Exploratory Factor Analysis: Factors that Affects Parents' Decision to Choose Private Elementary Schools in Pandemic Covid19

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Abstract. Currently, the majority of private schools are considered by parents as an alternative school choice, in particularly at the elementary level. In many terms offered by this kind of school can greatly influence or even do not affect the parents' decision to prefer the school. The aim of this recent study is to investigate further points about what are the main considerations of parents in the middle of the New Normal age. The study was conducted in June in 4 cities with a fairly high spread of COVID-19 in Indonesia, with 226 samples of parents who would register their children at the beginning of the 2020 and 2021 academic year. The reliability employed was Cronbach Alpha with a value of 0.943. Whereas, the KMO and Bartlett's Test values were $0.924 > 0.05$ and Sig. $0.0001 < 0.05$ accordingly. Data collection employed a questionnaire with 29 questions which were analysed using EFA. There were 5 factors formed by eliminating 7 statements, resulting in a total variance of 72.012%. These factors were categorized as (1) School Services, (2) Facilities, (3) Additional Activities, (4) Promotions, and (5) International Curriculum.

Keywords: Elementary School Choice · the New Normal Age · EFA

1 Introduction

The contagion of Covid19 around the world has not yet shown signs of ending. Indeed, it will affect the world of education. The government is currently compiling a health protocol in the school policy [1]. The government reopen schools at the new academic year in July 2020 was also reaps the pros and cons of parents. Therefore, an initiative action has emerged such an online petition regarding postponing the new school year on the Change.org website [2]. It is due to the parents' lack of confidence in the protocol that the government will implement in schools later. Nevertheless, based on interviews conducted with 10 parents of students who had undergone School From Home activities, 7 of them admitted that they were turning to be overwhelmed by these activities. Admittedly, they wanted the school to reopen immediately. Some parents will also return to work outside the home, so they think of the need for teaching and learning activities to be conducted again at school so that their children can be more controlled.

The elementary school-age student defines an age group identified as an active characteristic. Parents will absolutely make a lot of considerations regarding their decision in choosing a school for them. Research on the factors which affect parental decisions has also been conducted in recent years. However, changes to the pandemic situation may lead to changes about parental decisions for now. There needs to be a renewal of research in the midst of the current new era, namely the Covid-19 pandemic condition.

There are four factors may influence decision making [3], namely cultural factors, social factors (reference group, role, social status, and family), personal factors (life cycle, occupation, economic conditions), and psychological factors (motivation, perception, learning process, beliefs, and attitudes). The four factors are general decision-making factors. In terms of deciding to choose a school, there identifies which are more specific than school as a choice. Other studies conducted specifically on school selection are summarized in Table 1.

In contrast to the research conducted by Yacoop, Murdopo, Bokings which stated that location was an influential factor, other studies have shown the opposite [4–6]. Kristen, Tangkilisan, and Rakhmanita stated that location did not have a positive effect on factors that affected parents [7–9]. The same thing was revealed by several people who were interviewed before conducting this research. Those in metropolises said that they did not have a problem with the location of the school which was far from home. Some of their children can take a pick-up car or use a private vehicle (driven by the driver or driven by the mother because they were not working).

Prior to conducting further research, the researcher interviewed 10 parents. Five of them planned to enrol their children in school this academic year and the next year and the remaining had their children attend private elementary schools. The intended interview was to gain deeper information about the indicators representing factors that had previously been studied by other researchers. The research was listed in Table 1. Overall, no one had included the indicators they took, so the indicators appeared could vary widely. It was due to the many indicators which can be considered by parents who certainly had different preferences regarding the school need of their children.

Table 1. Influencing Factors in the Previous Research

Previous Studies	Factors
Rakhmanita (2012)	Price, promotion, place, and facilities
Murdopo (2013)	Condition school, finance, and the location of school
Bokings, dkk. (2013)	The socio-economic background of parents, location, teachers, school status, environment, school condition, and cost factor
Tangkilisan, dkk. (2014)	Price, promotion, facilities, process, product, and people
Yaacob, dkk (2015)	Parents' income level, school syllabus, school facilities or environment, achievement, location, teacher quality, and distance
Kristiani (2016)	Promotion, services, product (Graduates/Alumnae), fees, and accreditation status

The government has not announced a definite date regarding the return of teaching and learning activities (KBM) to schools. Nonetheless, some provinces have begun to prepare the KBM scenario in the new normal age. Amid those who have released the KBM mechanism is East Java Province [19]. The mechanism is not yet official since it is still waiting for direct directions from the Central Education Ministry. With the mechanism that has been designed, it hoped that it can be immediately evaluated by the centre of government then the revisions can be carried out soon.

