

Development of the 21st Century Leader Attribute Indicators of Air Cadets

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Abstract: The objectives of this quantitative research were to: (1) study the conceptual framework; (2) identify the element and 21st century leader attribute indicators of air cadet; (3) verify the structural straightness of 21st century leader attribute indicators of air cadet measurement model. A sample of 460 was stratified randomly chosen from executive position commissioned officers affiliated directly to the Air Force, at the division director level and above (Group Captain and above). The instrument was a questionnaire created by the researcher with the reliability level of 0.98. Usable questionnaire copies of 386 or 83.99 percent were returned. The statistics for this research were: mean, standard deviation, content analysis, and confirmatory factor analysis. The results of the research were as follows: The 21st century leader attribute indicators of air cadet consisted of 3 aspects with 19 indicators as follow; First aspect was Personality attribute consisted of 7 features: integrity, loyalty, courage, enthusiasm, dependability, tact, and bearing. Follow by Ability attribute consisted of seven features: initiative, knowledge, discretion, decisiveness, holistic problem-solving, endurance and vision. Last, Social skill attribute consisted of five features: interpersonal, Selflessness, justice, understand of differences, and empowering subordinates. The results of the confirmatory inspection showed that 21st century leader attribute indicators of air cadet were consistent with the empirical data by considering the value of Goodness of fit: $\chi^2=112.94$, $df = 94$, $p\text{-value} = 0.89$; Relative $\chi^2 = 0.14$; GFI = .97; AGFI = .95, RMR = .02; SRMR = .02, RMSEA = .02. The weight of each factor was between 0.91-0.94, and the standard weight of each indicator was between 0.59-0.91.

Keywords: the 21st Century, Leader Attribute, Indicators, Air Cadets

1. Introduction

Nowadays, the world society and Thai society are entering the 21st century, an era of complexity and rapidly changing. Technological developments have created new tools. Like the SMEs that need to adjust themselves and should also start using information technology to improve their competitiveness because of the rapid technological development for determination in implementing information technology. (Haseeb and et.al., 2019) As a result, human beings can quickly access new knowledge and information. They need to be readily to learn for having the proper traits and skills for living in this rapidly changing society by managing education to create a new generation who is ready for change and can face any problems. Educational agencies must play an important role in encouraging and building personnel, institution and country to be ready for this change. Thus, the 21st century skills are essential skills for living in the 21st century.

We should increase an understanding of core subjects and 21st century skills in learning of interdisciplinary. 21st century skills include learning and innovation skills, life and professional skills and technology and communication skills. As it has been stated in supply change management (Jermstittiparsert and Srihirun, 2019) for sustainable outcome, the leader attribute of military cadets is focus in gender as only male students. We need to encourage male learners to develop leadership, which is a very important attribute in leading an organization to achieve its goals. Leadership is essential to organization development and management. Leadership in accordance with the 21st century change requires three components: self-directed leadership, team leadership, and organizational leadership.

Professor Metropolis at the University of Phoenix offers skills that make themselves succeed and to be required by the organization which has leadership as a core component. Leadership is a skill that can lead one and others to their intended goals. Military agency is one of the departments that focus on the leadership development of personnel in the organization. In addition, military work was also affected by the changes in the 21st century. It is a big challenge for military leaders to adapt the organization to this transformational society. Military leaders of the 21st century not only play a primary role in protecting national sovereignty, but also perform in the development of the country. Consequently, other essential attributes and skills should be developed to build 21st century military leader. (Najafipour, 2016) As a result of this shift in the role of military leaders in the 21st century, educational authorities have to produce the officers must also produce officers with desirable attributes that are consistent with 21st century military leaders.

