

Confirmatory Factor Analysis of the 21st Century Flexibility and Adaptability Skills of the School Administrators under the Office of the Basic Education Commission

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ABSTRACT

The skills of citizenship in the 21st century is an extremely important development that will pose perfectly, whether it's about knowledge, attitudes, and behaviors that are undesirable. As well as education management, one of the key players in the school administrators who are considered to be the great generals in pushing the organs of education. Therefore,

This research aims to develop the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission and to examine the harmony of the 21st Century Flexibility and Adaptability Skills model of the school administrators with empirical data. The sample were administrators and secondary school teachers. Northeast Under the Office of the Basic Education Commission, 260 people. they were selected by multi-stage random sampling. The research instrument was a questionnaire with a confidence value of 0.91. The data were analyzed using basic statistical calculation and the second Confirmatory Factor Analysis with the LISREL package. The results of the research found that;

The 21st Century Flexibility and Adaptability Skills of the school administrators had 5 components and 26 indicators. The weight of the components ranged from 0.83-0.97 and was statistically significant at 0.01 for all values. Arrange the weight of importance from greatest to least as follows: the creative conflict management skills, and the Adaptation skills to roles and responsibilities (0.97), the Flexibility work skills (0.95), the Adaptation skills to cultural differences (0.87), and Adaptation skills to changes (0.83). The components weight values of all indicators were high and statistically significant at the level. 0.01, and determined from the harmonious index values as follows $\chi^2 = 214.86$, $df = 225$, Relative $\chi^2 = 0.95$, P-value = 0.67, RMSEA = 0.00, GFI = 0.94, AGFI = 0.91, RMR = 0.01. Thus, it is shown the model of the 21st Century Flexibility and Adaptability Skills of the school administrators, that was developed can be used to describe the 21st Century Flexibility and Adaptability Skills of the school administrators and harmonize with empirical data.

Keywords: Flexibility and Adaptability Skills, Model, Confirmatory Factor Analysis

INTRODUCTION

The school administrators in the 21st century must have the distinctive character, skills, and role of effective change management, using data and information to formulate strategies and implement future actions. It was in line with Avis Gaze (2016) wrote Preparing School Leaders: 21st Century Skills said that the new skills of the school administrators in the 21st century include; Critical and creative thinking skill, Problem-solving skills, Communication skill, Technological and digital literacy skills, Organizational management skills, Personal management skills, Teamwork skills, learning innovation skill, Setting instructional direction skill. In addition, the Center for Corporate Strategy and Competitiveness, King Mongkut's University of Technology Thonburi (2020) explain that it is important for the school administrators to develop a variety of skills and be ready to cope with change so that the organization can achieve its goals and lead the organization to compete effectively with its competitors, which include: Complex Problem Solving, Critical Thinking, Creative, People Management, Coordinating with Others, Emotional Intelligence, Judgment and Decision Making, Service Orientation, Negotiation, and Flexibility and Adaptability Skills.

Therefore, the school administrators Must be of good character, knowledgeable, effective leadership and performance, Flexibility and Adaptability Skills (Thanes Khumkerd. 2007). Work in the future must face the

condition of limited resources. The best adaptation is to use crises as opportunities, use problems as opportunities, and find creative solutions. This is where learning is maximized, especially the more difficult and complex the project, the more opportunities to use and learn flexibility and adaptability skills. The school administrators must adapt to changes, adapt to different roles - assignments - changing schedules and contexts, perform well in conditions of uncertainty or uncertainty and conditions of priorities. Work has changed, flexibility, bring the results to use for the best benefit of the organization. It can also positively manipulate compliments and critics. and mistakes can bring different opinions and beliefs of the team to understand and negotiate to create balance and get the job done. Hence, the Executives with Flexibility and Adaptability Skills must have the ability to understand and analyze the behaviors of both themselves and others to improve themselves, taking into account the differences between individuals, as well as understanding the relevance between needs. -Human motivation and behavior, have at least five key attributes in enhancing and developing emotional intelligence as follows: 1) Knowing yourself, 2) Knowing how to deal with emotions, 3) Self-Motivation, 4) Controlling Emotions, and 5) Mindfulness of Others. However, Sirikarn Karnchanasuwan & Tharinthorn Namwan (2020) Said that executives with EQ competence are attractive, valued people, work with anyone they like, and have the ability to solve problems and make good decisions, has the ability to adapt to the work style, adapting to uncertainty and critical conditions.