The East Java Education Office presents the draft health protocol that will be conducted in schools later. The health protocol implemented is divided into 6 parts including the public health protocol in schools, facilities and infrastructure, teachers and education personnel, the health protocol going from home to school, while in school, and from school to home. This health protocol may affect parental factors in choosing a school. Therefore, some of the health protocols that could be observed prior to KBM started will be included in this study. By using the Exploratory Factor Analysis, this study has the objective to determine what factors influence parents' decisions in choosing private primary schools for their children.

2   Method

The population of this study was all parents of students who would enrol their children in private elementary schools in Java. Java Island has the highest distribution compared to other islands. The sample was random (random sampling) totalling 226 people. The number of samples was determined based on Hair which stated that the minimum sample size for EFA Analysis was 100 samples [10].

The retrieval data used a questionnaire which the factors were adapted from previous research. They included price, promotion, facilities and infrastructure, teachers, school status, syllabus, accreditation status, and school environment. These factors were then developed to fit the current pandemic condition. Thus, it conducted interviews with 10 parents of students to find out the indicators that affected the factors. The results were as shown in Table 2. The research instrument employed a Likert scale. The scale consisted of 1–5 category, which represented very insignificant (1) to very important (5). All statement items used were positive.

The reliability evidence of this instrument used Cronbach Alpha. Meanwhile, for the validity construct, the analysis factor was used in the form of Exploratory Factor Analysis (EFA). Data were analysed using Social Science Software (SPSS) version 25 to form the new form of factors. The number of factors based on the Eigenvalue which has a value of more than 1.

In EFA, the first test executed is the assumption test using the KMO-MSA (Kaiser-Meyer-Olkin Measures of Sampling Adequacy) value. The value used is to see the adequacy of the sample. It is indicated by the value of KMO MSA > 0.6 [10–12]. In the table of results from the same SPSS Software, it can also be seen the level of significance (Sig.) of Bartlett's Test of Sphericity. This kind of value used is to test the correlation between attributes that are measured largely enough or not [13], it requires the value around Sig. <0.05.

Table 2. The Blueprint of Questionnaire Instrument

Factor	Indicator	Item Number
Promotions	– Through *offline* media (pamphlet, banner in the centre of the crowd, etc.) – Through *online* media (TV, radio, social media, etc.) – Promotion gotten from friends, relatives, kin, family (mouth to mouth)	P1 P2 P3
Fees	– School fees are proportional to the quality, service, school facilities and infrastructure, etc. – School fees do not exceed the family's planned education budget – Deductions for certain circumstances (e.g., when an early bird of registration, scholarships for the learner achievement, gifted learner, etc.)	P4 P5 P6
Services	– Parenting activities – Student's progress report – Paying attention to individual potential, interests and talents – Student development counselling	P7 P8 P9 P10
Facilities and Infrastructure	– Classroom circumstances – Conditions of school facilities (playground, sports field, toilet, parking area, etc.) – Shuttle facilities – The canteen sells healthy food and refreshment – Learning media	P11 P12 P13 P14 P15
School Syllabus	– School' vision and mission – The curriculum is integrated with religion – International curriculum or international standard lessons – Varied Extracurricular – Various additional activities (such as community camps, study tours, performing arts, etc.)	P16 P17 P18 P19 P20
Teachers' Quality	– Teachers' image at schools – The availability of foreign teacher – Handling student delinquency – Understanding the diversity of students' abilities	P21 P22 P23 P24

Table 2. (*continued*)

Factor	Indicator	Item Number
Health Protocol	– The total number of students in the class and the spacing in the classroom as well as in the school environment – The readiness of a good distance learning system if at any time you have to run the school from home again – There are health workers – The optimization of the School Health Unit and its equipment – Hygiene facilities (hand washing station, hand sanitizer, spraying disinfectant, etc.)	P25 P26 P27 P28 P29

The use of EFA aims to explore data and it does not seek data validation. Therefore, it leads to many things to be considered. These include the value of Anti-Image Correlation and the value of Communalities. The minimum value for Anti-image Correlation is >0.5 [10]. As for the value of Communalities, experts have different minimum values. Tabachnick & Fidell and Field suggested that the minimum value of Communalities is >0.3 [12, 13]. Osborne, Costello, & Kellow and Gaskin recommended a higher value >0.4 [14, 15]. Meanwhile, Heir proposed a value >0.5 [10]. The value shows the amount of variance in the attribute which is taken into account by two factors taken together [10]. In this analysis, the calculation uses the Varimax rotation.

3 Results

The result of the overall reliability Cronbach's Alpha analysis using resulted in a value of 0.943. The type of this test was carried out prior to the EFA analysis. The average answer from the respondents was 4.22 with a standard deviation of 0.84 (Table 4).