Navaminda Kasatriyadhiraj Royal Air Force Academy, a school in the Royal Thai Air Force Serves in the production of the commissioned officer for the Air Force to be the leader of the Royal Thai Air Force at all levels. The attributes development of the 21st century military leaders of Navaminda Kasatriyadhiraj Royal Air Force Academy, have to focus on developing military leader attributes and 21st century leader attributes that consistent

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with the 20-year Air Force strategy (2018 – 2037) with the aims of contribute Air Force to one of the best air forces in ASEAN. In addition to education and knowledge, Air cadet must have military leadership qualifications. Navaminda Kasatriyadhiraj Royal Air Force Academy has determined the attribute of a military leader 15 qualifications as follows: (1) Bearing (2) Courage (3) Decisiveness (4) Dependability (5) Endurance (6) Enthusiasm (7) Initiative (8) Integrity (9) Judgment (10) Justice (11) Knowledge (12) Loyalty (13) Tact (14) Selflessness and (15) Vision. However effective leadership in these modern times requires a proactive approach towards managing change and its impact on long-term organizational growth. Therefore, it is important to define more desirable attribute of air cadets. This research will potentially enrich our understanding of identifying the element and 21st century leader attribute indicators of air cadet and verifying the structural straightness of 21st century leader attribute indicators of air cadet measurement model.

2. Literature Review

This research aims to describe and analyse development of the 21st century leader attribute indicators of air cadets by conducting relevant research studies. This presents the importance of the topics into military leader attribute, 21st century leader attributes and 21st century military leader attributes.

2.1. Military leader attribute

It is essential that all soldiers must have military leadership. Military leadership principles are rules or guidelines that have been practiced or proven by many successful leaders and can be used in operations. Sanitsom and Jarat (2015) analyzed the desirable traits of military leaders of Royal Thai Army follows: (1) Bearing (2) Courage (3) Decisiveness (4) Dependability (5) Endurance (6) Enthusiasm (7) Initiate (8) Integrity (9) Judgment (10) Justice (11) Knowledge (12) Loyalty (13) Tact (14) Selflessness and (15) Vision. Army Training Command (2013) states that the commissioned officer must have and strictly study the commissioned officer handbook. Military leadership attributes are indicators that can be trained and developed as a personality of military cadet. Headquarters (1999) identifies what shows military leadership is: (1) Army values are loyalty, duty, respect, Selflessness, duty, honor, honesty and courage. (2) Attributes include psychological, physical and emotional attributes. Furthermore, awareness and understanding of different cultures has been mentioned in psychological attributes.

2.2. 21st century leader attributes

A leader is someone who can see how things can be improved and who rallies people to move toward that better vision. Just being able to motivate people isn't enough leaders need to be empathetic and connect with people to be successful. Future leaders will actually be more diverse, which brings a variety of perspectives. Leadership is the art of motivating a group of people to act toward achieving a common goal. Leaders in the 21st century have another vital function. They have to be the ideal role models for the coming generation. Building a corporate community relation is the key to be leader in the 21st century. (Fullan, 1998)

Our society has been changing all the time and with the rapid invention of high technology that come into our lifestyle and change our living and change our way of life in every walk of life. In order to cope and be ready with the changes, leaders in the 21st century must be aware of (1) considering the current situation (2) creating an environment of encouragement and building good relationships with people in the organization (3) having a vision (4) controlling over emotions and (5) accepting the risks. (Allen and et al., 2012 and Dimmock and Walker, 2013) According to studies of many researches on leadership for the 21st century, it can be concluded that Leadership attributes in the 21st century consist of 9 attributes: (1) Vision (2) Motivation (3) Teamwork (4) Dare to make decisions, think, speak and act (5) Communication skills (6) Morality and ethics (7) Interpersonal (8) Creativity and (9) Self-development and learning (Srichan and et.al., 2016, Sanrattana and et.al., 2016 and Nantharajphong and et.al., 2017).

2.3. 21st century military leader attributes

Principles of leadership provide the fundamental actions which are universal and are founded on the general requirements for effective military operations. Leadership principles apply to all leaders and commanders regardless of rank or responsibility. Leadership is inherent in a military officer's function and has been variously defined. A general view is that leadership is the ability to inspire and direct a group of people to accomplish any purpose. Leadership is an art that can be studied and developed. Leadership in the military has often been a deciding factor in war or other missions. Pacuraru (2011) addressed the Air Force leadership attribute at the 6th

