

Factors driving teacher's innovation: a case study at public high schools in Tangerang Selatan, Indonesia

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Abstract. This study aims to determine the effect of teacher certification, management innovation, and motivation on teacher's innovation at public high school in Tangerang Selatan, Indonesia. Understanding the relationship between teacher certification, management innovation and motivation toward teacher's innovation could help the leader identify the factors driving teacher's innovation in order to do continuous improvement in the process of teaching and learning. The population in this study is all the teachers at public high school in Tangerang Selatan who have been certified, which number is 180. Data were analysed by 2 methods, namely: 1). Descriptive analysis, and 2). Multivariate regression analysis with Structural Equation Modelling (SEM). The results of the study give the following conclusions: (1) Teacher certification has no significant positive effect on teacher's innovation; (2) Management innovation has no significant positive effect on teacher's innovation; and (3) Motivation has significant positive effect on teacher's innovation. However, although teacher certification and management innovation do not contribute directly to the improvement of teacher's innovation, but they enhance motivation and ultimately increase teacher's innovation. Thus, teacher certification and management innovation are still important factor to be managed in order to increase teacher's innovation.

Keywords: teacher's innovation, management innovation, motivation, teacher certification

1. Introduction

Human resources significantly contribute to the success of an organization [13]. Therefore, the program in managing human resources should be formulated properly because human resource development is an investment for future success. One method in developing human resources is education and the teacher plays an important role in education. In education, learning process has to be improved continuously which needs innovation. Innovation is a form of learning [20]. Teaching is a dynamic and interpersonal job. Therefore, innovation plays an important role [1], and is one source of organization's competitive advantages to survive and to be successful in a fast changing and challenging environment [18].

Organizations respond various environmental changes through innovation [17]. Through innovation, new ideas, processes, products and procedures which are beneficial to the workers or organizations are introduced [33]. Innovation can be categorized into 4 types, namely: product, process, organization, and market innovation [3]. These four types of innovation are interrelated. This study focuses on the process innovation. Process innovation emphasizes the creation of improvements in techniques, processes, systems, and procedures [32]. Process innovation aims to improve the quality

of the learning process, which ultimately improves results [19]. Therefore, it is important for schools to find out the factors that drive innovation to improve learning outcomes.

Schools should continuously motivate teachers to innovate. Employees can be encouraged to participate in generating new ideas in order to increase their motivation [23]. Teacher is one of the most important factors in the learning process. That is the reason why teacher's motivation is the main factor determining the effectiveness of the teaching and learning process, and it is also the most important part of organizational success. [27] stated that in the teaching profession, there is the gap between welfare and motivation as the result of different dimensions of demands and resources for the job of teachers' makes [27]. Generally this sector, like other non-profit sector, is not able to offer competitive salaries and other benefits favorable to employees [8], so that the people who work in this sector have lower income. They may have lower commitment than those who work in the profit sector. Therefore, the motivation for non-profit organization is important to manage to keep the performance of the organization remains good. So, organizational and individual success can be expected.

In Indonesia, the government continuously works to enhance teachers' motivation. One of the programs conducted is teacher certification. This program, which has been implemented since 2005, aims to appreciate the professionalism of teachers and at the same time improves their welfare because certified teachers will be rewarded allowances. It is expected that certification program could maintain teachers' motivation, so that it will increase teacher's involvement in improving their performance. But, although the teacher certification program has been implemented, it does not significantly influence teachers' motivation and performance in Central Jakarta [30].

Management innovation benefits organizations for being able to improve long-term competitive performance and competitive advantage. Therefore, schools should carry out management innovations that refer to "the use of new management practices, processes, structures or techniques to achieve organizational goals" [16]. Innovative management seeks to exploit ideas and advice from employees. Management innovation is a continuous improvement management concept. Continuous improvement can best be defined as "the planned, organized, and systematic process of ongoing, incremental, and company-wide change of existing practices aimed at improving company performance" [21]. The term 'management innovation' is often associated with total quality management, business process reengineering, activity based costing, company resource planning, and lean six sigma [5].

Based on the background, research problem can be formulated as follows: (a) does teacher certification affect motivation?; (b) does management innovation affect motivation?; (c) does teacher certification affect teacher's innovation?; (d) does management innovation affect teacher's innovation?; (e) does the teacher certification affect teacher's innovation through motivation?; (f) does the management innovation affect teacher's innovation through motivation?; and (g) does the motivation affect teacher's innovation?

