The Practice of Child Marriage: A Profile and Policy Advocacy for the Indonesian Government

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The Practice of Child Marriage: A Profile and Policy Advocacy for the Indonesian Government

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ABSTRACT

Child marriage is one of the more frequent social problems in developing countries, especially in Indonesia; the government is hardly concerned about this and relates it to population control. This has the potential to escalate into a serious problem that will symmetrically affect the economy if the number of child marriages continues to increase. This study aimed to apply a profile analysis approach to measure the significant difference and to understand the characteristics of child marriages in each Indonesian province. The country is divided into four regions based on the main development area over 4 years from 2016 to 2019. The findings from the parallel hypothetical test suggest that the child marriage profile from each region is not parallel, and each region has its unique characteristics. Therefore, appropriate policies should be introduced separately for each region, such as enhanced education quality, social assistance and protection programs for children, social participation models, and collaborative governance-based city/village programs.

Keywords: Child Marriage, Profile, Multivariate of Variance, Policy Advocacy

INTRODUCTION

Child marriage is a social problem that is still prevalent in Indonesia. It occurs at the intersection of two hierarchies: sex and age. Women are always in the position of the least power; at the worst, they are without power and generally have to surrender to men. In contrast, in the age hierarchy as teenagers, they must obey their parents and family or older members of society (Grijns and Horii, 2018). Vogelstein (2013) states that cases of child marriage also indicate one of the slowdowns in economic growth in a region. Child marriage has an impact on low education levels, and the long-term impact is a risk to children's health, especially women who are threatened (Jensen and Thornton, 2003). Megan, Arthur et al. (2017) in their empirical research, stated that the high rate of child marriage in many countries indicates various views on the definition of childhood, and that the number of underage girls who are forced to marry is much higher than that of boys.

UNICEF (2020) data report that several factors are related closely to the practice of child marriage, including economic, culture, health, education, social protection, and employment. Several of these factors simultaneously act as the driving force and as protection to prevent the practice of child marriage, as long as it is used with the right approach.

This research was conducted by mapping child marriages through profile analysis based on the main regions of development planning in Indonesia. The development of main regions is one of the ways in which the government can achieve a successful implementation of a development program.

Based on the Ministry of National Development Planning (2018), main regional development aims at growth and equitable development.

The analysis profile based on the division of this area aims to identify the characteristics of child marriage in each development planning area, so that policy recommendations are specific to each region. In addition, statistical analyses to map characteristic profiles with multiple groups can apply multivariate analysis of variance (MANOVA) (Huberty and Olenjnik, 2005; Johnson and Wichern, 2002; Morrison, 1976; Timm, 2002). Da Silva et al. (2015) used MANOVA to analyze the characteristics of two population groups: the millennial generation and the X generation. They found that the personalities between the two groups of students differed significantly. Furthermore, Lowe et al. (2003) found a significant difference between profile variations for performance on memory tests by gender; in particular, they revealed relative strengths for women on verbal tasks and men on spatial tasks.

METHOD AND PROCEDURES

To conduct profile analysis, we applied some procedures before identifying possible similarities within the treatment effects. Some assumptions had to be satisfied before conducting profile analysis. First, Box (1949) was introduced through Box's M test to check the homogeneity assumption of variance–covariance matrices. The null hypothesis was rejected if the data from all groups had common variance–covariance matrices, called as heterogeneous. The null hypothesis is as follows:

$$H_0 = \Sigma_1 = \Sigma_2 = \Sigma_3 = 0$$

The next step was to check the data distribution, of which the multivariate data had to be distributed normally for each group, by using the Shapiro–Wilk's test for univariate normality and Mardia's skewness and kurtosis test for multivariate normality. The null hypothesis is given as follows:

$$H_0 = \epsilon \sim N_4(0,\Sigma)$$

Assuming that compound symmetry was not met, the repeated measurement of MANOVA was then applied (Timm, 1975). It was naturally chosen as it was the most appropriate to design the sort of complete random data across time-dependent and multiple dependent variables (Tabacknick and Fidel, 2007). In this study, we assumed E_{abc}, a = 1,2, …, r; b = 1,2, …, p_i; c = 1,2, …, y as the response in a repeated measurement, where a is the main development region in Indonesia; b is the number of provinces included in each region; c is the dependent variable of the year; r represents the four main development regions; p_i = the total number of provinces in the b-th region; and y = four year-groups.