As shown in Table 3, it can be summarized that the instrument has met the initial requirements of the EFA analysis by the explanation that the KMO value of 0.924 > 0.05 and Sig. 0.0001 < 0.05. Then, the Anti-image Correlation value found in the calculation result ranges from 0.580–0.960. All these values have met the minimum value > 0.5. What stands out in the table leads to a little difficult to predict which items will be the target of elimination if needed later. The results of Communalities are different. The values formed uses Varimax extraction ranging from 0.432–0.754. If we use the minimum value suggested by Heir et al., there will be 4 items that can be eliminated.

The purpose of eliminating an item is not only to fulfil the preliminary requirements analysis (KMO and Bartlett's Test), but also to affect the factors that are formed later.

Table 3. Measurement Indicator in EFA

Indicators	Minimum Range
KMO (Kaiser Mayer Olkin)	>0,6
Bartlett's Test of Sphericity	Sig. <0,05
Anti-Image Correlation	>0,5
Communalities	>0,3 or >0,4 or >0,5
Factor loading	Higher value in each items in each factors

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.924
Bartlett's Test of Sphericity	Approx. Chi-Square	4538.484
	df	406
	Sig.	.000

This factor is formed from the Eigen value which has a value >1. By analysing 29 items, 5 factors are formed based on the Eigen value. Table 5 shows that factor 1 can explain 23.937% of the variance after the data is rotated, while Factor 2 can explain 14.947% after rotation, etc. This means that if it is only formed into 1 factor, then the instrument is able to explain 23.937% to measure the influence factor of parents choosing private primary schools. However, if formed into 5 factors, the instrument can measure 65.711% of the variable to be measured. The remaining are factors that have not been measured in this instrument (Tables 6 and 8).

Based on the Rotated Component Matrix, the Loading Factor that is formed ranges from 0.390–0.851. A total of 13 items skew into a factor of 1; 4 items skew to a factor of 2; 6 items skew to a factor of 3; 3 items skew to a factor of 4, and 2 other items skew to a factor of 5. Several experts claimed that Loading Factors that have a value of >0.5 are considered to provide better results [16–18]. It was also conveyed by Hair that the estimated Loading Factor should be greater than 0.5, but if the value is greater than 0.7, it will give even better results [10] (Table 9)

As previously explained, the instrument was able to explain 65.711% of the measured variables. Nevertheless, by considering the opinion of experts regarding the value of Communalities and Loading Factors, the Total Variance previously obtained can have a better value by eliminating items. Based on the Communalities value, 4 items can be eliminated. They are P6, P7, P13, and P17. Meanwhile, based on the Loading Factor, the items that can be eliminated are P3, P6, and P13. These two consideration values

Table 5. Communalities

	Initial	Extraction
P1	1.000	.745
P2	1.000	.756
P3	1.000	.575
P4	1.000	.571
P5	1.000	.528
P6	1.000	.423
P7	1.000	.472
P8	1.000	.750
P9	1.000	.754
P10	1.000	.694
P11	1.000	.676
P12	1.000	.784
P13	1.000	.461
P14	1.000	.711
P15	1.000	.747
P16	1.000	.558
P17	1.000	.471
P18	1.000	.692
P19	1.000	.644
P20	1.000	.709
P21	1.000	.629
P22	1.000	.726
P23	1.000	.713
P24	1.000	.765
P25	1.000	.658
P26	1.000	.669
P27	1.000	.708
P28	1.000	.728
P29	1.000	.741

Table 6. Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	12,758	43,992	43,992
2	1,926	6,641	50,633
3	1,806	6,226	56,859
4	1,399	4,823	61,682
5	1,168	4,029	65,711

Table 7. Total Variance Explained

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	12,758	43,992	43,992
2	1,926	6,641	50,633
3	1,806	6,226	56,859
4	1,399	4,823	61,682
5	1,168	4,029	65,711

Table 8. Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6,942	23,937	23,937
2	4,335	14,947	38,884
3	3,761	12,968	51,852
4	2,134	7,358	59,21
5	1,885	6,501	65,711

refer to P6 and P13 to be eliminated. Next, we will try to do elimination in stages to see the changes in Total Variance that occur (Table 10).

Evidently, from the item elimination trial shown in Table 7, by eliminating the Communalities value <0.5 and Loading Factor <0.5, it can increase the Total Variance. From these results, it shows that if one elimination of the item carries out, the value of Communalities will only experience a small alteration. Conversely, the Loading Factor value may experience significant change if there is an elimination of items.