International Scientific Conference: Defense Resources Management in the 21st Century. Effective leaders must have the characteristics that are fundamental to lead in each situation. There are 6 important attributes that an Air Force commissioned officer should have: (1) Integrity (2) Loyalty (3) Accountability (4) Enthusiasm (5) Decisiveness and (6) Selflessness. Roger (2015) studied the attributes of Army Commissioned officers by interviewing cadets and officers at the University of North Georgia and found that the attributes required for a commissioned officer consisted of 6 attributes: (1) Personality (2) Demeanor (3) Intelligence (4) Leadership (5) Developer and (6) success. Gibson (2008) studied military leader attributes in the 21st century by studying the sources of leader attributes and values of the US Army, concluding that there are 6 attributes that leaders must have: (1) Selflessness (2) Honest (3) Confidence (4) Courage (5) Carefulness and (6) Humanity. Chief of Staff of the United States Army addresses a desirable leader in the 21st Century Defense Strategy of the United States Department of Defense: (1) Vision and leading Change (2) ethics (3) Learning and judgement (4) Adaptation (5) Balancing risk and opportunity (6) Initiative (7) Effective teamwork (8) empowering subordinates (9) Risk Acceptance (10) Courage (11) Knowledge and (12) All around communication. (Department of Defense, 2012) Moreover, Najafipour (2016) studied 21st century military leaders and found 6 essential traits and skills that needed for developing military leader into this new era: (1) Wise battle (2) Knowing about empowering subordinates (3) Awareness and understanding of different cultures (4) Knowing how to use and control military technology (5) Knowing the principles of combat that reduce losses, and (6) Teamwork skills.

The researcher analyzes the leader attributes followed by conducting research, interview 5 experts and focus group for the 21st Air Cadet leader attributes. And synthesized the data obtained as a total of 19 indicators as follows: (1) Integrity (PI) (2) Loyalty (PL) (3) Courage (PC) (4) Enthusiasm (PE) (5) Dependability (PD) (6) Tact (PT) (7) Bearing (PB) (8) Initiative (AI) (9) Knowledge (AK) (10) Discretion (ADI) (11) Decisiveness (ADE) (12) Holistic problem-solving (AH) (13) Endurance (AE) (14) Vision (AV) (15) Interpersonal (SI) (16) Selflessness (SS) (17) Justice (SJ) (18) Understanding of different culture (SC) and (19) Empowering subordinates (SE). The research framework was created by following the concept of Stogdill's (1989) leader attributes into 3 aspects: Personality attribute (CP), Ability attribute (CA) and social skill attribute (CS) as shown in Figure 1.

