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The Development of Innovative Leadership Indicators of the School Administrators in the Education Sandboxes

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Abstract: The objectives of this research are as follows: (1) to study the factors and indicators of the innovative leadership of school administrators in education sandboxes; (2) to examine the congruence of the measurement model of the innovative leadership of school administrators in education sandboxes and to develop a manual for using the indicators of innovative leadership of school administrators in education sandboxes. This study was mixed methods research and divided into three phases. The first phase was the building and development of innovative leadership indicators of school directors in education sandboxes. The second phase was the research hypothesis assessment. The data was collected from a sample group of 830 school directors and teachers in education sandboxes were analyzed with statistical software and LISRELv.8.72 software. The third phase was the development of a manual for using the indicators of the innovative leadership of the school administrators in education sandboxes, which received a quality assessment from nine experts, who were asked to assess the quality according to the standards of Stufflebeam (1981) in four aspects: utility, possibility, appropriateness, and complete accuracy. The results were analyzed by identifying standard statistics, such as mean and standard deviation (SD). The research results revealed the following: (1) the innovative leadership indicators of school administrators in the education sandboxes was comprised of seven main factors, 23 sub-factors and 81 indicators, which can be classified as 12 indicators on atmosphere building for innovation creation, 16 indicators on the selection of innovative creators, 23 indicators of innovation team building, 14 indicators on innovation team management, six indicators of innovative skill development, six indicators of the formation of supporting networks and four indicators on rewards and benefits; (2) the developed measurement model on innovative leadership of school administrators in education sandboxes showed a congruence with the empirical data, with a chi-square = 109.45, with no statistical significance, df = 100, GFI = 0.99, AGFI = 0.97; and (3) the appropriateness of the development of the manual for using the indicators of the innovative leadership of school administrators in education sandboxes was at the highest level and could be used to build an evaluation criteria for the innovative leadership of school administrators.

Keywords: Development of indicators, Innovative leadership, School administrators, Education sandboxes

Introduction

In the last century, the advancement of technology and innovation has led the world to changes in various aspects including economy and societies. Thailand needs to possess human resource with quality, knowledge, capabilities, and skills in responding to and coping with such changes in order to adapt themselves for making a happy living with stable occupational income within the changing rules and regulations. With the higher living standard especially in the rapidly changing world, the related systems and supporting factors are needed in the sector of educational system and skill development in accordance with human development at each age. In addition, the emphasis should be on public service, infrastructures, technology and innovation in order to upgrade Thailand's ownership of technology and innovation as well as to increase the competitive capabilities at the national and international levels. Accordingly, the 20-year National Strategy B.E. 2561 – 2580 (2018 - 2037) is the first Thai national plan according to the constitution of the Kingdom of Thailand which leads to implementation for Thailand to achieve the mission, "Thailand is the country with stability, prosperity, and sustainability; and becomes the developed country according to the development philosophy of economic sufficiency". The National Strategy prescribes the competitive capabilities in 1 of 6 main strategies for upgrading the country development to the country with high income within 20 years. The focus is on research and innovation development for applying new technology in the current production and service sector for increasing productivity and values (Government Gazette, 2018). Education also

needs to be managed to keep up with the rapid changes in the 21st century. As the education plays important roles to gain competitive advantages in the global stage under the dynamic economic and social systems, different countries around the world give importance and devote to the educational development for enhancing their human resources to cope with changes in the economic and social systems at the national, regional, and global levels. As a result, the education needs to be reformed into "Education 4.0: Learners as innovation creators" by emphasizing on manpower production and development as well as research and innovation in order to increase Thailand's competitive capabilities according to Strategy 2 in the National Plan B.E. 2560 – 2579 (2017 – 2036) (Office of the Education Council, 2018).