Provided a subject is in the a-th region and b-th province, and in the y-th year-group, its mean response is:

$$E_{abc} = [e_{ab1}, e_{ab2}, \ldots, e_{aby}] \quad (1)$$

Equation (1) implies the response vector for the b-th province within the a-th region, and

$$\bar{E}_{abc} = [\bar{e}_{a1}, \bar{e}_{a2}, \ldots, \bar{e}_{ay}] \quad (2)$$

Equation (2) implies the mean response vector for the a-th region group. Anderson (2017) argued that profile analysis provides tests that have more specific hypothesis than the standard hypothesis of

$$H_0 = \mu_1 = \mu_2 = \mu_g$$

This is because it can be developed by considering the *c x 1* mean vector as the profile for each group. Usman, et al. (2013) stated that for a greater understanding in profile analysis, some hypothetical tests must be constructed with the condition of accepted hypothesis from the previous hypothesis before conducting the next hypothesis. Sabbag (2019) specified three main basic questions that should be asked for profile analysis in groups, which are as follows:

1. Are the groups parallel?
2. Are the groups coincidental?
3. Are the groups horizontal?

Should any of these questions have "no" as an answer, there would be a significant effect. Therefore, we can develop three hypotheses from these questions, as follows.

- H_{01} = The r region profile is in parallel form.

Parallel form means that each profile has significant similarities among groups, and it is considered as the main test in profile analysis. The subtraction of the segment matrix from the group mean for each individual results in the within-group variance, whereas the subtraction of each group mean segment matrix from the grand mean segment matrix results in the between-group variance. If the null hypothesis is not rejected, then it can go through to the second hypothesis.

- H_{02} = The profiles have equal levels, with the condition of a parallel profile.

This is simply mathematically by measuring the relative contributions between groups and within groups to the sum of squared residuals. If the group levels are significantly different, then the coincident null hypothesis is rejected.

- H_{03} = The profiles experience flatness.

The horizontal null hypothesis is measured if the multiple segments in the profile are zero; hence, the slope is zero and the profile is flat. If the line is not flat, any segment varies significantly from zero and the within-group main effect.

In their empirical study, Khattree and Naik (2005) argued that at least four multivariate tests can be applied to test parallel, coincident, and horizontal profiles, which are Wilks' lambda, Pillai's trace, Hotelling–Lawley trace, and Roy's greatest root. We rejected the null hypothesis if the probability values of all the tests were less than the alpha level of 5%, or if the F statistics exceed the critical value. If only the first hypothesis is the region of rejection, then the last two hypothetical tests were not conducted as they were considered meaningless (Usman et al., 2013).

RESULTS AND DISCUSSION

Data Analyses and Results

Data on child marriages in Indonesia over the last 4 years were gathered from Badan Perencanaan Pembangunan Nasional (Bappenas). Data were obtained from 34 provinces, divided into four regions based on the main development area. Region A consists of five provinces including Aceh, North Sumatra, West Sumatra, Riau, and Kepulauan Riau; region B has 11 provinces: Jambi, South Sumatra, Bengkulu, Kepulauan Bangka Belitung, Lampung, Banten, Jakarta, West Java, Central Java, Yogyakarta, and West Kalimantan; region C includes six provinces of East Java, Bali, Central Kalimantan, North Kalimantan, East Kalimantan, and South Kalimantan; and region D consists of 12 provinces: West Nusa Tenggara, East Nusa Tenggara, West Sulawesi, South Sulawesi, Southeast Sulawesi, Central Sulawesi, Gorontalo, North Sulawesi, Maluku, North Maluku, Papua, and West Papua. The underage-marriage population is divided into four year-groups: year 1 (2016), year 2 (2017), year 3 (2018), and year 4 (2019).

Using SAS 9.4 software, we first conducted the test of MANOVA criteria to measure any differences among the dependent variables, as shown in Table 1.

