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Analysis of Factors Affecting Decision Making in the Selection of Majors at SMK Negeri 4 Kupang

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Abstract. *Decision-making is the process of selecting one option from a range of alternative choices, carried out rationally. This process can be done individually or with the participation of others. This research aims to identify the factors influencing the decision-making of students at SMK Negeri 4 Kupang. This study employs a quantitative approach. The population consists of 195 tenth-grade students, with a sample size of 132 students. The sampling technique used in this research is probability sampling. Data collection was conducted using a Likert Scale questionnaire, focusing on decision-making in selecting a major (40 items), which includes both favourable and unfavourable items.The research findings indicate that knowledge about majors contributes the most to students' and parents' decision-making, with a contribution of 30.89%. Students' and parents' perceptions of majors account for 47.28%. The key factors include parenting style, parents' perceptions of majors, and career information. Peers also play a significant role in the decision-making process, influencing it by 58.04%.Based on these results, it can be concluded that three main factors emerged from the factor analysis:knowledge about majors, parental perception, and peer influence play an important role in the decision-making process for selecting majors at SMK Negeri 4 Kupang.*

Keywords: *Factor Analysis, Decision Making, Choice of Major*

1. Introduction

According to Terry (as cited in Santoso, 2022), decision-making is the process of evaluating and selecting options to solve a problem, typically involving the choice of one alternative from several available options. Decision-making is both a science and an art that must be pursued, studied, mastered, and deeply developed by individuals. It is considered an art because the process is often confronted with unique situations, each characterized by its distinct features.

Ruslan (as cited in Suryani, 2020) explains that the selection of a major is a student's right to choose a field of study that aligns with their talents, interests, and potential, offered by the school they wish to attend. The primary purpose of selecting a major is to provide students with comprehensive and clear information about the various available options for continuing their education. This process aims to help students choose the most suitable school or study program based on their general abilities (intelligence), talents, interests, personal inclinations, and other factors that may influence their educational path.

Vocational High School (SMK) is a form of formal education that continues vocational training at the secondary level, following junior high school or its equivalent, or after completing recognized learning outcomes at the junior high/MTs level. SMKs prepare students to develop

specific skills for future careers. A phenomenon observed at SMK Negeri 4 Kupang, based on interviews conducted by the researcher with a school counselor, revealed that decision-making in selecting a major for grade X students is influenced by several factors, including interest, economic status, family, and peers.

Research conducted by Kasan (2022) highlights that choosing a major or field of expertise that aligns with one's interests, skills, and abilities is not an easy task, as many factors must be considered. Making a major selection requires careful, rational decision-making, aligned with personal interests. If the chosen major or area of expertise does not match a student's interests, it can lead to difficulty in following the curriculum, increasing the risk of failure when expectations do not align with reality. Several factors influence the decision to choose a major, including interest, economic status, parents, and peer influence.

2. Literature Review

1.1. Decision Making

According to Terry (in Santoso, 2022), decision making is an activity in assessing and making choices in solving a problem, usually done by choosing one alternative from several existing alternatives. Inbar (in Pasolong, 2023) defines that decision making should be understood in two senses, namely goal setting which is the translation of ideals, aspirations and achieving goals through their implementation. In summary, decisions are made to achieve goals through implementation and this is all based on human relations. For the success of decision-making, the ten laws of human relations should be the reference of every decision-making.

Furthermore, Bowo (in Trisnawaty, 2020) states that decision making is a process of finding one choice from a variety of alternative best choices that are carried out rationally. Solving various kinds of problems that exist with the intention of achieving a certain goal thus requires a decision-making process.

From the various definitions put forward above, it can be concluded that decision making is a process of systematically selecting alternatives to be followed up or to be used as a way of solving problems. This decision-making process can be done alone and can also be carried out with the help or participation of others. The basics that can be used in decision making vary, depending on the problem. Terry (in Pasolong, 2023), states that the applicable decision-making basics are as follows: a) Intuition, b) experience, c) Facts, d) Authority, e) Logic or Rational

1.2 Aspects that influence Decision Making

Winkel (in Pramudi, 2019), explains the aspects that influence career decision making, especially in choosing a major, namely; aspects of interest, economic status, parents and peers, namely; a) Interest, b) Family economic status, namely the level of education of parents, c) Influence from parents and all family members, d) Association with peers and e) Counseling guidance teacher.