Paitoon Sinlarat (2011) mentions about the aspects and roles of the leaders at the age of changes that only their appropriate abilities, skills, behaviors, and knowledge to cope with situations are not enough, but the leaders should also be thought leaders by thinking up ideas and applying other ideas for developing their thoughts in a clear and valuable way in order to reflect the organizations' directions, goals, and missions clearly. Therefore, the educational administrators should modify their educational management to cope with changes in the concrete directions for the effectiveness of the educational management, leading to productive / innovative mind in the educational sector. The administrators at the age of knowledge society must take the roles to get insights about the organizational situations for determining visions, directions, and implementation to achieve the goals. They should communicate new ideas or directions for enhancing the personnel's trust and faith; and build teamwork from the internal and external people. The organizational implementation should be decentralized by starting from the gradual success, and such decentralization should be in accordance with the new perspectives. In addition, the personnel's motivation and encouragement should be reinforced, and the improvement should be on assessment, supervision, records, and dissemination for the development of the innovation creation in the organizations. Innovative leadership is the expression of leaders who are capable to access complicated problems or opportunities, and discover new ways for new implementation. The leaders or the administrators must have innovative intelligence for better responding to and solving problems in real situations and for creating more innovation in the organizations (Weiss and Legrand, 2011, 36 – 37). Moreover, Onanong Rotwatthanabun (2010, 179) suggests that the innovative leadership is an attribute of the leaders who use their power of the desirable attributes in competencies, personalities, roles, and social aspects for driving the personnel to create innovation and value added for the organizations. Similarly, Van de Ven and Chu (1989) state that innovative leadership is the leaders' expression of the desirable attributes with creative thinking, clarification of mission and responsibility, reflection on the performance appraisals, work concentration, relationship with qualified personnel, and trust in the organizational members.

The current school administration has to be changed in methods and ways of management in accordance with the changing situations. The school administrators must have knowledge, abilities, skills, and high experience in administration (Wirot Sanrattana, 2012, 153 – 159). The school administrators are regarded as important people because they take the roles of chiefs and leaders, and the school success depends on their abilities (Benjamaphorn Kheasuwan, 2014, 1). The school administrators need to possess innovative leadership as an important factor because they are responsible for supporting and promoting the school personnel to create ideas and ways for making new things and methods useful for the schools (Kunchalee Chongcharoen, 2017, 5). This is consistent to the concept that the school administrators are important in driving innovation creation, development, and

application in the educational management in an effective ways. Such administrators are innovative leaders equipped with necessary creative thinking for developing new useful things for the organizational development. This skill is called "innovative thinking" which is the fundamental thinking for creating innovation in the organizations, and it should be fostered to teachers and school personnel. The educational management relies on cooperation from the teachers and school personnel to drive the outcome with knowledge management for making the organizations to become innovative organizations. Accordingly, learning quality is regarded as the innovative products from the effective innovative management (Sukanya Chamchoi, 2017, 4 – 5). According to the strategies for the educational development of Ministry of Education in basic education and leadership development, the school administrators and the teachers should be developed with community participation, and the strategies specify that the school administrators should be developed to gain desirable leadership attributes and competences. Innovative leadership is one of the indicators of the school administrators in the basic education. The school administrators should be raised on their awareness for changing attitudes and have ability to change themselves for gaining innovative leadership in order to learn new skills. In the innovative leadership development, the leaders are enhanced to use their creative ideas for the benefits of the schools in problem-solving and innovation creations in schools. The innovative leadership of the school administration is an outstanding attribute for changing the organizational culture of the schools to the innovative cultures (Ministry of Education, 2016, 63 – 64).

In 2011 – 2015, Office of National Education Standards and Quality Assessment (Public Organization) (ONESQA) conducted the 3rd round of the external school quality assessment. Accordingly, the results showed that the standards of the schools at the pre-primary, primary, secondary, vocational, tertiary, and district informal education were approved higher than 75.00% i.e. 96.81%, 77.47%, 79.49%, 95.27%, and 89.81% respectively. Such assessing results are unstable and unsatisfactory. Regarding the approved schools, the assessing results reflected on the unsatisfactory quality of the students from the indicators of learning achievement in the primary and secondary schools had the average scores at the moderate level, especially on the learning achievement of the science subject area (Office of the Education Council (2017, 4). Based on these findings, it can be concluded that the school management cannot achieve the learning objectives at the age of changes, and the students should be more developed on their skills and desirable attributes in creative thinking, innovation creation, and invention as well as on research skills applicable for real uses (Office of the Education Council, 2017, 4). Consistently, the concept of Sherwood (2001) explains that the administrators are very important in encouraging innovation creation in the organizations and in developing the students to gain desirable attributes. With the administrative power, the administrator should give importance and pay attention in promotion and participation of the innovative processes, and the roles of the administrators in the innovative process are to protect creative ideas until they are assessed. In addition, the administrators should sacrifice time for promoting different innovative activities as well as for making the organizational personnel perceive the importance of innovation for survival or competition of the organizations. Moreover, the administrators should be able to perform as coaches to stimulate the personnel's inspiration, and they should be open-minded to allow the personnel to create new things and patient to the personnel to investigate or experiment. Furthermore, the administrators should understand that innovation creation need financial support and the budget plans should be flexible. The investment should be on personnel trainings for equipping them with innovative knowledge and skills in order to become