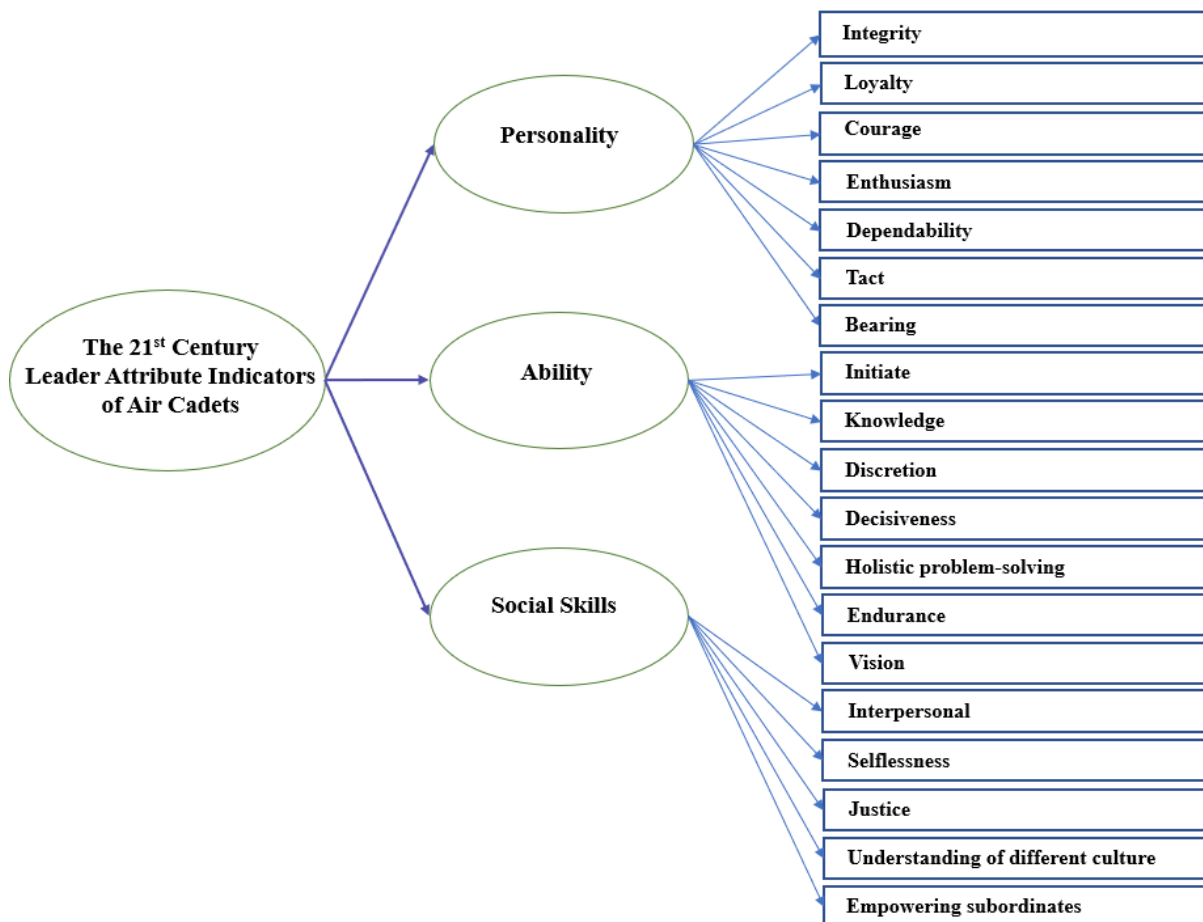


Figure 1 Conceptual Framework

3. Research Methodology

The experts were used as an example in this research for framing and verification of the 21st Century Leader element and attribute indicators of air cadets. It was from the interviewing 5 experts and focus group (a group of 9 people), based on a purposive sampling.

A sample of 608 in 2021 who were stratified randomly chosen from executive position commissioned officers affiliated directly to the Air Force, at the division director level and above (Group Captain and above) were used for verifying the structural straightness of 21st century leader attribute indicators of air cadet measurement model. The researcher determined the sample group by using Rule of Thumb (Hair and et al., 1998). This study has 23 parameters, 10-20 samples per parameter were specified, so the number of samples was 460 people.

The instruments for this research are:

(1) The document, semi-structured interview form and the group chat recording form were used for defining and confirming the 21st century leader attribute indicators of air cadet

(2) The questionnaires which were used in this research is about the air cadet's behavior in accordance with the 21st century leader attribute indicators of air cadet. They are 5-point Likert scale consisting of 81 items. (5 is the highest and 1 is the lowest) The research instruments had been tested for their accuracy and reliability by interviewing 5 educational administration and military experts and focus group. They verified the 21st century leader element and attribute indicators of air cadets. The structural straightness of 21st century leader attribute indicators of air cadet measurement model had been reviewed by 5 experts in education administration. The research and analysis in each item correspond to an operational definition and can be used to measure leader attributes.

Each item was congruent with the operational definition and applicable to measure each construct. The scores of the item-objective congruence index (IOC) were between 0.6-1.0. To assess the reliability, we try out the 81-item questionnaire with 30 respondents; the Cronbach's alpha coefficient of the entire questionnaire was 0.98.

4. Research Results

4.1. The 21st century leader attribute of air cadet.

The data was analysed by using the content analysis and synthesize the concept of 21st century leader attributes indicators of air cadet development. In interviewing and group discussions with experts, it was found that the composition of the 21st century leadership attribute of air cadet consists of 3 aspects, 19 indicators as follow; (1) Personality attribute consisted of 7 features: integrity, loyalty, courage, enthusiasm, dependability, tact, and bearing. (2) Ability attribute consisted of 7 features: initiative, knowledge, discretion, decisiveness, holistic problem-solving, endurance and vision. (3) Social skill attribute consisted of 5 features: interpersonal, selflessness, justice, understanding of different culture, and empowering subordinates.