2. Research Method

This research is an explanatory research, which aims to solve the problem. The research used deductive approach. Data are collected through a survey and the instrument used is questionnaire with Likert scale of 1 to 5. The conceptual framework of the research is presented in figure 1.

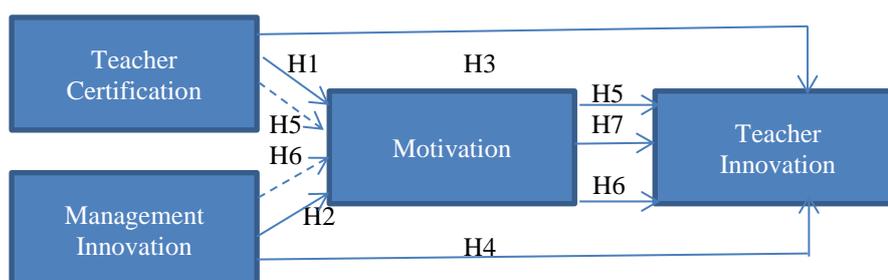


Figure 1. Conceptual framework

Research hypothesis are:

H1: Teacher's Certification has a Significant Effect on Motivation.

Teacher certification is the process of giving teacher certificates to teachers based on their competence. Recognition of teacher competence is one of the factors that can increase motivation, because the recognition of their profession may give sense of pride and appreciated to the teachers [10]. Pride is one component of the esteem factor that affects motivation.

H2: Management Innovation has a Significant Effect on Motivation.

Empowerment of members, mutual trust between members at various levels and transformational leadership will build innovative management [31]. Empowered employees will be motivated to work efficiently and effectively, and it is more profitable to the organization [26]. Leaders often form teamwork within the organizations, so relationships between units or organizations should be built on trust [7]. [5] state the importance of the aspect of trust relationships, which convince employees to exchange knowledge [5], [28]. [2] recognized it as a source of innovation [2]. These trust relationships in turn directly shape the individual's motivation to act as an agent of change for management innovation [4]. In addition, the employees following more training program show higher commitment to the organization and it has a positive impact on the success of the trainees. Training is usually defined as teaching or practicing some skill in order to bring a desired standard of behavior. Therefore, innovative learner organizations need to keep continuation of the training program.

H3: Certification has a Significant Effect on Teacher's Innovation.

Teacher certification significantly influence job satisfaction [30]. Sense of dignified and appreciated of the teachers could be generated by recognition of their profession [10]. This recognition also makes the employee more involved in the organization [25]. The level of employee involvement is influenced by the perception of the benefits they receive [12]. When employees are satisfied and proud of their work, they feel obliged to innovate in their work. [20].

H4. Management Innovation has a Significant Effect on Teacher's Innovation.

Undertaken innovation reflects the involvement and the ability of the organization in innovation [11]. [9] found that human resources management activities can directly affect innovation of the product and process [9]. [35] found a positive impact of various performance of HRD systems on innovation [35]. [14] found training and performance appraisal significantly and positively related to organizational innovation [14].

H5. Teacher's Certification has a Significant Effect on Teacher's Innovation through Motivation.

Certified teachers get additional benefits on top of their salary, which can be expected to increase their job satisfaction. The larger incentives the higher motivation to work harder [15]. This is in line with research done by [30] which shows that "the improvement on the performance of lecturers is primarily driven by factors directly affecting them" [30]. Teachers will be motivated to come up with new ideas in teaching and learning as they feel proud of their work and appreciated by the present of rewards.

H6. Management Innovation has a Significant Effect on Teacher's Innovation through Motivation.

Organizations must facilitate their employees to innovate, as human resources are considered an important capital for innovation [35]. Effective management can motivate and facilitate individuals to innovate [6]. Motivation is a positive mechanism that moves and directs teachers to use their strengths and potentials in achieving organizational goals. Motivation is a process that explains the intensity, direction, and perseverance of organizational members in an effort to achieve goals [22]. Thus, motivation is an important factor to manage in order to improve teacher performance [30]. Innovative management can increase employee motivation and encourage employee participation in generating new ideas.

H7. Motivation has a Significant Effect on Teacher's Innovation.

One of the factors influencing innovation is motivation. To enhance their motivation the teachers should be challenged. Through these challenges teachers are engaged to give new ideas, so teachers are

motivated to improve their performance [29]. Therefore, the motivation will encourage someone to perform a new action in order to achieve a certain better goal.