innovation creators. These characteristics are the summary for the attributes of the innovative leadership of the school administrators. Phiriya Saisirisuk (2018) proposes the concept that innovative leadership of the school administrators has influence on the work process of the school personnel for creating new innovation and achieving goals in order to make change and value added for the schools. The development for the school quality includes 1) visions on changes, 2) creative thinking, 3) teamwork and participation, 4) ethics and verifiability, 5) risk management, and 6) atmosphere of innovative organization.

Ministry of Education perceives the importance of the school development according to the National Strategy to develop the learners to be innovators so Ministry of Education legislates Innovation Educational Area Act B.E. 2562 (2019) (Government Gazette, 2019). This Act involves with educational management conforming to the contexts of each area to elevate the national fundamental education for citizen development. The innovation educational areas called education sandboxes include schools in the provinces of Si Sa Ket, Satun, Rayong, Chiang Mai, Kanchanaburi, and the provinces in the southern border areas (Pattani, Yala, and Nara Thiwat). The main concept is for the students in the education sandboxes to receive education with quality and suitability in consistence to the identities of the communities in the areas. These education sandboxes are studied to expand to other areas with 4 main goals: 1) to increase learning achievement of the students in the education sandboxes in 3 aspects i.e. attitudes, important skills, and knowledge for expanding the results to other areas; 2) to reduce inequality of educational quality by upgrading learning achievement of students with poor learning achievement and poor families; 3) to develop the provincial innovation educational management and to expand the results of the educational innovation in terms of learning management policies and school management to the national educational policies and other areas such as curriculums, textbooks, learning media, school testing and evaluation, personnel, finance, and congruence of various management; and 4) to cooperate among the government sector, local administration organizations, the private sector, and the public sector for managing education. In the academic year of 2020, there has been 432 pilot schools of the education sandboxes in 8 provinces, affiliated under Office of the Basic Education Commission, Office of the Private Education Commission, and Local Administration Organization (Office of Education Sandbox, 2021) (online paper). The school administrators, teachers, educational personnel of the schools in the education sandboxes according to Innovation Educational Act B.E. 2562 (2019) (Government Gazette, 2019) in the provinces of Si Sa Ket, Satun, Rayong, Chiang Mai, Kanchanaburi, and the provinces in the southern border areas (Pattani, Yala, and Nara Thiwat). The total number of the population was 84, 951 people i.e. 3,527 school administrators in the basic education; and 81,424 teachers and educational personnel. In such educational management according to the Innovation Educational Area Act B.E. 2562 (2019), the people who play important roles in the school management are the school administrators. They have to possess innovative leadership for changing the schools into innovative schools with sustainability. Therefore, the school administrators in the education sandboxes must be able to manage education by facilitating all sectors to collaborate in education management with the aim to create educational innovation and to develop learning quality. According to the documentary study and previous research, the studies on indicators of innovative leadership of the school administrators are not found.

As a result, the researcher as an educational personnel is aware of the importance on developing the indicators of innovative leadership of the school administrators in the education sandboxes. The study results are useful as guidelines for self-development of the

school administrators in the education sandboxes and related agencies to use as information for setting policies and direction for development of the school administrators.

The purposes for developing the indicators of the innovative leadership of the school administrators in the Innovation Educational Area were 1) To study the factors and the indicators of the innovative leadership of the school administrators in the education sandboxes. 2) To examine the congruence of the measurement model of the innovative leadership of the school administrators in the education sandboxes. 3) To develop the manual for using the indicators of the innovative leadership of the school administrators in the education sandboxes.

