD51	<---	ETHICAL CODES	0.208

Referring to Table 9, it can be concluded that the highest estimation result of class environment model measurement (MD6) was MD61, confidence in classroom management.

Table 9. Class environment model measurement results (md6)

			est std weight
MD61	<---	CLASS ENVIRONMENT	0.982
MD62	<---	CLASS ENVIRONMENT	0.925
MD65	<---	CLASS ENVIRONMENT	0.77
MD64	<---	CLASS ENVIRONMENT	0.498
MD63	<---	CLASS ENVIRONMENT	0.488

The estimation results of loading factors for each dimension of lecturer motivation consists of 6 dimensions, namely career love (MD1), salary (MD2), promotion and incentives (MD3), social factors (MD4), ethical codes (MD5), class environment (MD6), can be seen in Table 10.

Table 10. Lecturer motivation model measurement results (MD).

			est std weight
SOCIAL	<---	MOTIVATION	0.887
SALARY	<---	MOTIVATION	0.871
PROMOTION	<---	MOTIVATION	0.774
CAREERLOVE	<---	MOTIVATION	0.766
ETHICALCODES	<---	MOTIVATION	0.701
CLASSENVIROMENT	<---	MOTIVATION	0.557

Referring to Table 8, from the weight of the variables/dimensions obtained, it can be concluded that the variable/dimension of social factors was the most dominant variable/dimension in shaping lecturer motivation. The dimension that gave the least influence in shaping lecturer motivation was the class environment. The level of work motivation is influenced by intrinsic and extrinsic factors [15-18]. Furthermore, it includes social factors, salary, promotions, and incentives, love of career, code of ethics, and classroom environment [19-21]. In addition, when explored more deeply, the overall level of motivation is still at a level that is oriented towards basic needs, such as salary and recognition.

4. CONCLUSIONS

Based on the results through Confirmatory Factor Analysis (CFA), it shows the estimation of loading factors forming the level of lecturer motivation that includes six dimensions. The order of the most dominant dimensions were social factors, salary, promotions and incentives, love of career, code of ethics, and classroom environment. Lecturer motivation can be explained unidimensionally, precisely, and consistently by these six

dimensions. The findings of this study can be used as evaluation material for leaders in determining future policies and programs.

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