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A Measurement Model of Teachers' Motivation Factors in Primary Schools

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ABSTRACT

Motivation has an enormous impact in the field of education, which is strongly linked to appreciation, financial rewards, professional development, interpersonal relationships, work significance, achievement, and work status. The motivation model that originated from the two-factors Herzberg's motivation theory was adopted in this study. The implementation of this validation was to confirm whether the measurement model for motivation construct is appropriate for primary school teachers in Kelantan, Malaysia. This study proposed a measurement model by applying the Confirmatory Factor Analysis that achieved its construct validity with an acceptable fit (RMSEA= 0.06, CFI= 0.95, Chisq/df=2.32). Besides, the model met its unidimensionality with the factor loadings ranging from 0.57 to 0.98, which described the factors that contributed to teachers' motivation in eight dimensions, namely responsibility, potential, promotion, and reward, recognition, interpersonal relationship, working condition, working environment, achievement, and organisation policies. This model met its convergent validity and reliability with AVE=.77 and CR=.94. The modification indices of this model confirmed that the discriminant validity was achieved and described the consistent findings and assigned data quality to fit within the suggested model. This model could be utilised by researchers to examine the motivation effect in education institutions.

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INTRODUCTION

Motivation serves as an internal reinforcement factor that stimulates the willingness of workers to bring the most enthusiastic effort into their jobs. In schools, as educational hubs, teachers play a crucial role in order to ensure high-quality education in transforming students into global citizens for the corporate world. However, this can only be realised if school teachers are inspired to accomplish their goals effectively. Various motivational factors that encourage school teachers on work effectiveness to improve institutional performance have been outlined. These factors included recognition from heads of department, empowerment, achievement of students, and the development of career (Rasheed et al., 2010).

The aspiration of teachers based on the motivational factors, namely recognition, achievement, development of career, and advancement opportunities, substantive roles, and jobs, as well as hygiene factors (supervision, salaries, environment and physical conditions of work, organisational policies, and relationships with colleagues), may promote positive job satisfaction, that would improve the achievement of students in schools (Boyle, 2014; Mertler, 2001). Besides, Anastasiou and Papakonstantinou (2014) explained that teachers were more satisfied with their work, including nature and the ability to work, as well as to help students.

Meanwhile, a study by Morcom and MacCallum (2009) proved that teachers had also played a role that significantly preserved better relationships among colleagues, who could be inspired to collaborate in the face of a challenging and 'tiring' educational environment. Besides, the situation was also related to the well-being of the teacher's lifestyle, which is driven by responsive values, vision, and learning. Moreover, other important motivating factors for teachers have been to respect them by highlighting their achievements, granting them responsibility and autonomy, as well as providing promotional opportunities (Erciyes, 2019).

Teachers are influenced by the perceptions of job contexts that also affect the well-being of life and motivation. The attitudes of teachers can be considered based on the experiences towards the life well-being and motivation, as well as the perceptions of contextual variables to create teachers' experiences at school (Collie et al., 2012). Motivation can influence job satisfaction and loyalty within an organisation. Therefore, the level of job satisfaction and commitment to educational organisations are affected by the type of leadership exercised by the Principal (Mak et al., 2010).

An individual's interest should be stimulated and fulfilled to influence self-motivation. Then only the individual can deliver the best performance through the limited use of resources with maximum efficiency (Zamani & Talatapeh, 2014). Teachers' work motivation can also be nurtured by greater responsibility, promoting innovation and providing opportunities for career development (Arifin, 2014). It intended to meet the needs of teachers in terms of physiology, social and economic needs, as well as moral standards that are the

responsibility of the government, parents, and the community for the benefit of future generations (Gobena, 2018).

Besides, motivation is also a stage or effort that can be achieved on tasks and activities of the work role and scope (Mehta et al., 2003). In the meantime, school teachers can express their motivation and satisfaction in teaching when they are comfortable in their economic well-being and work environment (Nyamubi, 2017). As the teaching implementation performance influence the teachers' feelings and the positive impact of the teaching, teachers always strive to implement the learning efficiently and effectively (Abdullah et al., 2016). The teacher's role is essential for the students' learning process. Thus, teachers' motivation significantly showed a direct contribution and impact on students (Alam & Farid, 2011).

The study proposed a measurement model for primary school teachers in order to identify the contributing factors to motivation and its respective measures, such as responsibility, potential, promotion and reward, recognition, interpersonal relationship, working condition, working environment, achievement, and organisational policies. Besides, this study investigated the convergent and discriminant validity, as well as the reliability for the proposed model.