Research methodology

The indicators of the innovative leadership of the school administrators in the education sandboxes were developed in the mixed-method research. The research duration was during January 2020 – March 2021, in 3 phases according to the research objectives.

Phase 1: Indicator development on the innovative leadership of the school administrators in the education sandboxes. In this phase, the researcher studied the related papers and previous research in combination with the data collection from 10 experts in the focus group discussion on the issues about factors and indicators of the innovative leadership of the school administrators in the education sandboxes. Then, the results from the documentary study and focus group discussion were used for determining the research framework.

Phase 2: Hypothesis testing with the empirical data. In this phase, the questionnaire was developed as a research instrument on "the indicator development of the innovative leadership of the school administrators in the education sandboxes". This questionnaire was designed in the 5-level Likert scale with 81 items, and it was validated on content validity by 5 experts to find the congruence among the objectives with the index of item objective congruence. The IOCs were found at the range of 0.71 – 1.00 at the confidence level of 0.89. Then, the instrument was used for collecting the data for the confirmatory factor analysis from 830 informants who were the school administrators, teachers, and educational personnel of the schools in the education sandboxes in the academic year of 2020. The assessing data were analyzed into means and standard deviation and the confirmatory factor analysis was used for testing the congruence of the measurement model on innovative leadership of the school administrators in the education sandboxes.

Phase 3: Development of the manual for using the indicators of innovative leadership of school administrators in the education sandboxes. In this phase, the researcher studied the related papers and synthesized the resulting data for drafting the manual for using the indicators. The manual included 8 components: 1) explanation, 2) objectives, 3) usefulness of the manual, 4) background and significance, 5) definitions of the factors, variables, indicators, and sources of the indicator data, 6) guidelines for using the indicators for assessment, 7) an assessment form on the innovative leadership of the school administrators in the education sandboxes, and 8) a form on the assessment result summary about the innovative leadership of the school administrators in the education sandboxes. After that, the developed manual was submitted to the advisors for consideration and suggestion before being validated by 9 experts. The used instruments included the appropriateness assessment of the manual for using the indicators according to Stufflebeam's

(1981) assessment standards in 4 aspects: utility, possibility, appropriateness, and complete accuracy, which is a standardized quality assessment approach that can be referenced internationally. The assessing data were analyzed into means and standard deviation by using the interpretation criteria on the appropriateness of the manual with the 5-level Likert scale. Finally, the manual was improved into the final version according to the experts' suggestion.

Research results

1. The results about the indicator development on the innovative leadership of the school administrators in the education sandboxes consisted of 7 main factors with 81 indicators of the sub-factors. These results are summarized as follows.

1.1 The appropriateness was found at the 'much' and 'most' levels with the indicator of atmosphere building for innovation creation (EN) which included 3 sub-factors with12 indicators (EN11 – EN32): 1) building atmosphere in the organization (EN1), 2) building atmosphere for creative work (EN2), and supporting tools and equipment for innovation creation (EN3).

1.2 The appropriateness was found at the 'much' and 'most' levels with the indicator of selection of innovative creators (PE) which included 6 sub-factors with 16 indicators (PE11 – PE63): 1) process of personnel selection (PE1), 2) role and duty (PE2), 3) personalities (PE3), 4) work experience (PE1), 5) conceptualization (PE5), and 6) work performance (PE6).

1.3 The appropriateness was found at the 'much' and 'most' levels with the indicator of innovation team building (TE) which contained 5 sub-factors with 23 indicators (TE11 – TE53): 1) value creation in the team (TE1), 2) development of problem-solving skills (TE2), 3) self-discipline of the team members (TE3), 4) relationship maintenance in the work units (TE4), and 5) interaction with the work units inside and outside the organizations (TE5).

1.4 The appropriateness was found at the 'much' and 'most' levels with the indicator of innovation team management (MA) which had 3 sub-factors with 14 indicators (MA11 – MA35): 1) team management (MA1), 2) promotion of creative thinking (MA2), and 3) performance assessment (MA3).