4.2. The preliminary statistical analysis of the 21st century leader attribute indicators of air cadet .

The statistics of the research variables were found that the 21st century leader attribute indicators of air cadet have the highest average score. The highest average score was personality attribute. (\bar{X} = 4.73, S.D.= 0.51) The lowest average score was ability attribute. (\bar{X} = 4.58, S.D.= 0.59)

Compared with the old 21st leader attribute indicators of air cadet, it was found that the leader traits obtained from the research were increased from the previous 4 indicators: holistic problem-solving, interpersonal, understanding of different culture and empowering subordinates.

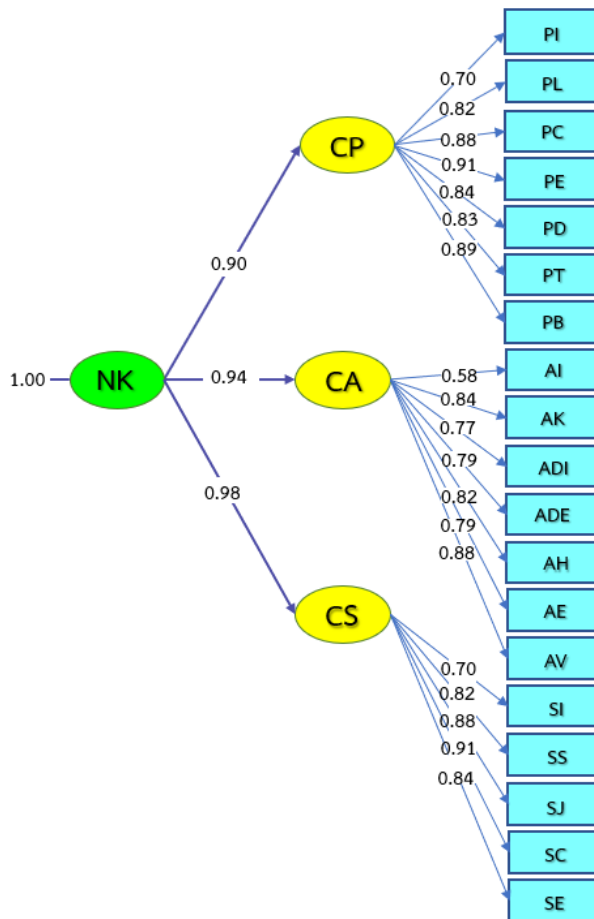
The relationship between variables was analysed by looking for the Pearson Correlation coefficient of the 21st century leader attribute indicators of air cadet as shown in Table 1. And measurement model of 21st leader attribute indicators of air cadet as shown in Figure 2.

Table 1 The Pearson Correlation Coefficient of the 21st century leader attribute indicators of air cadet