The theoretical framework for this study was illustrated in the following Figure 1.

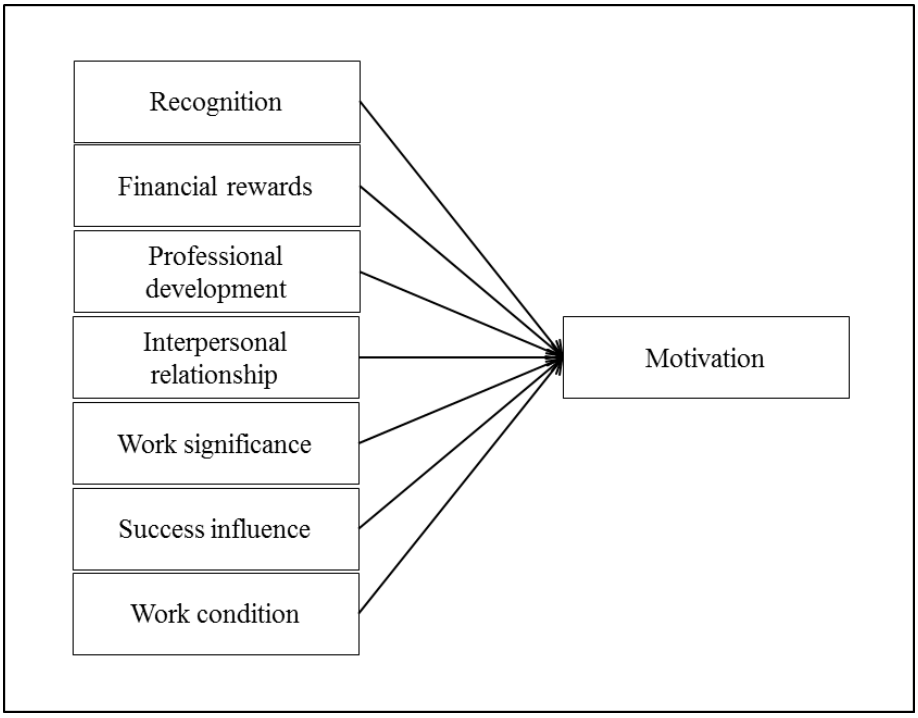

Figure 1. The motivation's theoretical framework

METHOD

Participants

A total of 330 primary school teachers, from the schools with excellent performance in the Primary Achievement Test in the state of Kelantan, Malaysia, were chosen as respondents in this study, comprising of 124 male teachers (37.6%) and 206 female teachers (62.4%). For teaching experience, 191 teachers had been teaching for 20 to 29 years (57.90%), 72 teachers (21.80%) had been teaching for 10 to 19 years, 35 teachers (10.60%) had been teaching for 30 years and above, while 32 other teachers (9.70%) had less than ten years of teaching experience.

Instrument

The questionnaire was selected based on the two most essential factors in the selection of an instrument, which was the original instrument accurately measured motivation as the variable of interest and its reliability, as well as the instrument's validity. A quick assessment of the previous research using the instrument allowed this study to be replicated.

The original version of the Teacher Motivation Survey (TMS) was previously developed in English. Therefore it had to be translated and adjusted to the local language in order to determine the motivational factors. Thus, once the permission to use was obtained from the owner of the instrument, the original instrument was translated into the Malay Language, the primary language spoken in Malaysia. Two (2) language experts conducted the forward and backward translation of the questionnaire.

The questionnaire needed to meet an outstanding linguistic translation and had to be adjusted to cultural differences to maintain the integrity of its content and to be referred to as the modified cross-cultural questionnaire. The validation was designed to ensure that the translated questionnaire had the same equivalent items to evaluate the construct as the original version, and was then retained to ensure the integrity of the questionnaire (Marzuki et al., 2018).

Besides, this study addressed issues focused on the emic view of Malaysian culture. This perspective focused on cultural differences that applied to the primary school teaching community, which were viewed from an insider's perspective. Also, studies conducted from an emic perspective often included more comprehensive and culturally rich knowledge than studies conducted from an etic point of view.