Table 1. MANOVA Test Criteria

Statistic	Value	F-value	Num DF	Den DF	P-value
Wilks' lambda	0.24154796	4.25	12	71.727	<.0001
Pillai's trace	0.91363424	3.17	12	87	0.0009
Hotelling–Lawley trace	2.51056700	5.48	12	43.121	<.0001
Roy's greatest root	2.23774099	16.22	4	29	<.0001

Table 1 measures statistically that all four dependent variables in a group have to reject the null hypothesis as they have a probability value less than 0.05. In other words, there are one or more differences among the four mean vectors for the four groups.

With the significant difference in mean vectors for all the multivariate groups, the next procedure was to ensure homogeneity assumption. The discriminant procedure is shown in Table 2 as follows.

Table 2. Test Homogeneity of the Within-Covariance Matrix

Chi-square	DF	P-value
30.932852	30	0.4187

As the chi-squared probability is 0.4187, which is more than the significant value of 5%, Box's M test can be said to have a common variance–covariance matrix for all groups; hence, the assumption is not violated.

The next procedure to be satisfied was the normality test. Table 3 shows the Shapiro–Wilk and Mardia skewness and kurtosis tests to check the normal distribution among the groups.

Table 3. Normality Test

Equation	Test statistic	Value	Prob
r1	Shapiro–Wilk W	0.96	0.3082
r2	Shapiro–Wilk W	0.96	0.2077
r3	Shapiro–Wilk W	0.97	0.6108
r4	Shapiro–Wilk W	0.96	0.2372
System	Mardia skewness	20.98	0.3981
	Mardia kurtosis	−0.77	0.4399
	Henze–Zirkler T	0.64	0.8027

Table 3 indicates that for univariate normality tests shown in the test statistics of the Shapiro–Wilk W for equations r1 to r4, the data are normally distributed. In addition, for multivariate normality tests, indicated by Mardia's skewness and kurtosis tests as well as the Henze–Zirkler T-test statistic, the data are normally distributed. To confirm this statistical test, the multivariate normality can be assessed graphically.

Figure 1 indicates that each pair of residual vectors for the bivariate normality test has a strong positive relationship, or if one residual vector increases, another residual vector will increase. The further graphical measurement considered the histogram of each vector of the residuals along with its corresponding QQ-plot.

Figure 2 shows clearly that all four residual vectors have a normal distribution and a strong correlation in normal quantiles.