The locus of the research is Tangerang Selatan. Tangerang Selatan is the second largest city in Banten Province, Indonesia. Tangerang Selatan has 12 public senior high schools. The population of this research is all the public high school teachers in Tangerang Selatan who are certified. The respondents were selected based on the availability and the convenience of certified teachers. The number of questionnaires prepared was 180 and all questionnaires were distributed to the teachers, then collected. Only 156 teachers filled out the questionnaires because some teachers were not in place and some cannot be disturbed. The number of valid questionnaires was 132 pieces. Then, the data are processed based on the principle of descriptive statistics, while for the analysis and testing of hypotheses, used inferential statistical approach. Data processed by using software SPSS 23.0. Multiple Regression was applied to examine the impact of independent variables on motivation and innovation. All hypotheses were tested for their acceptance or rejection.

3. Result and Discussion

Data were analyzed by using 2 methods, namely: 1). Descriptive analysis, and 2). Multivariate regression analysis with SEM.

3.1. Descriptive Analysis

Results of data processing on questionnaire for teacher certification, management innovation, motivation and teacher's innovation relationship are shown in Table 1.

Table 1. Respondent Responses

Variable	Indicator	Index
Teacher Certification (X ₁)	Performance improvements (X11)	2.98
	Does not affect performance (X12)	3.69
	Develop professionalism (X13)	3.13
	Dignified and proud (X14)	3.78
Management Innovation (X ₂)	Leadership (X21)	3.69
	Trust (X22)	4.20
	Empowerment (X23)	3.56
	Training and professional development (X24)	3.61
Motivation (Y ₁)	Like challenge (seeks moderate challenge) (Y11)	4.12
	Do not like to relax (unable to relax) (Y12)	3.69
Innovation (Y ₂)	Innovative behavior (Y21)	3.97
	Initiative (Y22)	3.98

Table 1 shows the average teacher satisfaction index of teacher certification is 3.40. The average satisfaction index of teachers to management innovation is 3.76. The average satisfaction index of teachers on motivation of 3.91 and the teacher's average satisfaction index is 3.98.

3.2. Multivariate Regression Analysis.

3.2.1 Confirmatory Factor Analysis

Confirmatory factor analysis is used to test uni-dimensionality, validity and reliability of construct measurement models that cannot be measured directly, which indicates that certification construct, which is used to form research model, fulfils the criteria that have been set. Similarly, management innovation, motivation and innovation has shown qualification as a good model.

3.2.2. SEM Analysis

After performing confirmatory factor analysis, the next step is to conduct SEM analysis using full model. Analysis of processed data at the stage of a full model SEM was conducted by conformation test and statistical test. SEM using modified – full model can be seen in Figure 2.

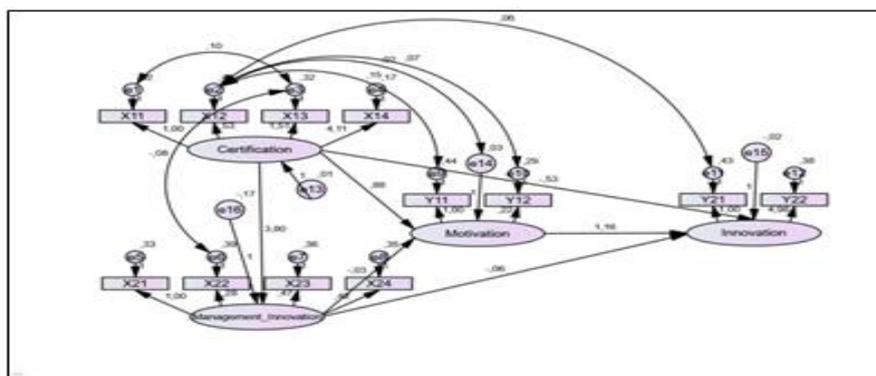


Figure 2. SEM– using Modified

Data processed using modified – full model SEM can be summarized in Table 2.

Table 2. SEM (Modified) Feasibility Test Result

Goodness of Fit Index	Cut-off Value	Analysis Result	Model Evaluation
Chi Square (X^2)		166,222	
Probability	$\geq 0,05$	0,665	Good
RMSEA	≤ 0.08	0.011	Good
GFI	≥ 0.90	0,911	Good
AGFI	≥ 0.90	0,955	Good
CMIN/DF	≤ 2.00	0,954	Good
TLI	≥ 0.90	0,981	Good
CFI	≥ 0.90	1.00	Good

Based on the results in Table 2, it can be seen that the model used was acceptable, since chi-square value obtained was 166,222 with probability value of 0.665, indicating that structural equation model was good enough. Measurement index of RMSEA, GFI, AGFI, CMIN / DF, TLI and CFI indicated that the model tested had already met the required criteria.

