Exploring the Profile of Factors of Career Adaptability through Cluster Analysis

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Abstract: Career adaptability is a crucial variable in higher education. Individuals need to prepare themselves to face career transition from college to work. Shipping education is among vocational programs which employs education function and work training function. The aim of this research was to identify the grouping of shipping cadets who share similar pattern of parental support, school climate, and adversity quotient. The sample was shipping cadets (N=81). Result indicates three clusters, namely (1) the Fighter cadets (32%) are those who have high adversity quotient but perceive no parental support and negative campus climate; (2) the "Unmotivated" cadets (31%) are those with low adversity quotient who perceive no parental support and negative campus climate, and (3) the "Optimism" (37%) are cadets whose adversity quotient is high and who receive parental support and perceive positive climate. This result can be used as a reference to design interventions for cadets who encounters career adaptability issues during their study.

1 INTRODUCTION

Career adaptability is currently a critical issue in education, which is utilized to predict individual career success. It is necessary for every individuals to effectively face the career transition from studying at school to entering the working world (Sulistiani and Handoyo, 2018). Career adaptability is one's readiness to face any possible challenge or problem during a transition, preparing themselves to succeed in career (Savickas, 2005). Career adaptability is a characteristic that shows flexibility to fulfill career tasks, career transitions, and face career trauma with the right steps (Savickas, 2013).

Lack of preparation in one's career may have direct and indirect effect on vocational problems (Skorikov, 2007). A common problem during career development is to select and to maintain the career choice that one has decided, including one's education choice. Individual ability to maintain their career of choice despite the challenging situations is termed as career adaptability (Indianti, 2015). Various studies have showed that career adaptability influence an individual's education. It can affect one's sense of power (Hirschi, 2009); academic satisfaction (Buyukgoze-kavas, Duffy, & Douglass, 2015, Hirschi, 2009); life satisfaction (Santilli, Marcionetti and Nota, 2017) and academic achievement (i.e. Grand Point Academic); academic fatigue and engagement (Merino-tejedor, Hontangas and Boada-grau, 2016); perceived career barriers (Hirschi, 2010); and self-regulation (Merino-tejedor, Hontangas and Boada-grau, 2016).

Career adaptability positively predicts the way teenagers manage vocational commitment. Commitment and commitment reconciliation consideration would in turn predict career adaptability. A study revealed that career adaptability and career identity are dynamic and interconnected dimensions in adolescents' career development (Negru-subtirica, Ioana and Crocetti, 2015).

Individuals who take vocational education program need to have a high career adaptability in order to master the transition from school to career. Vocational educations have distinctive characteristic of combining education and training function. They prepare students to be professionals equipped with standardized working skills (Ristekdikti, 2016). Shipping vocational education is an instance. Students of this program are called cadets. Cadets have different academic and non-academic demands from other students in higher education. Shipping education programs in higher education aim to

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produce skilled shipping professionals. Cadets are equipped with ability, skills, and discipline required by the national and international standards (*Peraturan Menteri Perhubungan No 20 Tahun 2010*, 2010). In addition, shipping education programs implement mental and moral coaching based on standard codes of conduct for cadets (Murdiyanto, 2012). A study by Harum and Virgonita (2014) on cadets of Indonesian Commerce Shipping Academy or *Akademi Pelayaran Niaga Indonesia* (*AKAPELNI*) in Semarang shows that cadets were stressed out by various task demands during their study. A literature review of previous studies reveals that career adaptability is affected by internal factors such as positive emotion disposition, adversity quotient, self-regulation, conscientiousness, cognitive flexibility, as well as external factors such as parental support, social support, and peer support (Sulistiani and Handoyo, 2018).