Boyle (2014) developed a 26-item scale instrument to evaluate teachers' motivation. The instrument was known as Teacher Motivation Survey (TMS). The scale clarified the seven (7) motivational dimensions of recognition, financial rewards, professional development, interpersonal relationships, work significance, success influence, and work condition. More specifically, TMS evaluated the level of teachers' feeling towards all the components that affected their motivation in schools. The TMS instrument consisted of 26 ordinal Likert type items. The item rated in 4-point scales, which were highly

unmotivated, unmotivated, motivated, and highly motivated. However, in this study, the interval 10-point scale ranging from 1 (strongly disagree) to 10 (strongly agree) was utilised to give more freedom to the respondents in choosing the best answers (Awang, 2015a; Awang et al., 2015).

Subsequently, the Exploratory Factor Analysis (EFA) was implemented to examine all items and evaluate the dimensions of the items that represented the motivation construct. This test yielded one (1) method of the main unrotated component (Bido et al., 2017), namely that all items would form one (1) or more dimensions (Costello & Osborne, 2005) using the pilot study data to ensure that the instrument was valid, reliable, and capable of generating accurate research results to avoid any doubts about its validity.

The Principal Component Factor Analysis (PCFA) with Varimax Rotation was implemented on all items. The finding showed a significant value of the Bartlet Test of Sphericity (Chi-Square=2442.21, $p<0.01$). While, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) measurement value was KMO=0.69, which satisfied the KMO analysis requirements (Table 1).

The procedure of factor analysis yielded eight (8) different dimensions for motivational items with Eigenvalue=1.16. The factor loadings of all 26 items were divided into each of the eight (8) components, namely responsibility, potential, promotion, and reward, recognition, interpersonal relationship, work condition, work environment, achievement, and organisational policies. The items for each component were determined according to the findings of the Rotated Component Matrix analysis. The entire 26 items were retained as the factor loadings were higher than 0.60, with the lowest was 0.66, and the highest was 0.93.

From the factor analysis results, the reliability test was obtained (Yong & Pearce, 2013) to validate each measurement item in the components through the Cronbach's alpha measurement to confirm the stability of the instrument. A Cronbach's alpha of at least 0.60 or higher (Hinton et al., 2004; Taber, 2017) for a variable indicated that the measuring elements in the motivation construct were capable of providing one (1) measure with reliable internal consistency (Marzuki et al., 2018). The output for each component in the motivation construct had higher Cronbach's alpha values than 0.60,

Table 1

Principal component factor analysis for motivation construct

KMO		0.69
Bartlet Test of Sphericity	Chi-Square	2442.21
	Df	325
	Significant	0.00

which ranged from 0.78 to 0.91. Therefore, all components of this construct were used to calculate the motivation construct, α=.80. The value was considerably high (Hinton et al., 2004; Taber, 2017), suggesting that the translated TMS questionnaire was a reliable instrument and was valid to evaluate the motivation of primary teachers.

Data Analyses

In order to ensure its unidimensionality, the data of this study had been recoded. This motivation model estimation was examined in Structural Equation Modelling (SEM) using the Analysis of Moment Structures (AMOS) software. The technique implemented the Confirmatory Factor Analysis (CFA), while the Maximum Likelihood Estimation (MLE) generated the model estimation. Besides, the covariance matrix of the item was utilised as an input. Indices were categorised based on their loading values, while the indicators were correlated to their respective unobserved or latent variables to calculate the estimate.

RESULTS

The questionnaire with 26 items applied in this study was adopted from the previous study. The 10-point interval scale items used in this study consisted of eight (8) components, which were M1 (responsibility), M2 (potential, promotion, and reward), M3 (recognition), M4 (interpersonal relationships), M5 (working condition), M6 (working environment), M7 (achievement), and M8 (organisation policies). The scale extended from 1 (strongly disagree) to 10 (strongly agree). All these eight components were derived from the EFA analysis from the previous pilot study (Abdullah & Ismail, 2018).

This motivation construct analysis evaluated the measurement model through the CFA analysis to assess the item significance of the reflective construct. Figure 2 presents the first-order reflective measurement model.

The M1 component contained five (5) questionnaire items, namely M11, to M15. While, the M2 component consisted of four (4) questionnaire items, namely M21, to M24. The M3, M4, M5, M6, and M7 components consisted of three (3) questionnaire items respectively, which were M31 to M33, M41 to M43, M51 to M53, M61 to M63, and M71 to M73. Besides, M8 components contained two (2) questionnaire items accordingly, which were M81 to M82. All these 26 questions, namely the M11 to M82, were the response items, while e1 to e26 were the respective measurement errors of each item for the motivation construct.