3.2.3. Hypothesis Testing

Hypothesis testing to prove causality of relationship H1, H2, H3, H4, H7 based on Critical Ratio (CR) value of SEM analysis result, could be seen on Table 3. Hypothesis testing of H5 and H6 was using Standardized Indirect Effect measurement, could be seen on Table 4.

Table 3. Hypothesis Testing Based on Critical Ratio Value

Variable	Estimate	S.E	C.R.	p-value
Motivation<--- Certification	-0.056	1.18	-2.54	.033
Innovation <--- Certification	-0.818	.39	-2.22	.026
Motivation<--- Management	1.221	.71	2.83	***
Innovation <--- Management	-1.113	15.67	-1.45	.889
Innovation <--- Motivation	1.078	.45	2.41	***

Hypothesis testing based on Table 3 shows that management innovation affects motivation, where magnitude of the estimation coefficient for management innovation variable on motivation is 1.121.

This indicates that if management innovation variables increase by 1.0 then the motivation will increase by 1.121. Table 4 also shows that variable motivation affects innovation, where magnitude of the estimation coefficient for motivation variable on innovation is 1.078. This indicates that if motivation variables increase by 1.0 then the innovation will increase by 1.078.

Teacher certification does not affect motivation and teacher's innovation. The coefficient estimate of teacher certification variables on motivation is approximately -0.056 ($CR < 1.96$, not significant). The coefficient estimate of teacher certification variables on teacher's innovation is approximately -0.818 ($CR < 1.96$, not significant). This research also shows that management innovative does not significant effect on teacher's innovation. The coefficient estimate of management innovative variables on teacher's innovation is approximately -1.113 ($CR < 1.96$, not significant). Thus it can be stated that the factors that affect teacher's innovation is the motivation, and the motivating factor is management innovation.

Table 4. T-Test result (CR) on Teacher Certification and Management Innovation Variable towards Teacher Innovation through Motivation (Standardized Indirect Effect)

Variable	Variable	Direct Effect	Indirect Effect	Total Effect
Certificate	--> Innovation	-1.213	2.332	0.165
Management	--> Innovation	-2.444	2.884	0.353

This study showed that teacher certification variable had significantly influenced innovation through motivation. Table 4, explains the magnitude of the estimated coefficient of certificate variable on teachers' innovation through motivation with a direct effect approximately -1.213 and indirect effect approximately 2.332 with total effect of 0.165 . Management innovation variable had significantly influence innovation through motivation. Table 5, explains the magnitude of the estimated coefficient of management innovation variable on teachers' innovation through motivation with a direct effect approximately -2.444 and indirect effect approximately 2.884 with total effect of 0.353 . Thus the results show that teacher certification and management innovation does not affect teacher innovation directly, but through increased motivation. Therefore, the research shows that teacher certification and management innovation does not influence teacher innovation directly, but through the increase of motivation.

4. Conclusion

This study shows that teacher certification is not directly beneficial either to improve teacher motivation or teacher innovation. This is in line with the research on teachers in Central Jakarta by [30] which stated that teacher certification does not increase teacher performance, but improves teacher job satisfaction [30]. Although teacher certification does not increase teacher motivation and teacher innovation directly, but teacher certification had significantly influenced teacher innovation through motivation. Therefore, it is important for school organizations in Tangerang Selatan to manage teachers' motivation so that teachers have a passion for innovation in teaching and learning.

The results also show that it is important for school organizations to implement management innovation because management innovation can improve teacher motivation that ultimately improves teacher innovation. Motivation is an important factor in teacher work, which encourages to improve the efficiency and effectiveness of the classroom as well as improving student achievement. Motivated teachers will have a willingness to participate and contribute to the progress of the educational process. When teachers are motivated to make improvements in teaching and learning, new ideas (innovations) will emerge.

Management innovation requires leaders who can empower teachers and build a culture of trust within the organization, so as to enhance teachers' innovation. Thus the school will grow into a learning organization. Seen the important role of leaders in management innovation. As stated by [24], that a leader's behavior has a strong effect on follower behavior. Leaders who make their organization a learning organization, will make the behavior of followers as well as learners [24]. The results show

the need for teachers to be challenged, because with the challenge given the teacher will be encouraged to take action to achieve these challenges. This is in line with research of [34] which states with the motivation, then someone encouraged to perform an action to achieve a certain goal [34].

5. References

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