1.5 The appropriateness was found at the 'much' and 'most' levels with the indicator of innovative skill development (SK) included 2 sub-factors with 6 indicators (SK11 – SK22): 1) building necessary skills (SK1), and 2) Transfer from the experts (SK2).

1.6 The appropriateness was found at the 'much' and 'most' levels with the indicator of formation of supporting networks (NE) consisted of 2 sub-factors with 6 indicators: (NE11 – NE23): 1) internal network building (NE1), and 2) external network building (NE2)

1.7 The appropriateness was found at the 'much' and 'most' levels with the indicator of rewards and benefits (WN) included 2 sub-factors with 4 indicators (WN11 – WN22): 1) recognition and valuing (WN1), and 2) suitable and challenging reward giving (WN2).

2. The results about the congruence of the model developed from the empirical data for measuring the innovative leadership of the school administrators in the education sandboxes are summarized as follows.

2.1 The confirmatory factor analysis was performed on the innovative leadership of the school administrators in the education sandboxes. Before the analysis, the relationship among 81 indicators was analyzed and found that the Pearson's correlation coefficient of the innovative leadership of the school administrators in the education sandboxes showed the positive relationship at the statistical significance level of .04 ($p < .01$)

2.2 The second order confirmatory factor analysis was also performed for developing the indicators of the innovative leadership of the school administrators in the education sandboxes. Before the analysis, the researcher analyzed the relationship among 23 sub-factors and found that the Pearson correlation coefficient of the indicator of each factor had the positive relationship at the statistical significance at .01 ($p < .01$) in all factors. The confirmatory factor analysis was performed with 81 indicators in 7 models: atmosphere building for innovation creation, selection of innovative creators, and innovation team building, innovation team management, and innovative skill development, formation of supporting networks, and rewards and benefits. The analyzing results revealed the congruence with the empirical data with the Chi-Square χ^2 at 109.45 in which the difference from zero was not significant statistically; the df (degree of freedom) was at 100; and χ^2 / df at 1.094 was considered according to the criteria i.e. less than 2. In addition, the results showed the GIF (goodness of fit index) at 0.110, the AGFI (adjusted goodness of fit index) at .97, and the RMSEA (root mean square error of approximation) at 0.0110. Therefore,

Table 1 The second order confirmatory analysis results to develop indicators of innovative leadership of the school administrators in the education sandboxes

indicators	b(SE)	R^2	FS	e
The first order confirmatory analysis				
building atmosphere in the organization (EN1)	0.89**(0.02)	0.78	0.33	0.22
building atmosphere for creative work (EN2)	0.92**(0.02)	0.85	0.55	0.15
supporting tools and equipment for innovation creation (EN3)	0.84**(0.02)	0.71	0.28	0.29
process of personnel selection (PE1)	0.88**0.02)	0.77	-0.12	0.23
role and duty (PE2)	0.83**(0.02)	0.69	-0.09	0.31
personalities (PE3)	0.87**(0.02)	0.76	0.00	0.24
work experience (PE4)	0.88**(0.02)	0.77	0.03	0.23
conceptualization (PE5)	0.87**(0.02)	0.75	0.07	0.25
work performance (PE6)	0.80**(0.02)	0.64	0.12	0.36
value creation in the team (TE1)	0.92**0.02)	0.85	0.02	0.15
development of problem-solving skills (TE2)	0.94**(0.02)	0.87	0.06	0.13
self-discipline of the team members (TE3)	0.94**(0.02)	0.88	0.14	0.12
relationship maintenance in the work units (TE4)	0.93**(0.02)	0.86	-0.03	0.14
interaction with the work units inside and outside the organizations (TE5)	0.90**(0.02)	0.80	0.11	0.20
team management (MA1)	0.92**0.02)	0.85	-0.04	0.15
promotion of creative thinking (MA2)	0.94**(0.02)	0.88	0.09	0.12
performance assessment (MA3)	0.94**(0.02)	0.88	-0.01	0.12
building necessary skills (SK1)	0.96**0.02)	0.92	0.02	0.08
Transfer from the experts (SK2)	0.93**(0.02)	0.87	0.03	0.13
internal network building (NE1)	0.91**0.02)	0.82	-0.03	0.18
Transfer from the experts (NE2)	0.86**(0.02)	0.74	0.08	0.26
recognition and valuing (WN1)	0.89**0.02)	0.79	0.06	0.21
suitable and challenging reward giving (WN2).	0.88**(0.02)	0.78	0.01	0.22
The second order confirmatory analysis				
Atmosphere building for innovation creation (EN)	0.94**(0.03)	0.89	-	-
Selection of innovative creators (PE)	0.95**(0.03)	0.90	-	-
Innovation team building (TE)	0.99**(0.03)	0.99	-	-
Innovation team management (MA)	0.95**(0.03)	0.91	-	-
Innovative skill development (SK)	0.93**(0.03)	0.87	-	-