Unidimensionality

The items of motivation construct in the questionnaire were in the form of "*Are these factors motivating you?*", which used interval scale 1 (strongly disagree) to 10 (strongly agree). Since all the 26 questions in the questionnaire were positive items, the answers would be in the positive form if the teachers agreed on these items. Thus, the test of unidimensionality for the first-order reflective measurement model had

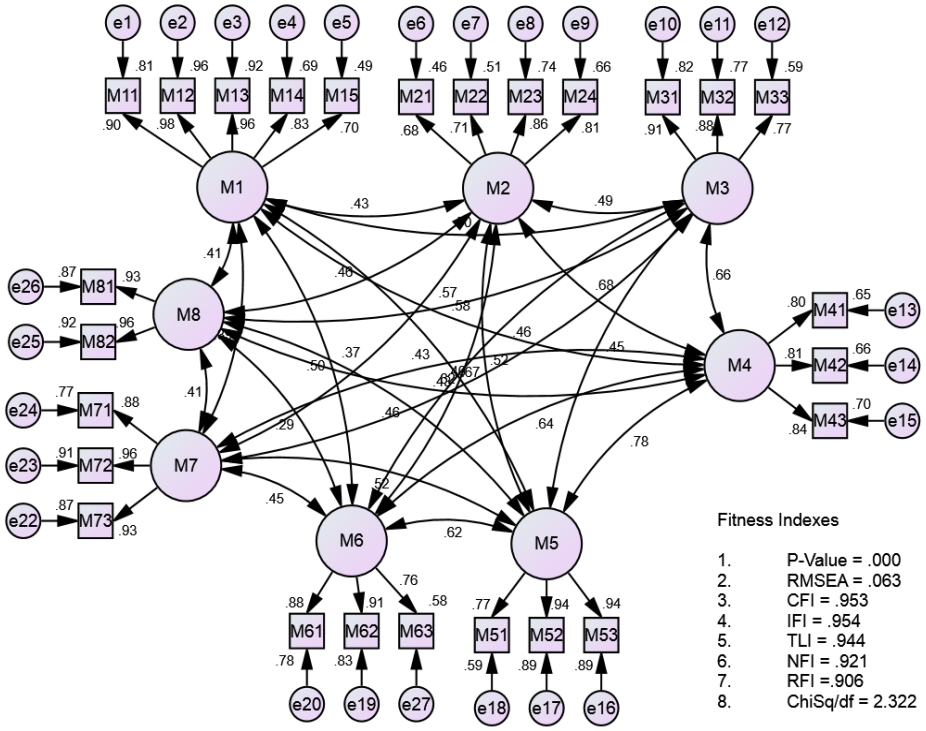

Figure 2. The first-order reflective measurement model

been satisfied, with all the measurement items showed the high factor loading values, except for M63 with the factor loading value of 0.57. However, it was retained since the value was approaching 0.60. Thus, all the measuring items ranged from 0.57 to 0.98.

The high value of the factor loadings suggested that each particular item measured the motivation construct significantly. Thus, it could be retained for each aspect of the construct in the model. The values of unidimensionality expressed that all factor loadings indicated positive values in one (1) direction. The validation test was conducted to examine the strength of the instrument, as well as to measure the motivational design. The Modification Indices (MI) value table was revised, and it had been ascertained that no items needed to be removed. This motivation measurement model confirmed to be free from overlapping and redundant items. Thus, discrimination validity was achieved.

Validity

The CFA result explained the fitness indexes and the factor loadings for each item, as shown in the following Table 2. Overall, the analysis indicated that the model achieved the required good fit.

This motivation measurement model was carried out with the Maximum Likelihood Estimate (MLE). The CFA

Table 2

The fitness indexes for the motivation measurement model

Category	Index	Index Value	Output for the required level
Absolute fit	RMSEA<0.08	0.06	Achieved
Incremental fit	CFI>0.90	0.95	Achieved
Parsimonious fit	Chisq/df<3.00	0.32	Achieved

tested model confirmed an acceptable fit (RMSEA=0.06, CFI=0.95, Chisq/df=2.32). The construct validity of the motivation measurement model had been met, confirming the accuracy of all the 26 items to measure the motivation construct. The motivation construct contained eight (8) components, and the particular items are presented in Table 3.