A research by Tian, Xiuzhen Fan (2014) investigated adversity quotient, clinical learning environment, and social support on students of nursery school. The research was motivated by the condition of the nursery students who experienced stress due to high academic demands. It also emphasized individual intelligent in dealing with adversity as a personal factor and learning environment and social support as environmental factors in nursery vocational education. The result demonstrates that adversity quotient, school support, and environmental support are positively correlated with career adaptability (Tian & Fan, 2014; Han & Rojewski, 2015). Stoltz (2000) explained that adversity quotient is the degree to which one can withstand challenges and their ability to overcome them. Adversity Quotient (AQ) helps individuals to be more creative, productive, and competitive despite being in a challenging environment (Venkatesh and Shivaranjani, 2016). AQ illustrates how an individual face hardship and treat it as a challenge. Education environment and parental support are two important factors of career adaptability in nursery vocational program (Tian and Fan, 2014). School climate also has impacts on adaptation (Kuperminc *et al.*, 1997). School climate may be defined as the character and life quality in a school which are shaped by the organizational structure, physical environment, instructional practice, interpersonal relationship, and the holistic values, goals, and habits (Cohen, Mccabe and Michelli, 2009).

The other fact, there are data stating that Indonesia is one of the countries ranked among the top five seafarers in the world. However, Indonesia is not included in the top five seafarers supplying countries (BIMCO, 2015). Other data also conveyed by the transportation minister Budi Karya Sumadi in STIP Marunda January 7, 2018, that many sailors and graduates of shipping schools are still unemployed (Florentin, 2018). The data shows that although cadets take vocational education that focuses on training in the field of shipping, in reality they still experience various obstacles in working when they graduate. The preparation process in the world of work must have started when cadets entered the university. Youth who are able to adapt to a career in the future are influenced by internal factors such as adversity quotient and external, such as parental support, school climate.

Based on the data above, it is necessary to identify the different factors that influence career adaptability of each cadet. The purpose of this study was to identify groups of shipping cadets based on variables that influenced the cadets' career adaptability, namely adversity quotient, school climate and parental support. The second objective in this study is to compare each cluster that has been formed with demographic variables and career adaptability categories.

2 METHOD

2.1 Participant

Participants in this research were 81 Shipping Education Program Cadets of Universitas Hang Tuah in Surabaya, from three different majors, namely Commercial Shipping Management (*KPN*), Shipping Engineering (*Teknika*), and Nautical Science (*Nautika*). Simple random sampling technique was employed in pooling sample.

2.2 Measurement

2.2.1 Characteristic Demography

Some demographic data collected in this research include: gender (i.e. male and female); previous school (i.e. high school (*SMA*), vocational high school (*SMK*)); major; ambition.

2.2.2 Adversity Response Profile

The Adversity Response Profile (ARP) scale was translated and adapted from the original ARP by Stoltz (2000). The ARP is a self-evaluation

questionnaire designed to measure individual response while dealing with difficult situation. It comprises four subscales, namely control, ownership reach, and endurance. It consists of 20 items, each with five-point scale response ranging from 1 (strongly disagree) to 5 (strongly agree). The example of item such as "You experience a financial setback. How far can you be affected by this situation?". This scale has a great reliability (α = .843).

2.2.3 School Climate

Four aspects of school climate were measured in this research, which are: (a) order, security, and discipline; (b) clarity and justice in the school regulations; (c) lecturer-cadet relationship; and (d) inter-cadet relationship. The four scales were translated and revised from the original version by Fan, Williams, and Corkin (2011). They had also gone through some adjustment from previous studies about perceived school climate (Fan, Williams and Corkin, 2011; Yang *et al.*, 2013). The students responded to statement such as, "other cadets often disturb with class" (order, security, and discipline), "everyone knows the rules in this campus" (clarity and justice in the school regulations), "Cadet get along well with teachers", (lecturer-cadet relationship), "Cadet get along with one another" (inter-cadet relationship). They consist of 21 items in total, but only 19 of them were valid in this research. Each item uses four-point scale response ranging from 1 (strongly disagree) to 4 (strongly agree). The scale as a whole has a great reliability (α = .808). Invalid item is "Teachers are interested in students" and "punishment same no matter who you are". This is because this item is still confusing so that the subject is difficult to understand, may be also because of cultural differences.