Figure 1. Scatter Plots for Pairs of Residual Vectors

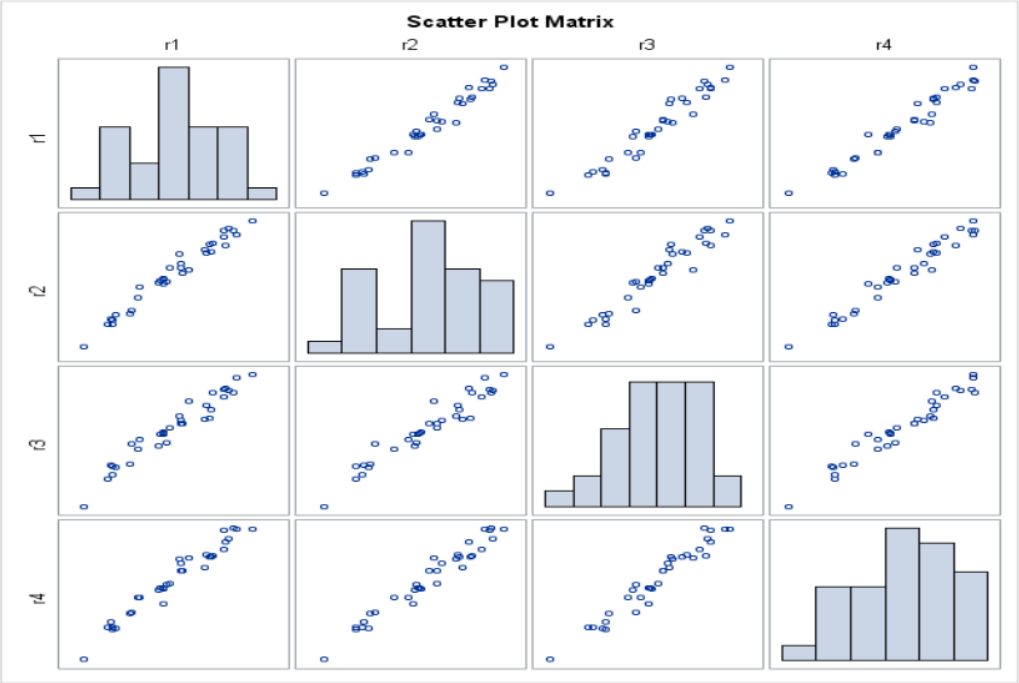
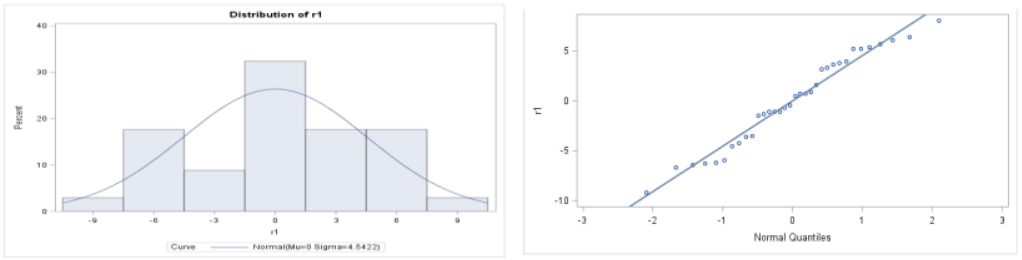
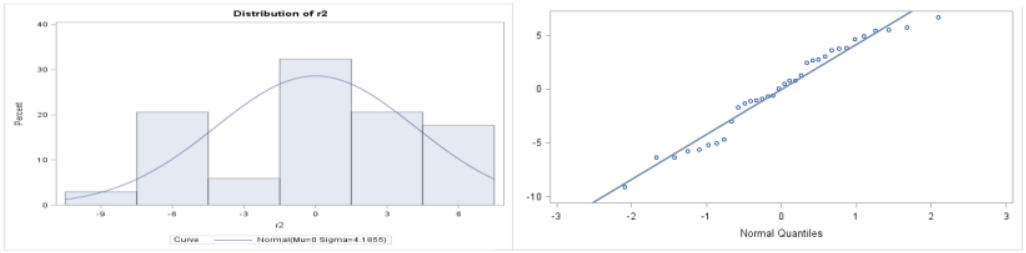


Figure 2. Distribution Histogram and Probability Plots for **(a)** r1; **(b)** r2; **(c)** r3; and **(d)** r4

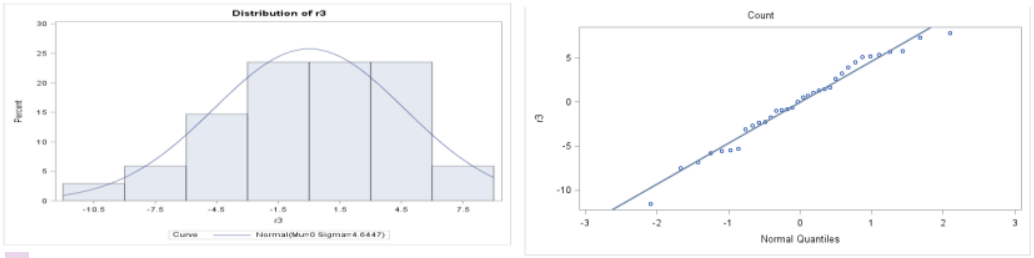
(a)



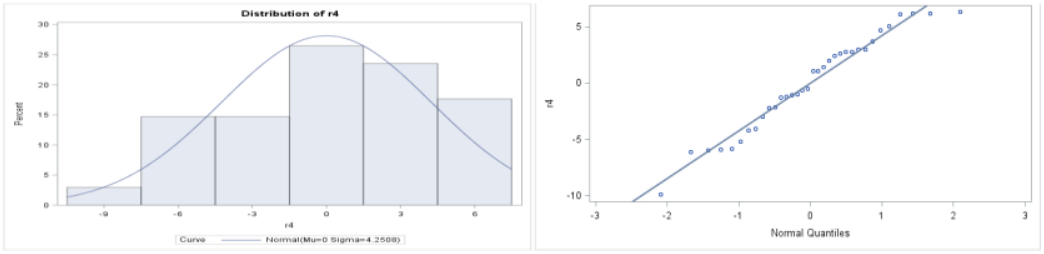
(b)



(c)



(d)



Furthermore, once the assumptions were satisfied, we tested the overall treatment effect. The output of the MANOVA test criteria in Table 1, with an average overall test, showed a p-value of 0.001, and was used to test the null hypothesis of $H_0 = \mu_1 = \mu_2 = \mu_g$; it referred to rejection, and thus indicated that at least one of the four regions has a significant impact on child marriage.