Then, the Average Variance Extracted (AVE) values were examined to confirm the convergent validity and reliability of the motivation construct. The values of AVE were higher than 0.50, showed that the value had satisfied the convergent validity value. Thus, this measurement model reached the convergent validity requirements, and the AVE values ranging from 0.59 to 0.90 for all components.

Table 3

The Confirmatory Factor Analysis (CFA) report summary for the measurement model

Second Order	First Order	Item	Factor Loading (>.60)	CR (>.60)	AVE (>.50)
Motivation	M1	M11	.90	.94	.77
		M12	.98		
		M13	.96		
		M14	.83		
		M15	.70		
	M2	M21	.67	.85	.59
		M22	.71		
		M23	.86		
		M24	.82		
	M3	M31	.91	.89	.73
		M32	.88		
		M33	.77		
	M4	M41	.81	.86	.67
		M42	.81		
		M43	.83		

Table 3 *(Continued)*

Second Order	First Order	Item	Factor Loading (>.60)	CR (>.60)	AVE (>.50)
	M5	M51	.77	.92	.79
		M52	.94		
		M53	.94		
	M6	M61	.88	.84	.64
		M62	.91		
		M63	.57		
	M7	M71	.87	.94	.85
		M72	.96		
		M73	.93		
	M8	M81	.95	.95	.90
		M82	.95		

Then, the validity analysis was utilised to examine the instrument's ability to measure the construct of motivation, as well as to identify its redundancy. The measurement confirmed that the motivation measurement model was free from unnecessary or overlapping items. Furthermore, the correlations between the components were lower than 0.85, explained that the components were not having a multicollinearity problem or redundant, as shown in Table 4.

Table 4

Correlation values between components

			Estimate
M1	<-->	M2	.43
M1	<-->	M3	.50
M1	<-->	M4	.58
M1	<-->	M5	.43
M1	<-->	M6	.50
M1	<-->	M7	.39
M1	<-->	M8	.41
M2	<-->	M3	.49
M2	<-->	M4	.68
M2	<-->	M5	.53
M2	<-->	M6	.43
M2	<-->	M7	.37
M2	<-->	M8	.46
M3	<-->	M4	.66
M3	<-->	M5	.45
M3	<-->	M6	.46
M3	<-->	M7	.40
M3	<-->	M8	.57
M4	<-->	M5	.78
M4	<-->	M6	.64
M4	<-->	M7	.67
M4	<-->	M8	.62
M5	<-->	M6	.62
M5	<-->	M7	.52
M5	<-->	M8	.46
M6	<-->	M7	.45
M6	<-->	M8	.29
M7	<-->	M8	.42

The diagonal values indicated the square roots of the AVE value of motivation construct. At the same time, the other values indicated the association between the respective components. As a result, the measurement of the discriminant validity for all components was achieved as the diagonal values showed higher values than others in its row and column. This study confirmed that the discrimination validity of the measurement model of motivation had been met, as shown in Table 5.

Table 5

Discriminant validity index summary for motivation

	M1	M2	M3	M4	M5	M6	M7	M8
M1	**0.88**							
M2	0.43	**0.77**						
M3	0.50	0.49	**0.85**					
M4	0.58	0.68	0.66	**0.82**				
M5	0.43	0.53	0.45	0.78	**0.89**			
M6	0.50	0.43	0.46	0.64	0.62	**0.80**		
M7	0.39	0.37	0.40	0.67	0.52	0.45	**0.92**	
M8	0.41	0.46	0.57	0.62	0.46	0.29	0.42	**0.95**

Reliability

The Composite Reliability (CR) values, which were higher than 0.60 for the motivation construct, demonstrated that the reliability of the constructs had been achieved to the required level (CR≥.60), M1=.94, M2=.85, M3=.89, M4=.86, M5=.92, M6=.84, M7=.94, and M8=.95. The CR components values between 0.84 and 0.95, and the CR construct a value of 0.90 indicated the level of reliability and internal consistency of the measured components representing the motivation construct. Besides, the AVE values exceeding 0.50 also indicated the reliability of the measurement model in measuring the motivation construct. The AVE achieved, as the lowest AVE, was M2=.59, followed by M6=.64, M4=.67, M3=.73, M1=.77, M5=.79, M7=.85, while the highest AVE value was M8=.90.