Indicators	Mean	Std. Deviation	PI	PL	PC	PE	PD	PT	PB	AI	AK	ADI	ADE	AH	AE	AV	SI	SS	SJ	SC	SE
PI	4.83	0.31	1.00																		
PL	4.75	0.36	0.67**	1.00																	
PC	4.69	0.39	0.66**	0.71**	1.00																
PE	4.67	0.40	0.63**	0.76**	0.77**	1.00															
PD	4.81	0.35	0.67**	0.68**	0.77**	0.76**	1.00														
PT	4.66	0.45	0.60**	0.70**	0.73**	0.80**	0.70**	1.00													
PB	4.71	0.41	0.55**	0.74**	0.71**	0.81**	0.74**	0.82**	1.00												
AI	4.38	0.55	0.20**	0.32**	0.40**	0.42**	0.32**	0.34**	0.41**	1.00											
AK	4.55	0.45	0.47**	0.56**	0.61**	0.65**	0.59**	0.60**	0.65**	0.59**	1.00										
ADI	4.67	0.49	0.46**	0.54**	0.65**	0.63**	0.63**	0.61**	0.63**	0.44**	0.63**	1.00									
ADE	4.58	0.52	0.39**	0.54**	0.61**	0.60**	0.58**	0.57**	0.60**	0.45**	0.62**	0.67**	1.00								
AH	4.68	0.45	0.48**	0.54**	0.63**	0.63**	0.60**	0.62**	0.64**	0.47**	0.68**	0.74**	0.73**	1.00							
AE	4.68	0.49	0.50**	0.49**	0.63**	0.62**	0.63**	0.64**	0.68**	0.35**	0.57**	0.62**	0.58**	0.68**	1.00						
AV	4.55	0.52	0.48**	0.55**	0.63**	0.65**	0.64**	0.58**	0.62**	0.54**	0.75**	0.64**	0.71**	0.74**	0.58**	1.00					
SI	4.63	0.43	0.47**	0.60**	0.61**	0.65**	0.59**	0.69**	0.70**	0.48**	0.69**	0.61**	0.60**	0.65**	0.62**	0.68**	1.00				
SS	4.75	0.37	0.57**	0.59**	0.71**	0.74**	0.72**	0.66**	0.71**	0.41**	0.59**	0.66**	0.58**	0.64**	0.66**	0.63**	0.68**	1.00			
SJ	4.69	0.47	0.52**	0.56**	0.69**	0.62**	0.62**	0.61**	0.60**	0.37**	0.53**	0.52**	0.54**	0.55**	0.50**	0.59**	0.59**	0.68**	1.00		
SC	4.63	0.47	0.45**	0.60**	0.63**	0.64**	0.56**	0.66**	0.61**	0.40**	0.65**	0.61**	0.59**	0.61**	0.55**	0.64**	0.68**	0.68**	0.62**	1.00	
SE	4.64	0.42	0.41**	0.56**	0.58**	0.62**	0.57**	0.63**	0.60**	0.49**	0.60**	0.56**	0.58**	0.56**	0.56**	0.61**	0.70**	0.66**	0.64**	0.71**	1.00

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

Table 1 shown that tact and bearing in the personality attribute are the most related ($r = 0.82$). Tact and Integrity are the least related ($r = 0.55$). Vision and holistic problem-solving in the ability attribute are the most related ($r = 0.74$). Endurance and initiative in the ability attribute are the least related ($r = 0.35$). In the social skill attribute, empowering subordinates and understanding of different culture are the most related ($r = 0.71$). Justice and interpersonal are the least related ($r = 0.59$).



Chi-Square=110.23, df=89, P-value=0.06310, RMSEA=0.023

Figure 2 Measurement model of 21st century leader attribute of air cadet

AGFI (Adjusted goodness – of –fit index) contains the Chi-Square/Degree of Freedom obtained from the analysis = 1.24 (<2.00) and Goodness of Fit = 0.98 (>0.90). Root Mean Square Residual = 0.02 (<0.05) and Root Mean Square Error of Approximation = 0.02 (<0.05) In conclusion, index of item objective congruence and empirical data are harmonious.

4.3. The verification of structural straightness of 21st century leader attribute indicators of air cadet.

The second-order confirmatory factor analysis with LISREL program to verify the consistency of the measurement model structure of 21st leader attribute of air cadet developed with empirical data consists of 3 aspects, 19 indicators as shown in Table 2.

Table 2 The results of the second-order confirmatory factor analysis of 21st century leader attribute indicators of air cadet with empirical data

Latent Variable	Indicators	Factor Loading			
		B	S.E.	t	R ²
CP	PI	0.70	-	-	0.49
	PL	0.82	0.04	18.48	0.67
	PC	0.88	0.05	18.00	0.78
	PE	0.91	0.05	17.56	0.83
	PD	0.84	0.05	18.25	0.71
	PT	0.83	0.05	16.44	0.69
	PB	0.89	0.06	16.13	0.79
CA	AI	0.58	-	-	0.34
	AK	0.84	0.06	14.64	0.71
	ADI	0.77	0.06	12.63	0.59
	ADE	0.79	0.06	12.79	0.63
	AH	0.82	0.06	13.12	0.67
	AE	0.82	0.06	13.12	0.67

CS	AE	0.79	0.07	11.85	0.63
	AV	0.88	0.06	13.68	0.78
	SI	0.84	-	-	0.70
	SS	0.88	0.04	22.24	0.79
	SJ	0.76	0.04	18.27	0.57
	SC	0.79	0.04	20.01	0.62
	SE	0.76	0.04	20.46	0.58