Table 1 (continue)

indicators	b(SE)	R^2	FS	e
Formation of supporting networks (NE)	0.92**(0.03)	0.85	-	-
Rewards and benefits (WN)	0.93**(0.03)	0.87	-	-
Chi-Square = 109.45 df = 100 p = 0.24355				
GFI = 0.99 AGFI = 0.97 RMSEA = 0.0110 RMR = 0.0035				

**p <.01

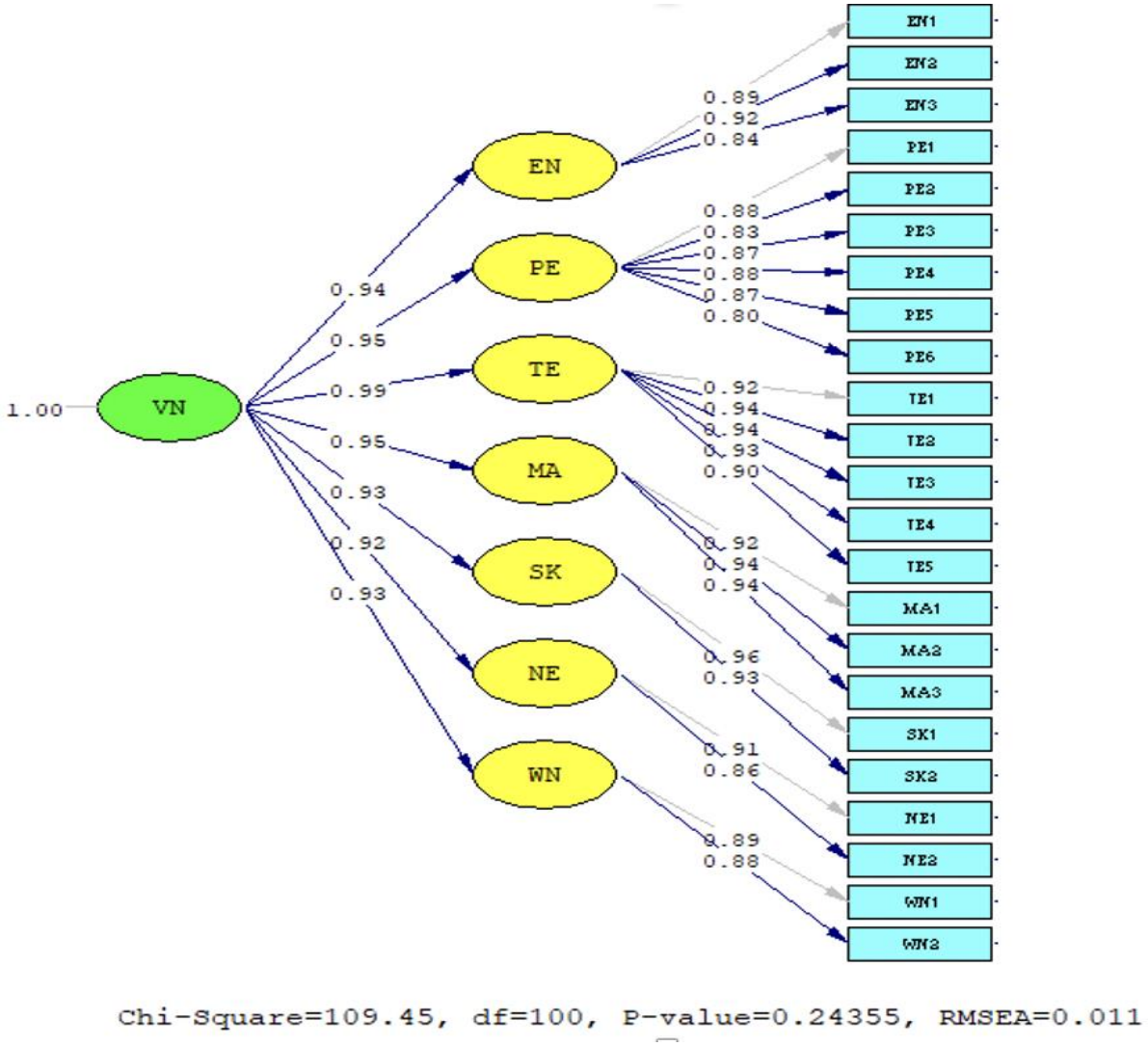

Figure 1: The second order confirmatory analysis results in the measurement model for the indicators of the innovative leadership of the school administrators in the education sandboxes

3. According to the results about the development of the manual for using the indicators of the innovative leadership of the school administrators in the education sandboxes, the appropriateness of the manual was validated by 9 experts. The results showed that the quality of the manual for using the indicators of the innovative leadership of the school administrators in the education sandboxes was at the 'most' level in overall (mean = 4.72, S.D. = 0.45). In each aspect, the quality was found at the 'most' appropriate level in

all factors. The highest mean was found in appropriateness (mean = 4.83, S.D. = 0.38), followed by utility (mean = 4.74, S.D. = 0.45) possibility (mean = 4.72, S.D. = 0.46), and complete accuracy (mean = 4.63, S.D. = 0.49) respectively. When considering each item, all items were at the 'most' level, and the highest means was in appropriateness of the language use in the manual for the target groups (mean = 4.89, S.D. = 0.33).The following rank was on the clear and easy-to-understand explanation; the achievable objectives; the assessment form applicable with the target groups; the background, concepts, and importance appropriate for the current situations (mean = 4.78, S.D. = 0.44). The next rank was on the usefulness of the manual covering the stakeholders with clear specification for using the indicators in assessment; the assessment form of the innovative leadership of the school administrators in the education sandboxes was congruent to the factor definitions; and the assessing results summary form of the innovative leadership of the school administrators in the education sandboxes was accurate according to the academic principles (mean = 4.67, S.D. = 0.50). Lastly, the lowest mean was on the indicator definitions and data sources with accuracy according to the academic principles (mean = 4.56, S.D. = 0.53).