In particular, adaptation to different individuals in the work world by self-adjusting while using methods of altering the knowledge, attitudes, behaviors of individuals, and group behaviors towards the desired goal direction. These are considered "Giving people the opportunity to participate in thinking Joint action, joint responsibility, and positive reinforcement are ways to adapt and lead to appropriate and lasting change. The conflict is handled constructively and adaptive and flexible management encourages personnel to treat each other in a caring, supportive, friendly manner. Executives must have the belief that all human beings are valuable and developable, all human beings have different potentials and abilities, all have dignity, all have human dignity. These will give employees a feeling of satisfaction, pride, comfort, comfort, belonging, and want to come to work. Therefore, if the management manages the physical environment and the working atmosphere is good, it will result in the employees being happy and satisfied with their work.

From the contextual study of the school administrators Under the Office of the Basic Education Commission, which has many guidelines for developing executive skills in the 21st century such as leadership, vision, media use, information technology, etc. However, developing the Flexibility and Adaptability Skills of the school administrators There is no clear action plan or project to support it." Therefore, the researchers were interested in developing the Confirmatory Factor Model of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission. The results of the study will be beneficial and affect the development of quality management.

OBJECTIVES

1. To develop the 21st Century Flexibility and Adaptability Skills components weight and indicators of the school administrators. under the Office of the Basic Education Commission.
2. To examine the harmonization of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission with empirical data.

METHODOLOGY

1. The research population was the school administrators. and secondary school teachers in the Northeastern region Under the Office of the Basic Education Commission, 39,545 people. The sample group was the school administrators. and secondary school teachers in the Northeastern region under the Office of the Basic Education Commission of 260 people. Hair and et al (2010) determined that the minimum sample size should be 100 people, and there should be at least 5-10 people per indicator, thus, there were 26 indicators in this study, so the sample size was 260 people, and multi-stage random sampling was used.
2. The variables used in the research were 26 observable variables divided into 5 components: 1) the Adaptation skills to cultural differences, 2) Adaptation skills to changes, 3) the Adaptation skills to roles and responsibilities, 4) the creative conflict management skills, and 5) the Flexibility work skills.
3. The research tool was the 21st Century Flexibility and Adaptability Skills components questionnaire of the school administrators. Which is a 5-level rating scale (Rating scale) of 26 items with a content

validity (CVI) of 1.00, a power of discrimination between 0.55-0.83, and a confidence value of the whole article (α) is 0.91.

4. Data collection, the researcher collected the data by himself. A total of 300 questionnaires were submitted, 281 questionnaires were returned, representing 93.67 percent. After checking the completeness of the responses, 260 questionnaires were used to analyze the data.
5. Data analysis uses basic statistical analysis of variables, correlation coefficient analysis between variables in the model to know the correlation characteristics of the variables and check preliminary agreement, and the second Confirmatory Factor Analysis to examine the harmonization of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission with empirical data with the LISREL package.

RESULTS

1. Preliminary data analysis results

The results of the analysis of basic statistical values of the overall variables revealed that All variables are distributed in a normal curve. The variables observed in the 21st Century Flexibility and Adaptability Skills of the school administrators were all high averages. Most of them averaged between 3.76-4.58. All observed variables had a low standard deviation between 0.59-0.84.

The results of the correlation analysis between the observed variables regarding the 21st Century Flexibility and Adaptability Skills of the school administrators. using Pearson's correlation coefficient. When considering the statistical test of Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy, it was found that the correlation matrix between the observed variables in all latent variable groups differed statistically from the identity matrix at the 0.01 level. It was shown that all observed variables were highly correlated and suitable for use in second-order confirmation element model analysis.

Confirmatory Factor Analysis of the 21st Century Flexibility and Adaptability Skills of the school administrators using First Order Confirmatory Factor Analysis found that components weight of Factor Loading (β), components weight of Factor Loading (b), Standard Error ($S.E.$), Statistical Significance Test (t -Values) of components weight, and Coefficient of Determination (r^2) of the indicators of each component. That is to say, the 21st Century Flexibility and Adaptability Skills components of the school administrators have five components, a total of 26 indicators, and the results of the analysis yielded various values, which are shown in Table 1 as follows:

Table 1: First Confirmatory Factor Analysis Result

Components	Component weight			<i>t</i>	<i>r</i> ²
	<i>β</i>	<i>b</i>	<i>S.E.</i>		
Components No.1 the Adaptation skills to cultural differences					
1) Interpersonal skills	0.79	0.52			0.62
2) Organizational culture knowledge skills	0.82	0.58	0.04	13.10*	0.67
3) Having a social network	0.75	0.51	0.04	13.16*	0.56
4) Interpersonal communication skills	0.74	0.52	0.04	11.86*	0.55
Components No.2 Adaptation skills to changes					
1) Applying technology to work	0.79	0.58			0.62
2) Changes in administrative powers in the organization	0.82	0.66	0.05	12.28*	0.67
3) Meeting to exchange opinions with each other	0.72	0.50	0.04	13.04*	0.52
4) Continuous study and understanding of external conditions	0.80	0.62	0.05	12.43*	0.64
Components No.3 the Adaptation skills to roles and responsibilities					
1) Work planning and goal setting	0.58	0.37			0.34
2) to promote the performance of teachers	0.67	0.45	0.05	8.62*	0.45
3) Decentralized management with regard to competence	0.74	0.50	0.05	9.21*	0.55
4) Commanding and leading the work	0.58	0.38	0.05	7.71*	0.34
5) Applying techniques and methods to suit the job	0.68	0.43	0.05	8.66*	0.46
Components No.4 the creative conflict management skills					
1) Building teamwork	0.77	0.52			0.59
2) Using the principles of negotiation to solve problems	0.70	0.50	0.04	11.55*	0.49

Components	Component weight			<i>t</i>	<i>r</i> ²
	β	<i>b</i>	<i>S.E.</i>		
3) the use of moral principles in organizational administration	0.75	0.52	0.04	11.88*	0.56
4) Building trust between each other	0.81	0.55	0.04	15.70*	0.66
5) Opportunity for open discussion and exchange of opinions	0.73	0.51	0.04	12.16*	0.53
6) Strengthening cooperation	0.77	0.52	0.04	12.84*	0.59
Components No.5 the Flexibility work skills					
1) Self Esteem	0.63	0.44			0.40
2) having a sense of humor	0.69	0.48	0.04	10.96*	0.48
3) Not encroaching on anyone	0.80	0.54	0.06	9.08*	0.64
4) pressure resistance	0.76	0.43	0.05	9.58*	0.58
5) Look for opportunities for self-discovery.	0.72	0.46	0.05	9.72*	0.52
6) Opening yourself to new opportunities	0.69	0.44	0.05	9.38*	0.48
7) Having a positive attitude	0.73	0.54	0.06	9.72*	0.53
$\chi^2 = 214.86$, $df = 225$, Relative $\chi^2 = 0.95$, P-value = 0.67, RMSEA = 0.00, GFI = 0.94, AGFI = 0.91, RMR = 0.01					

*P < .01

From Table 1, it is found that the weight of the components in the form of a standard score (Factor Loading: β) of all 26 indicators in 5 components. When considering component weight, it was found that the four indicators of Components No.1 have component weights ranging from 0.74 – 0.82. the four indicators of Components No.2 have component weights ranging from 0.72 – 0.82. the five indicators of Components No.3 have component weights ranging from 0.58 – 0.74. the six indicators of Components No.4 have component weights ranging from 0.70 – 0.81. the 7 indicators of Components No.5 have component weights ranging from 0.63 – 0.80.

Standard Error (*S.E.*) of the 26 indicators, the values ranged from 0.04–0.06. Statistical Significance Test Values(*t*-Values) of components weight of all 26 indicators, ranging from 7.71–15.70 statistically significant ($P < .01$). Coefficient of Determination (r^2) of all 26 indicators in 5 components, considering the forecast coefficient of the four indicators of the Components No.1 was found to have predictive coefficients ranging from 0.55–0.67, the four indicators of the Components No.2 has forecast coefficients ranging from 0.52–0.67, the five indicators of the Components No.3 has predictive coefficients from 0.34–0.55, the six indicators of the components No.4 has predictive coefficients ranging from 0.49–0.66, indicates all 7 aspects of the components. No.5 has a forecast coefficient ranging from 0.40-0.64.

2. The Second-order Confirmatory Factor Analysis

The Second-order Confirmatory Factor Analysis of the 21st Century Flexibility and Adaptability Skills of the school administrators by Confirmatory Factor Analysis second-order found that components weight in the raw score (Factor Loading: *b*), components weight in standard points (Factor Loading: β), Standard Error (*S.E.*), *t*-Values of components weight and Coefficient of Determination (R^2) for each component; these are, there are five components of the 21st Century Flexibility and Adaptability Skills of the school administrators.

Table 2: Second-Order Confirmatory Factor Analysis

Components	Component's weight			<i>t</i>	R^2
	β	<i>b</i>	<i>S.E.</i>		
Adaptation skills to cultural differences	0.87	0.87	0.07	12.59*	0.76
Adaptation skills to changes	0.83	0.79	0.07	12.08*	0.69
Adaptation skills to roles and responsibilities	0.97	0.94	0.10	9.74*	0.94
Creative conflict management skills	0.97	0.96	0.07	13.97*	0.94
Flexibility work skills	0.95	0.95	0.09	10.52*	0.90
$\chi^2 = 214.86$, $df = 225$, Relative $\chi^2 = .95$, P-value = .67, RMSEA = .00, GFI = .94, AGFI = .91, RMR = .01					