2.2.4 Parental Support Scale

The Parental Support scale was translated and adjusted from the original scale by Zhou (2012). It has 12 items in total, but only 11 of them were valid in this research. Students responded to statements such as "I feel my father/mother proud with me". Each item has five-point scale options ranging from 1 (strongly disagree) to 5 (strongly agree). It also has a good reliability (α = .833). Invalid item is "In an emergency, I can rely on my father/mother". This is because some of the subject in this study live far from parents.

2.2.5 Career Adapt-Abilities Scale-Indonesian Form

Career adaptability scale was translated and adapted from the Career Adapt-Abilities Scale (CAAS) (Savickas & Porfeli, 2012). The scale comprises 24 items with four subscales, namely Concern, Control, Curiosity, and Confidence. Students responded to statements such as "Concerned about my career," (concern), "I'm keep optimism", (control), "I explore the surrounding environment about my future work" (curiosity), "I do the task efficiently", (Confidence). Each subscale consists of six items, in which every item uses five-point scale options from 1 (strongly disagree) to 5 (strongly agree). Every subscale has good reliability as follow: Concern (α = .862), Control (α = .795), Curiosity (α = .875), Confidence (α = .866).

2.3 Procedure

Data was collected using questionnaires, the participants filled in the questionnaires in the classrooms after a lecture. Permissions from lecturers were obtained before data collection. Research assistance provided guidelines to fill out the questionnaire and waited until all participants returned the questionnaires. All of the questionnaires needed 20-30 minutes to complete.

2.4 Data Analysis

This research used K-Means Cluster analysis in SPSS 20.0 to group research sample based on adversity quotient, parental support, and campus climate. Descriptive statistical analysis and One-Way ANOVA were also conducted to provide the profile of each cluster and to explore whether all clusters were different in term of adversity quotient, parental support, and school climate. Additionally, differences in demographic characteristics (i.e. sex, major, previous school, ambition) and career adaptability category across clusters were also taken into account.

3 RESULT

The characteristics of the participants in this research are provided in Table 1. There were more male participants than female because men usually dominate in such shipping cadet education program, while there is usually a limited number of female cadets.

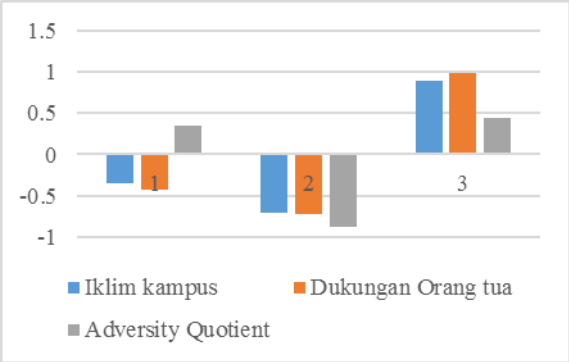

Figure 1: Profile of three clusters (campus climate, parental support, adversity quotient).

The cluster analysis resulted in three group which were uniquely profiled, namely 26 (32%) cadets in Cluster 1, 25 (31%) cadets in Cluster 2, and 30 (37%) cadets in the Cluster 3. All three clusters were formed based on similarities in the factors which affect career adaptability (i.e. adversity quotient, parental support, and school climate). Figure 1 illustrates the profiles of each cluster.

Clustering based on the three variables impacting career adaptability were then given labels. Cluster 1 was labelled as "fighter", Cluster 2 as "unmotivated", and Cluster 3 as "optimism". Labels are based on average scores of each variable. Significant differences across clusters are as follow: in term of parental support F (2, 78) = 56.280, p<.000; in term of school climate F (2, 78 = 38.104, p<.000; in term of adversity quotient F (2, 78) = 21.496., p<.000. These imply that clusters markedly differ in every variable.