Discussion

The development of the indicators for the innovative leadership of the school administrators in the education sandboxes are discussed as below.

1. The results on the indicator development showed that all the developed indicators were at the 'more' and 'most' appropriate level with the means of more than 3.5. Therefore, these indicators were selected and included in the relationship structural model of 7 factors: 1) atmosphere building for innovation creation, 2) selection of innovative creators, 3) innovation team building, 4) innovation team management, 5) innovative skill development, 6) formation of supporting networks, and 7) rewards and benefits. These factors are the main factors of the innovative leadership of the school administrator in the education sandboxes in accordance with the research framework and hypotheses. These indicators were obtained from the study on related concepts, theories, and research about the innovative leadership as well as the research procedures for obtaining the indicators for the innovative leadership of the school administrators in the education sandboxes. Accordingly, the data from the focus group discussion were used for drafting the indicators and forming the questionnaire to test the indicator quality on the innovative leadership of the school administrators in the education sandboxes. This questionnaire was validated by 7 experts on content validity, appropriateness, and congruence of the research instrument. This is consistent to the concepts and studies of Wirot Sanrattana (2011), Kanlayarat Methiwirawong (2014), Nathaphorn Suemak (2016), Mata Kaewseng (2016), Aswin Senichai (2017), and Thitinan Nanthasi (2019). The indicator development procedure can be summarized into 6 steps: 1) setting the objectives of the indicator development, 2) defining the indicators, 3) collecting the data, 4) forming the indicators, 5) examining the indicator quality, and 6) presenting the report.