1.3 Major Selection

Ruslan (in Suryani, 2020) defines that, the selection of majors is the right of students to choose suitable majors according to the talents, interests and potential in students available at the school of choice of students in continuing their education. The purpose of majoring is first of all so that students can obtain complete and clear information about the various possible choices that exist for continuing their education.

Selection of majors is a decision where a person makes his choice from several alternative choices available. It can be useful for students in determining the best and quality majors according to the ability of talents and interests possessed by students to be more directed and in

accordance with the wishes and majors they want and as expected. The selection can be determined by students according to their wishes, as well as majors of interest to students (Hidayat, 2019).

1.3.1 Aspects Affecting the Selection of Majors

According to Riswani (2021), aspects that need to be considered in selecting and determining the specialization of SMA / MA and SMJK students can include academic learning achievement, non-academic achievement, parental attention and peers. Description of the aspects in choosing students' majors, namely; a) academic learning achievement, b) non-academic achievement, c) parents, and d) peers.

1.3.2 Majors at SMK Negeri 4 Kupang

1. Visual Communication Design
2. Interior Design and Furniture Engineering
3. Computer Network Engineering
4. Creative Crafts of Wood and Rattan
5. Batik and Textile Creative Craft

1.4 Research Objectives

The purpose of this study is to find out what factors influence decision making in choosing a major at SMK Negeri 4 Kupang.

3. Research Methods

3.1 Research Design and Data Sources

The type of approach in this research is quantitative research. Quantitative research according to Sugiyono (2019), is "research in the form of numbers and analysis using statistics". This quantitative research is used by researchers to analyze the factors that influence decision making in choosing majors at SMK Negeri 4 kupang. The research instrument used in this study is a decision-making scale in choosing a major.

Population is a collection of all possible people, objects and other measures of the object of concern that have the same characteristics or characteristics (Sugiono, 2019). In this study, the intended population is SMK Negeri 4 Kupang class X students from all fields of expertise with a total of 195 students.

Table 1. Research Population

NO	SKILL COMPETENCIES	NUMBER OF LEARNERS
1	Visual Communication Design	79
2	Computer and Network Engineering	69
3	Interior Design and Furniture Engineering	13
4	Batik and Textile Creative Craft	18
5	Creative Crafts of Wood and Rattan	16
Total		**195**

Data Source: Administration of SMK Negeri 4 Kupang FY 2023/2024

3.2 Data Collection Technique

Data collection on decision making in choosing a major is done by filling out a closed questionnaire with a *Likert* scale so that respondents will only give the answers needed for

research purposes. This is because the *Likert* scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena (Sugiyono, 2020).

Respondents will choose one answer to the question / statement by giving a *cheek list* (√) on the available answer number. The scale was prepared by the researcher using the division of two categories of statement items, favorable and unfavorable by determining the weight of the values.

Table 2. Likert Scale

Answer	Favorable (+)	Unfavorable (-)
Very suitable (SS)	4	1
Appropriate (S)	3	2
Not suitable (TS)	2	3
Strongly Disagree (STS)	1	4

3.3 Data Analysis Technique

Factor Analysis

Factor analysis is a technique used to find factors that are able to explain the relationship or correlation between various independent indicators observed. The purpose of factor analysis is to find the minimum possible factors with the principle of simplicity or parsimony that can produce correlations between observed indicators. The data obtained during data collection is analyzed with statistical calculations so that the data can be presented in a simpler form (Safitri and Purba, 2023). This factor analysis has several stages, namely;

1. Kaiser Meiyer Olkin (KMO) Test and Bartlett's Test
2. Measure Of Sampling Adequacy (MSA) Test
3. Factor Extraction
4. Factor Rotation
5. Planting Factors

4. Results and Discussion

4.1 Results

4.1.1 Kaisyer Meyer Olkin Test (KMO) and Barlett's Test.

Based on the table below the results of *IBM SPSS 26 Statistics For Windows,* it can be obtained that the KMO value is 0.728 and the Bartlett Test significance value is 0.000, it can be concluded that these variables can be analyzed further.