*P < .01

The Confirmatory Factor Analysis ranked Second Order the 21st Century Flexibility and Adaptability Skills model of the school administrators. Under the Office of the Basic Education Commission found that there was harmony with the empirical data, considering the harmonization index was $\chi^2 = 214.86$, $df = 225$, Relative $\chi^2 = 0.95$, P-value = 0.67, RMSEA = 0.00, GFI = 0.94, AGFI = 0.91, RMR = 0.01. When considering the component weights of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission in the Confirmatory Factor Analysis Second-Order place, the five components' weights were both high and statistically significant, with the values ranged from 0.83-0.97 and were statistically significant at all 0.01 levels. In order of importance from most to least, they are the creative conflict management skills and the Adaptation skills to roles and responsibilities (0.97), the Flexibility work skills (0.95), the Adaptation skills to cultural differences (0.87), and Adaptation skills to changes (0.83). The components weight indicated that the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission were born from the creative conflict management skills and the Adaptation skills to roles and responsibilities more than other components. When considering the predictive coefficients of each component, it was found that the creative conflict management skills and the Adaptation skills to roles and responsibilities have the same predictive coefficient (0.94), the Flexibility work skills have a predictive coefficient of 0.90, the Adaptation skills to cultural differences had a predictive coefficient of 0.76, and Adaptation skills to changes had a predictive coefficient of 0.69.

DISCUSSION

In this research, the researchers discuss the results of two issues: (1) the first issue: the development of components and indicators of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission, developed from Relevant theoretical concepts and preliminary quality checks. And Issue 2: The results of the harmonization examination of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission with empirical data, are as follows:

1. The results of the development of components and indicators of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission consistent with the conceptual synthesis of Roy and Andrews (1999), Gary Yuk & Rubina Mahsud (2010), Partnership for 21st Century Skills (2011), Armanda& Claude (2012), Open Sourced Workplace(2019), Elearn2grow(2021), Thanee Khumkerd (2004), Vicharn Panich (2012), Anucha Somabut (2013), Ruchirat Chanachaiyawibolwat (2019) It was found that the five components were 1) the Adaptation skills to cultural differences, 2) Adaptation skills to changes, 3) the Adaptation skills to roles and responsibilities, 4) the creative conflict management skills, and 5) the Flexibility work skills, which can be considered as 26 indicators of behavioral theories related to Flexibility and Adaptability Skills.

2. The results of the conformity examination of the model of the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission with empirical data revealed that the harmonization index was as follows: $\chi^2 = 214.86$, $df = 225$, Relative $\chi^2 = 0.95$, P-value = 0.67, RMSEA = 0.00, GFI = 0.94, AGFI = 0.91, RMR = 0.01. It was shown that Components and indicators of the 21st Century Flexibility and Adaptability Skills of the school administrators Under the Office of the Basic Education Commission are harmonious with the empirical data.

The Confirmatory Factor Analysis found that all five components of the 21st Century Flexibility and Adaptability Skills of the school administrators could explain the variability of the 21st Century Flexibility and Adaptability Skills of the school administrators. not equal. where the creative conflict management skills and the Adaptation skills to roles and responsibilities have the highest components weight (0.97), while Adaptation skills to changes have the lowest components weight (0.83). These weights reflect the variability of the 21st Century Flexibility and Adaptability Skills of the school administrators. It stems from the creative conflict management skills component more than any other aspect. It was consistent with the concept of Gary Yuk & Rubina Mahsud (2010), Partnership for 21st Century Skills(2011), Armanda& Claude(2012), Open Sourced Workplace(2019),elearn2grow(2021), Thanee Khumkerd (2004), Vicharn Panich (2012) confirm that the creative conflict management skills and the Adaptation skills to roles and responsibilities influence the 21st Century Flexibility and Adaptability Skills. The components weight of the remaining aspects remains high, indicating that the 21st Century Flexibility and Adaptability Skills of the school administrators under the Office of the Basic Education Commission must have all six components.

RECOMMENDATIONS

1. Applying research results Suggestions

The results showed that the 21st Century Flexibility and Adaptability Skills of the school administrators More on the weight of the components of creative conflict management skills and adaptability to roles and responsibilities than others. Therefore, the development of the 21st Century Flexibility and Adaptability Skills of the school administrators. These components should be used as the lead components which will help to move the other components' weight along with it. While adapting to change skills should be intensively promoted and developed for the school administrators to develop on the subject.

2. Further research Suggestions

This research is a study of expectation conditions only. Therefore, to cover all issues, the actual characteristics should be assessed so that the results reflect their implementation, a combination of several analytical techniques may be used to make the indicators more reliable.

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