2. The results were on the congruence of the model for measuring the innovative leadership of the school administrators in the education sandboxes with 7 main factors, 23 sub-factors, and 81 indicators. All 81 indicators were found with the means at the 'more' level upward i.e. higher than the criteria. Therefore, these factors are the indicators of the innovative leadership of the school administrators in the education sandboxes. These findings are consistent to the results of the confirmatory factor analysis of the 81 indicators

with the factor loading more than .30 at the statistical significance of .01, indicating that the sub-factors can measure the main factors because the variables has little errors according to the analyzing results on the part of the forecasting coefficient (R^2) (Supphamas Angsuchot et al., 2014). The main factor of innovative team building (TE) with the highest factor loading (b(SE) = 0.99) might be due to the school administrators' desirable attribute of the innovative leadership in using innovation for education management to build values in teams and to develop problem-solving skills of themselves, teachers and educational personnel; to be aware of leadership and team members when changes are necessary; to promote self-discipline of the team members; and to maintain relationship among the internal and external work units. This is consistent to Manlika Witchukorn Ingkharat (2010) and Suwanna Phongphongphun (2015) that the school teamwork needs to have the same goals, mutual trust, participation, respect, and internal and external interaction. These factors are the main factors of the innovative leadership of the school administrator in the education sandboxes in accordance with the conceptual framework and hypotheses. These indicators were obtained from the study on related concepts, theories, and research about the innovative leadership as well as the research procedures for obtaining the indicators for the innovative leadership of the school administrators in the education sandboxes. Accordingly, the data from the focus group discussion were used for drafting the indicators and forming the questionnaire to test the indicator quality on the innovative leadership of the school administrators in the education sandboxes.

3. The results were on the development of the manual for using the indicators of the innovative leadership of the school administrators in the education sandboxes. The appropriateness of the manual for using the indicators were analyzed and found the overall mean at the 'most' level according to the criteria. This is because the research revised the manual according to the suggestion of the thesis advisors and 9 experts. In addition, the factors and the indicators were operationally defined as described in the manual. This manual has been revised by basing on the experts' suggestions in Phase 1 and Phase 2, so the factors and language used in the manual are complete and congruent to the objectives for measuring the innovative leadership of the school administrators in the education sandboxes. The manual is composed with 8 components: 1) explanation, 2) objectives, 3) usefulness of the manual, 4) background and significance, 5) definitions of the factors, variables, indicators, and sources of the indicator data, 6) guidelines for using the indicators for assessment, 7) an assessment form on the innovative leadership of the school administrators in the education sandboxes, and 8) a form on the assessment results summary about the innovative leadership of the school administrators in the education sandboxes. This is consistent to the study of Thitinan Nanthasi (2019) which proposes that the manual for using the indicators of the innovative leadership of the school administrators consists of 8 components: 1) explanation, 2) objectives of the manual, 3) usefulness of the manual for using the indicators, 4) background, concepts, and significance, 5) definitions and contents of the main factors, sub-factors, indicators, and sources of the indicator data, 6) guidelines for using the indicators for assessment, 7) an assessment form on the innovative leadership of the school administrators, and 8) a form on the assessment result summary about the innovative leadership of the school administrators in accordance with Office of the Public Sector Development Commission (2016). The suggestions for using the research results composed of 1) Policies should be set on promotion and development for the school administrators to possess innovative leadership by using the indicators developed in this study as guidelines for the implementation at the levels of areas, affiliations, and ministries. 2) The agencies at the area level can use the developed manual for using the indicators for assessing the

innovative leadership of the school administrators and for further development and promotion according to group assessing levels. The suggestions for future research composed of 1) The instrument should be developed for measuring the innovative leadership of the teachers in the different educational levels. 2) The structural equation model should be researched on the innovative leadership of the school administrators at the basic educational level and the other educational levels.

Conclusion

The innovative leadership indicators of the school administrators in the education sandboxes comprise 7 main factors, 23 sub-factors and 81 indicators. The developed measurement model on innovative leadership of the school administrators in the education sandboxes shows congruence with empirical data, with chi-square = 109.45 with no statistical significance, df = 100, GFI = 0.99, AGFI = 0.97. The appropriateness of the development of the manual for using the indicators of the innovative leadership of the school administrators in the education sandboxes is the highest level and can be used to build an evaluation criteria of school administrators' innovative leadership.

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