Modelling Motivation as the Second Order Construct

An ellipse represented the latent construct of motivation and it was measured by eight (8) components, namely M1 to M8, also represented by ellipses. Furthermore, motivation had been developed as a second-order construct that consisted of eight (8) components. While each component was calculated through a certain number of items. The components were M1, M2, M3, M4, M5, M6, M7, and M8, described in Figure 3. The confirmatory factor analysis (CFA) was utilised to test whether the

measurement model of motivation construct was consistent with the contruct's nature. This study was intended to determine the contributing factors to the motivation construct and its respective measurements.

Then, the measurement model was examined. The CFA-tested model showed an acceptable fit (RMSEA=0.07, CFI=0.95, Chisq/df=2.42). Thus, the motivation measurement model had achieved its construct validity, showing the precision of each of the 26 items in the motivation construct. Figure 3 showed the result of the factor loadings for the second-order motivation construct, as well as the first-order construct.

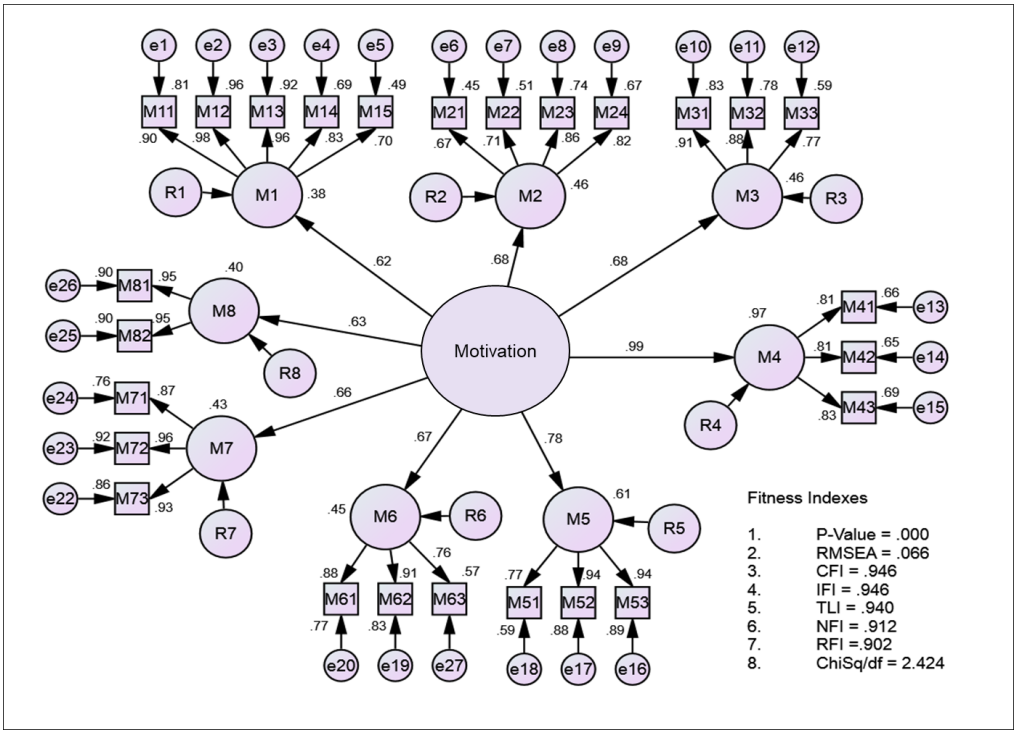

Figure 3. The measurement model for measuring motivation

Then, the CFA analysis evaluated the standardised estimate and squared multiple correlations. The standardised estimate explained the factor loading for each item in the motivation measurement model. The strength of a relationship is defined as in the following Table 6.

Table 7 presents the factor loading for each item in the measurement model that measured the latent construct. The motivation clarified the correlation between the variables and the factors of motivation, and the point to understand the nature of the specific factors. All the related items with the

Table 6

Definition of r coefficient value

r Coefficient Value	Definition of Correlation
.00	Not Exist
.10 - .39	Low
.40 – .69	Moderate
.70 – .99	High
1.00	Complete

Source: Dancey and Reidy (2011)

Table 7

The item correlations in the motivation measurement model

			r	Interpretation
M1	<---	Motivation	.62	Moderate
M2	<---	Motivation	.68	Moderate
M3	<---	Motivation	.68	Moderate
M4	<---	Motivation	.99	High
M5	<---	Motivation	.78	High
M6	<---	Motivation	.67	Moderate
M7	<---	Motivation	.66	Moderate
M8	<---	Motivation	.63	Moderate
M11	<---	M1	.90	High
M12	<---	M1	.98	High
M13	<---	M1	.96	High
M14	<---	M1	.83	High
M15	<---	M1	.70	High
M21	<---	M2	.67	Moderate
M22	<---	M2	.71	High
M23	<---	M2	.86	High
M24	<---	M2	.82	High
M31	<---	M3	.91	High
M32	<---	M3	.88	High
M33	<---	M3	.77	High
M41	<---	M4	.81	High
M42	<---	M4	.81	High