Table 1: Demographic characteristics of the research participants

Characteristic	Category	N	%
Sex	Male	70	86.42
	Female	11	13.58
Previous school	*SMA*	69	85.19
	SMK	12	14.81
Major	*KPN*	31	38.27
	Teknika	8	9.87
	Nautika	42	51.86
Ambition	Sailorman	58	71.6
	Be Successful	10	12.34
	Policeman	4	4.94
	Military personnel	6	7.41
	Architect	1	1.23
	Pilot	1	1.23
	Athlete	1	1.23
Career adaptability category	Low	2	2.47
	Moderate	38	46.91
	High	41	50.62

Comparisons between clusters on each variable resulted in considerable differences across groups in term of the three variables (see Table 2, Mean and SD). Cluster 3 "optimism" is the biggest group of the three, consists of cadets with above average level of adversity quotient when facing difficulties, who perceived parental support above the average level of the population, and perceived above average level of school climate concerning order, regulation, security; clarity and justice in school regulations; lecturer-cadet relation; and inter-cadet relations as well. Cluster 2, the "unmotivated", is the second biggest group in number which includes cadets who had adversity quotient level under the average population when encountering difficult situations, perceived under average level of parental support and also under average level of school climate regarding order, regulation, security; clarity and justice in school regulations; lecturer-cadet relation; and inter-cadet relationship. Meanwhile Cluster 1, the fighters, consists of cadets who had above average adversity quotient in the face off difficulties perceived lower parental support than the average population, and perceived under average school climate concerning the order, regulation, security; clarity and justice in school regulation; relation between lecturers and cadets; and inter-cadet relations as well. To further explore the characteristics of each cluster, differences in the demographics (i.e. sex, previous school, major, and

Table 2: Means from K-means Three Cluster Solution

Variable	Mean value cluster number			SD value cluster number			Z score value cluster number			F	Sig
	1	2	3	1	2	3	1	2	3		
Campus climate	-.347	-.709	.892	.756	.674	.726	-2.016	-1.125	2.145	38.104	.000
Parental support	-.434	-.729	.984	.590	.751	.601	-2.018	-2.954	1.727	56.280	.000
Adversity quotient	.343	-.885	.440	.525	.611	1.109	2.105	-2.578	-1.568	21.496	.000

ambition) and in the career adaptability category were explored. Table 3 provides the comparisons.

Cluster 1, the fighter, made up 30% of the male cadets and 45.5% of the female counterparts. Most of female cadets were in this cluster. First-born cadets in this cluster made up 40.4% of first children in the sample. 41.9% *KPN* major, the biggest percentage among all, was grouped in this cluster. So was the case with *Teknika* major in this cluster, making up 62.5% of the *Teknika* cadets in the sample. On the other hand, only 19% *Nautika* major was in this group which is the smallest percentage of all clusters. A hundred percent of cadets with low level of career adaptability was grouped in this cluster. Cluster 2, the unmotivated, comprises 32.9% of male sample and 18.2% of female cadets which is the smallest percentage of female participants among the three groups. Cluster 3, the optimism, includes 37.1% of male participants and 4% of the female counterparts, which means the majority of male cadets were classified in this group. Most high school graduates (36.2%) were in this cluster. Likewise, the majority of *Nautika* major (47.6%) was included in this group. In term of ambition, the profile is as follow: 36.2% sailorman, be successful 30%, policeman 50%, military personnel 50%, architect 100%, pilot 0%, athlete 0%, making it the group with the majority participants whose ambition was to be a sailorman. In term of career adaptability, it comprises 0% of the low level, 38.9% of the moderate level, and 46.3% of the high, the majority of participants with high level of career adaptability was in this cluster.

4 DISCUSSION

The aim of this research was to identify groupings of cadets who share similar pattern of parental support, school climate, and adversity quotient. Additionally, it also compared each cluster from the result in term of their demographic variables and categorization of career adaptability. Cluster analysis resulted in three clusters as follow: (1) the fighter cadets, (2) the unmotivated cadets, and (3) the "optimism" cadets. Names of the clusters were based on the average score of the variables in each cluster. The fighter cluster represents cadets who have high adversity quotient but perceive no parental support and have negative perception about the campus climate. Negative perception on school climate concerns the order, regulation, security; clarity and justice in the school regulations; relation between lecturers and cadets; as well as inter-cadet relation. A previous study on students of nursery school demonstrated a correlation between adversity quotient and career adaptability (Tian and Fan, 2014). Another study which investigated career adaptability of Italian adolescents in relation to barriers revealed that intrinsic barriers strongly correlated with external barriers (Soresi, Nota and Ferrari, 2012).