Table 3. Results of KMO and Barlett's Test Of Sphericity

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.728
Bartlett's Test of Sphericity	Approx. Chi-Square	297.314
	Df	45
	Sig.	.000

4.1.2 Measure Of Sampling Adequacy (MSA) *test.*

Based on the table below the results of the *IBM SPSS 26 Statistics For Windows* anti-image correlation section, it can be seen that the variables formed after the MSA test are as follows:

Table 4. Measure Of Sampling Adequacy (MSA) Test Results

No.	Indicator	MSA Value	NO	Indicator	MSA Value
1	X1	0,762	6	X6	0,716
2	X2	0,762	7	X7	0,528
3	X3	0,775	8	X8	0,533
4	X4	0,774	9	X9	0,567
5	X5	0,789	10	X10	0,722

From table 4.2 above, it is known that 10 Indicators all have MSA> 0.5. Thus, the 10 Indicators above can be analyzed further.

4.1.3 Factor Extraction.

The factor extraction process is divided into two, namely communalities and variable eigenvalue. The greater the communalities value of an indicator, the more closely it is related to the factor formed. The communalities value results from IBM SPSS 26 Statistics For Windows as follows:

Table. 5. Communalities value

Communalities		
	Initial	Extraction
X1	1.000	.330
X2	1.000	.586
X3	1.000	.724
X4	1.000	.599
X5	1.000	.531
X6	1.000	.542
X7	1.000	.712
X8	1.000	.811
X9	1.000	.442
X10	1.000	.527

Extraction Method: Principal Component Analysis.

From Table. 5 Communalities there are zeroes in the extraction column indicating how much the factor formed to explain the variance. Next is to make assumptions on factor analysis. After all the assumptions in factor analysis are met, then the analysis is carried out to determine the number of factors formed based on several criteria, one of which uses *eigenvalue*. In this study, to determine the number of factors using *eigenvalues* with the criterion that the number of

eigenvalues <1 is not used in calculating the number of factors formed. The *eigenvalue of the variables* studied can be seen in table 4.4 total *variance explained* below.

Table 6. Total Variant Explained

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.089	30.890	30.890	3.089	30.890	30.890	2.919	29.185	29.185
2	1.639	16.391	47.281	1.639	16.391	47.281	1.781	17.810	46.995
3	1.076	10.761	58.041	1.076	10.761	58.041	1.105	11.047	58.041
4	.977	9.767	67.809						
5	.774	7.740	75.549						
6	.684	6.836	82.385						
7	.597	5.967	88.352						
8	.441	4.408	92.760						
9	.401	4.009	96.769						
10	.323	3.231	100.000						

4.1.4 Factor Rotation

Gunawan (in Ihsan et al, 2023) defines that, this factor rotation is needed if the factor extraction method has not produced a clear main component. The variables that have been extracted will be rotated because usually the variable placement is not correct or there are still variables that do not fit the factor. The rotation process is carried out on variables that pass the MSA test.

After obtaining the component matrix value, it is known that 3 factors are the most optimal number, then the component matrix table shows the distribution of the 10 indicators on the 3 factors formed. While the numbers in the table are loading values that show the amount of correlation between an indicator and factor 1, factor 2, and factor 3.

After knowing the loading value in table 4.5 component matrix, factor rotation is carried out. This rotation is done with the aim of getting a clear view of the data with the loading value of each indicator on the existing factors. The loading value for each indicator on the existing factors can be seen in table 4.6 rotated component matrix below. This interpretation is based on the largest loading value of each indicator on existing factors so that an indicator is included in the factor that has the largest loading value.