Table 7 *(Continued)*

			r	Interpretation
M42	<---	M4	.81	High
M43	<---	M4	.83	High
M53	<---	M5	.94	High
M52	<---	M5	.94	High
M51	<---	M5	.77	High
M63	<---	M6	.76	High
M62	<---	M6	.91	High
M61	<---	M6	.88	High
M73	<---	M7	.93	High
M72	<---	M7	.96	High
M71	<---	M7	.87	High
M82	<---	M8	.95	High
M81	<---	M8	.95	High

factor loading above 0.60 were maintained in the measurement model. The highest factor loading for the motivation construct was M4 (.99), while the lowest factor loading was M1 (.62). In each component, the highest factor loading for M1 component was M12 (.98), while in M2 component was M23 (.86). Besides, the highest factor loading for M3 component was M31 (.91). The highest factor loading for M4 component was M43 (.83), M5 component with M53 (.94), and M6 component with M62 (.91). For M7 component, the highest factor loading was M72 (.96), while the M8 component with both M81 and M82 (.95).

The squared factor loadings indicated that each factor explained the percentage of the variance in the motivation variable. The values shown in Table 8 indicated the values of squared multiple correlations for the specific items. All items explained the R^2 values that were equal to or higher than 0.40, except for the M1 component (R^2=.38). The item with less than 0.40 R^2 value should be eliminated from the measurement model. However, all items had been retained as the fitness indexes for this motivation measurement model had exceeded the required level (Awang, 2015b).

The value of squared multiple correlations shown in Table 7 confirmed that M4 component (interpersonal relationship) contributed the highest variance in the motivation construct (R^2=.97). While the lowest variance was contributed by the M1 component (R^2=.38), consisted of responsibility items. In the M1 (responsibility) component, the highest variance came from item M12 (accountability value and direct responsibility towards students learning). In contrast, the M2 component (potential, promotion, and reward) explained the

Table 8

The effect size and squared multiple correlation values

	Effect Size (R^2)	Percentage of Variance
M8	.40	40%
M7	.43	43%
M6	.45	45%
M5	.61	61%
M4	.97	97%
M3	.46	46%
M2	.46	46%
M1	.38	38%
M81	.90	90%
M82	.90	90%
M71	.76	76%
M72	.92	92%
M73	.86	86%
M61	.77	77%
M62	.83	83%
M63	.57	57%
M51	.59	59%
M52	.89	89%
M53	.89	89%
M43	.69	69%
M41	.66	66%
M33	.59	59%
M32	.78	78%
M31	.83	83%
M24	.67	67%
M23	.74	74%
M22	.51	51%
M21	.45	45%
M15	.49	49%
M14	.69	69%
M13	.92	92%
M12	.96	96%
M11	.81	81%

highest variance from M23 item (opportunity for promotion). For the M3 component (recognition), the highest variance was M31 (being selected as the "teacher-of-the-month"). While for the M4 component (interpersonal relationship), the highest variance value was M43 (interpersonal relationship/interaction with students). The M5 component (working condition) explained that the highest variance was the M53 item (total of the job to be done). In the M6 component (working environment), the highest variance came from item M62 (condition and location of school buildings). For the M7 component (achievement), the highest variance was from M72 (student achievement), while for M8 component (organisation policies), the highest variance value was M82 (instructional workshops offered and organised by the school).

DISCUSSION AND CONCLUSION

This study examined and validated the measurement model describing contributing motivation factors among primary school teachers, as well as their reliability and validity. The findings assured the reliability and validity of the proposed model. The overall analysis of this structural equation model of motivation recorded the influential factors of responsibility, potential, promotion and reward, recognition, interpersonal relationship, working condition, working environment, achievement, and organisational policies confirmed that this model achieved a good fit.

In conclusion, this instrument is a valid tool to measure motivation factors for the teacher population in primary schools. Besides, this study achieved its objective mainly by creating a systemic model to boost the motivation of teachers. Further research may extend this model to other school environments and may evaluate other areas of its applicability.

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