Table 9. Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
P24	.787	.224	.299	.036	.074
P23	.778	.204	.248	−.012	.059
P9	.749	.296	.306	.102	.033
P8	.744	.307	.293	.126	−.004
P26	.688	.186	.283	.094	.271
P4	.673	.297	.089	.142	−.041
P5	.667	.121	.049	.165	−.198
P29	.645	.179	.509	.097	.158
P10	.641	.423	.299	.085	.082
P15	.526	.508	.452	.081	.049
P25	.514	.429	.450	−.040	.078
P21	.504	.499	.194	.167	.246
P3	.488	.328	−.136	.459	−.004
P20	.128	.809	.032	.075	.180
P19	.323	.688	.181	−.027	.179
P17	.331	.568	.154	.091	.083
P16	.419	.536	.217	−.054	.213
P7	.361	.521	.224	.139	.025
P14	.233	.234	.757	.169	−.012
P28	.435	.056	.689	.120	.215
P27	.429	.048	.625	−.026	.360
P12	.338	.568	.582	.048	−.076
P11	.361	.474	.551	.094	−.084
P13	−.125	.363	.390	.245	.317
P1	.019	.038	.131	.851	.040
P2	.142	−.025	.052	.845	.134
P6	.259	.231	.326	.429	−.111
P22	−.108	.079	.115	.107	.826
P18	.221	.323	.006	−.003	.734

Table 10. The Effect of Item Elimination to the Total Variance

Item Elimination	Results	Total Variance
P6	Communalities P7, P13, P17 < 0,5 Loading Factor P13 < 0,5	66,859%
P6 and P13	Communalities P7, P17 < 0,5 Loading Factor P25 < 0,5	68,170%
P6, P13, P7	Communalities P17 < 0,5 Loading Factor P25 < 0,5	69,153%
P6, P13, P7, P17	Communalities all items > 0,5 Loading Factor P16, P21, P25 < 0,5	70,264%
P6, P13, P7, P25	Communalities P17 < 0,5 Loading Factor all items > 0,5	69,403%
P6, P13, P7, P17, P25	Communalities all items > 0,5 Loading Factor P16, P21 < 0,5	70,553%
P6, P13, P7, P17, P25, P16, P21	Communalities all items > 0,5 Loading Factor all items > 0,5	72,012%

The items eliminated represent 7 indicators, in the form of discounted fees (P6); parenting activities (P7); shuttle (P13); vision and mission of the school (P16); integrated religious curriculum (P17); the good figure of teachers in schools (P21); and the total number of students in the class (P25). The reduction in items was able to incline the Total Variance up to 72.012% (Table 11).

Exploratory Factor Analysis (EFA) had been done on the response of 29 item statements regarding the factors which affect parents' decision in choosing schools. The result gained was that the instrument was able to explain 65.711% of the variables studied. However, to further improve the test result, 7 items were reduced. The reduction resulted in an increase in variance up to 6.301%, to 72.012%. The higher the Total Variance, the better the instrument can measure the variables being measured.

There were 5 factors formed based on the Eigenvalues > 1. From the analysis using 29 items to the reduction to 22 points, the number of factors formed was still 5 factors. What changes were the items which were inclined towards these factors. Nevertheless, the 5 factors that are formed from 22 items can be categorized as (1) School Services, (2) Facilities, (3) Additional Activities, (4) Promotion, and (5) International Curriculum.

The Total Variance result obtained indicated that there were still 27.988% that could not be measured from this instrument. For this reason, further research is needed considering the condition during the pandemic still causes a lot of anxiety from parents in choosing a good and safe school for their children.

Table 11. Factors and Items Formed

Factors	Items
Factor 1 (24,856%)	Promotion gotten from friends, relatives, kin, family (mouth to mouth). (P3) School fees are proportional to the quality, service, school facilities and infrastructure, etc. (P4) School fees do not exceed the family's planned education budget (P5) Student's progress report (P8) Paying attention to individual potential, interests and talents. (P9) Student development counselling. (P10) Handling student delinquency. (P23) Understanding the diversity of students' abilities. (P24) The readiness of a good distance learning system. (P26)
Factor 2 (19,416%)	Classroom circumstances (P11) Conditions of school facilities (P12) The canteen sells healthy (clean) food and refreshment (P14) Learning media (P15) There are health workers (P27) The optimization of the School Health Unit and its equipment (P28) Hygiene facilities (P29)
Factor 3 (11,665%)	Varied Extracurricular (P19) Wider ranges of additional activities (P20)
Factor 4 (8,272%)	Through *offline* media *offline* (P1) Through *online* media (P2)
Factor 5 (7,802%)	International curriculum or international standard lessons (P18) The availability of foreign teacher (P22)

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