Table 6. Rotated Component Matrix

Rotated Component Matrix[a]			
	Component		
	1	2	3
X3	.847	.080	-.004
X2	.765	-.025	-.026
X10	.700	-.086	-.175
X5	.640	.295	.185
X4	.579	.206	.471
X1	.569	.078	-.010
X7	-.084	.827	.143

X6	.200	.697	-.129
X9	.058	.645	-.151
X8	-.094	-.210	.870
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Component matrix resulting from the rotation process (rotated component matrix) shows a clearer and more real distribution of indicators. Based on the table above, several indicators are obtained that have groups in each factor.

4.1.5 Factor Naming

To name the factors that have been formed in factor analysis, it can be done in 2 ways, namely first giving a factor name that can represent the names of the indicators that make up the factor, and second giving a factor name based on the indicator that has the highest factor loading value. This is done if it is not possible to give a factor name that can represent all the indicators that make up the factor. In this study, naming factors based on indicators that have the highest factor loading values. The results of factor naming can be seen in table 4.7 below:

Table. 7. Factor Naming

No.	Indicator	Formed factors	Eigen value	Factor Loading	%Variance	%cumu-lative
Factor 1	- Interest in the major	Learners' and parents' knowledge about majors	3,089	0,562	30,890%	30,890%
	- Motivation			0,711		
	- Knowledge about majors			0,824		
	- Family Economy			0,632		
	- The role of parents			0,708		
	- Individualized planning			0,700		
Factor 2	- Parenting	Students' and parents' perceptions of majors	1,639	0,697	16,391%	47,281%
	- Parents' perception of majors			0,827		
	- Career information			- 0,645		
Factor 3	- Peers	Peers	1,076	- 0,870	10,761%	58,041%

4.2 Discussion

4.2.1 Learner and Parent Knowledge of Majors

In selecting a major at SMK, the school counselor plays a key role as a facilitator, mentor, and liaison between students and their chosen department—whether it be the department head or professionals in the field. BK teachers provide essential information on skill development related to various majors, guiding students to pursue self-development opportunities outside of school, such as participating in workshops, seminars, internships, and certified educational programs. They serve as mentors to help students acquire additional skills in their field of study, aiming to strengthen their career readiness in relation to their chosen major. Additionally, BK teachers act

as role models, collaborating with professionals in relevant fields to offer insights into various majors. Through this, it is expected that they can better support students' needs and help them prepare for their future careers (Santoso et al., 2024).

4.2.2 Perceptions of Learners and Parents about Majors

The perception of students and parents towards majors contributed 16.391%. The forming factors are parenting patterns, parents' perceptions of majors and career information. As revealed by Kasan and Ibrahim (2022) that, by providing information to students can help students to develop and make wise decisions. Usually counseling guidance teachers will provide an understanding of careers through classical services or attach to madding at school.

BK teachers are expected to be able to utilize the use of media and technology to facilitate the expansion of access to information in providing services to students (Risqiyain & Purwanta, 2019). Media that can be used by counseling teachers in providing information to students are power points, videos, and animations (Nindya & Hidayanti, 2019).

In addition to career information, support from the surrounding environment, especially from parents, is very important in making decisions in choosing a major. In line with this, Gradiyanto and Indrawati (2023) revealed that families, especially parents, have a contribution to students' career decision making. Parents' views on education, especially on majors in schools and parenting patterns, help students make decisions in choosing majors.

4.2.3 Peers

Peers have a major influence on decision making in choosing a major by 10.761%. Peers influence attitudes and behavior and with an interest in the same majors as peers influence students to make decisions to choose majors that match familiar friends.

The influence of decision-making on the choice of majors in vocational schools is influenced by peers. The influence given can also have positive and negative impacts. Peers have a positive impact if they provide assistance in the form of motivation or encouragement in learning, especially in choosing majors and providing other information needed in learning. However, peers can also have a negative impact if they like to impose personal ego. This is why it is still widely found that students choose majors not based on their interests and talents, but students choose majors due to the influence of social contexts, namely peers (Gulo & Laila, 2023).

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