**p < .01

The second-order confirmatory factor analysis found that the factor loading of 21st century leader attribute indicators of air cadet showed the factor loading of 0.58 – 0.91. All components were statistically significant at the level of 0.01. It shows that all components of 21st century leader attribute indicators of air cadet were statistically significant. Particularly, enthusiasm (PE) showed the maximum factor loading of 0.91 which can explain the variation with the component of 21st century leader attribute indicators of air cadet, followed by bearing (PB), courage (PC), vision (AV), Selflessness (SS), and initiative with factor loadings of 0.89, 0.88, 0.88, 0.88 and 0.58 consequently. The results are as follows:

(1) Personality attribute: enthusiasm showed the maximum factor loading of 0.91 and integrity showed the minimum factor loading of 0.70.

(2) Ability attribute: vision showed the maximum factor loading of 0.88 and initiative showed the minimum factor loading of 0.58.

(3) Social skill attribute: selflessness showed the maximum factor loading of 0.88 and justice and empowering subordinates showed the minimum factor loading of 0.76.

5. Discussion and Conclusion

The composition of 21st century leader attribute of air cadet consists of 3 aspects, 19 indicators, and 4 additional leadership indicators: holistic problem-solving, interpersonal, understanding of different cultures and empowering subordinates. Three of the four indicators are social skill indicators correspond to the changes in the 21st century. According to Riggio and Reichard (2008) Zaccaro (2004), emotional and social skills and social intelligence are characteristics of emerging leaders and it's vital to be an effective leader. In addition, understanding of different cultures is an essential attribute of Thai graduates in the 21st century. Fleenor (2006) explained a large number of leaders and concluded that there are some attributes that appear to make a leader successful in any situation. These traits included skill in dealing with people and Understanding of followers and their needs.

The results of the second-order confirmatory factor analysis of 21st century leader attribute indicators of air cadet in personality attribute (CP) showed that enthusiasm is the maximum factor loading correspond to the attribute of the commissioned officer of the Air Force (Pacuraru, 2011) This supports (Saengthong and Wiruchnipawan, 2018) that enthusiasm is a trait of leader that can lead an organization to success.

The most significant of the ability attribute (CA) is vision. Ahmed and Bach (2014) found that leaders cannot lack vision. It reflects the leaders' values and beliefs and allows them to define the philosophy and guidelines of the organization. The findings of Nakyai and Apibunyopas (2019) on the attributes of military leaders that affect the effectiveness of operations, a case study of division 8, Armed Forces Security Center, Royal Thai Armed Forces Headquarters stated that vision was one of the indicators of the attributes of military leadership which had a positive effect on the performance of division 8, Armed Forces Security Center, Royal Thai Armed Forces Headquarters The commander should continue to provide the guidance for strengthening in this section.

Selflessness showed the maximum factor loading in social skill attribute which corresponds to the values of the United States Army (Headquarters, 1999). Moreover, the documents of the 42th Ohio volunteer battalion spring semester, 2014 of the University of Akron Army ROTC (2014) indicate that the development of an effective army leader should be based on the Seven Army Values. Selflessness is one of the seven military values.

6. Conclusion

This research is empirical research on the 21st century leader attribute of air cadet by developing the indicators of the 21st century leader attribute of air cadets from document analysis, interviews and group discussions. According to the study, it was found that the leader attribute consists of 19 indicators. The concept of Stogdill (1989) was used to identify the leader attribute in 3 aspects: (1) Personality attribute consisted of 7 features. (2) Ability attribute consisted of 7 features. (3) Social skill attribute consisted of 5 features. The highest average score was personality attribute and the leader traits obtained from the research were increased from the

previous 4 indicators: holistic problem-solving, interpersonal, understanding of different cultures and empowering subordinates.

The relation of the greatest indicators in personality attribute is bearing and enthusiasm. The relation of the greatest indicators in ability attribute is holistic problem-solving and discretion. The relation of the greatest indicators in social skill attribute is empowering subordinates and understanding of different cultures.

The second-order confirmatory factor analysis with LISREL program to verify the consistency of the measurement model structure of 21st leader attribute of air cadet developed with empirical data. Then, considering the results of the first confirmation of the analysis found that enthusiasm, vision and selflessness respectively. It was found that the personality attribute had the highest reliability of the variable extracted by the element and the variance was 1.00.

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