Table 3: Demographic Profile

Variable	Cluster 1 Fighter	Cluster 2 unmotivated	Cluster 3 optimism
Demographics	n (%)	n (%)	n (%)
Sex			
Male	21 (30%)	23 (32.9%)	26 (37.1%)
Female	5 (45.5%)	2 (18.2%)	4 (36.4%)
Previous School			
SMA	21 (30.4%)	23 (33.3%)	25 (36.2%)
SMK	5 (41.7%)	2 (16.7%)	5 (41.7%)
Major			
KPN	13 (41.9%)	9 (29%)	9 (29%)
Teknika	5 (62.5%)	2 (25%)	1 (12.5%)
Nautika	8 (19%)	14 (33.3%)	20 (47.6%)
Ambition			
Sailorman	17 (29.3%)	20 (34.5%)	21 (36.2%)
Be Successful	4 (40%)	3 (30%)	3 (30%)
Policeman	1 (25%)	1 (25%)	2 (50%)
Military personnel	2 (33.3%)	1 (16.7%)	3 (50%)
Architect	0 (0%)	0 (0%)	1 (100%)
Pilot	1 (100%)	0 (0%)	0 (0%)
Athlete	1 (100%)	0 (0%)	0 (0%)
Career adaptability score			
Low	2 (100%)	0 (0%)	0 (0%)
Moderate	14 (36.8%)	13 (34.2%)	11 (28.9)
High	10 (24.4%)	12 (29.3%)	19 (46.3%)

The unmotivated cadet cluster represents those who have low adversity quotient, perceive no parental support and negative school climate. The term "unmotivated" is used in this research because it suits the characteristics of these cadets which are having low adversity in the face of difficult situation and perceiving no support.

The optimism cluster represents cadets who have high degree of adversity quotient, receive parental support, and have positive perception on the campus climate.

A prior study by Tian, Xiuzhen Fan (2014) investigated adversity quotient, clinical learning environment, and social support in nursery students. This study emphasized individual intelligent in dealing with difficulties as personal factor and also learning environment and social support as environmental factor in nursery vocational education. Its result showed that adversity quotient, school support and support in clinical learning environment positively correlated with career adaptability subscales (Tian & Fan, 2014; Han & Rojewski, 2015). Another research on this matter is a study by Han and Jay W. Rojewski (2015) on high school graduates. It result indicated that social support and familial support had positive correlation with career adaptability (Han and Rojewski, 2015). A similar study about parent's behavior and career adaptability was conducted on Chinese students in 2015. The result demonstrated parent's behavior as a positive predictor of career adaptability (Guan *et al.*, 2015). Yet some other researches also reported correlation between parental support and career adaptability in education settings (Hirschi, 2010; Santilli *et al.*, 2014). The demographic profile of the optimism cluster also shows that the majority of male cadets are included in this cluster. In term of sex, males tend to have higher efficacy in their ability compared to their counterpart (Hirschi, 2009). Men are more likely to have higher career adaptability and experience career satisfaction than women (Han and Rojewski, 2015).

5 CONCLUSIONS

Cluster analysis was conducted in this research on shipping cadets to make profiling based on the factors of career adaptability. It resulted in three profiles, namely: Profile 1, the fighter, is cadets who have high adversity quotient but perceive no parental support and negative school climate; Profile 2, the "unmotivated", includes cadets with low adversity quotient who perceive no parental support and negative school climate; Profile 3, the "optimism", is cadets who have high adversity quotient, perceive parental support, and have positive perception on the school climates. This result could be a reference for designing interventions to address issues experienced by shipping cadets during their study.

Limitations to this research might include: this research does not have balance demographic data. On gender, the ratio between males and females was not balanced because the involved programs are dominated by male students. So was the case with ambition, we did not obtain balanced data with well-spread distribution across categories of ambition.

The next study needs to measure the relationship of variables that affect career adaptability

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