After some procedural tests in conducting the MANOVA assessment, to understand more regarding the profile analysis, the first question needs to be answered: whether the within groups are parallel or not. Table 4 indicates that all four statistical measurement tests have a significant value of less

than 0.05; therefore, we rejected the null hypothesis and concluded that the profiles of early marriages have no parallel profiles within the groups of year-regions. Figure 3 supports the statistical results, as the plots for profiles of early marriage groups in 4 years for four regions are not parallel.

Table 4. Parallel Profile Tests

Statistic	Value	F-value	Num DF	Den DF	Pr > F
Wilks' lambda	0.28688953	5.09	9	68.295	<.0001
Pillai's trace	0.76752225	3.44	9	90	0.0011
Hotelling–Lawley trace	2.29601400	6.97	9	40.933	<.0001
Roy's greatest root	2.21021718	22.10	3	30	<.0001
Note: The F statistics for Roy's greatest root is an upper bound.					

Figure 3. Region Group Profiles for Marriage Rate Profiles

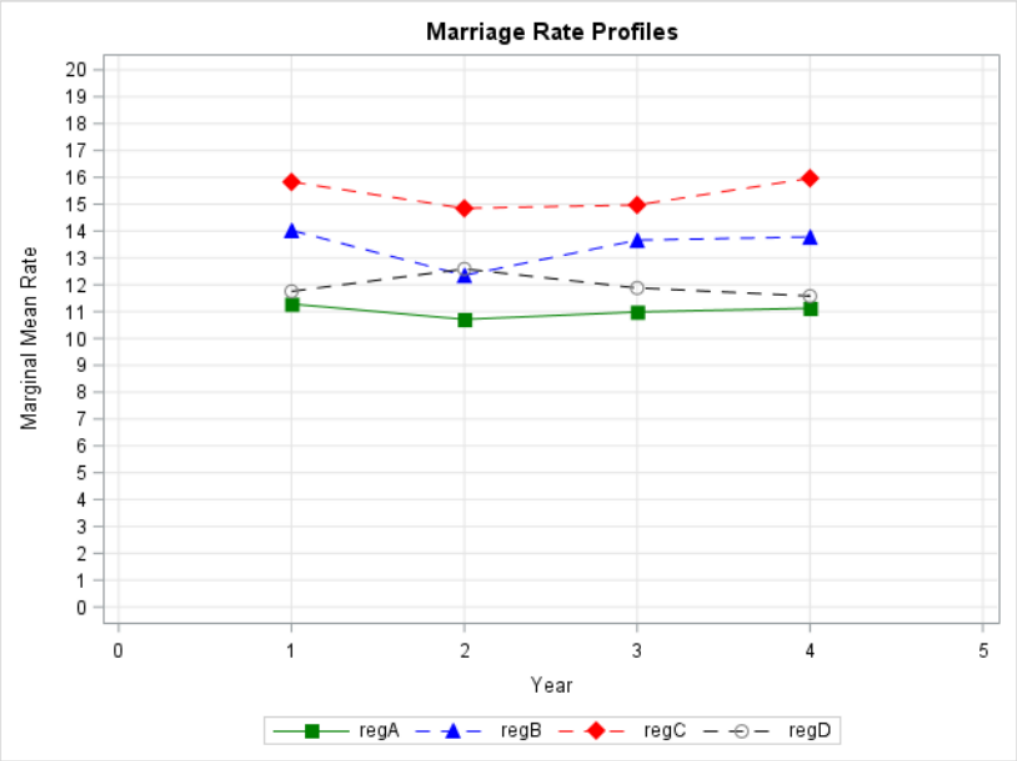


Figure 3 reveals that region B, shown by the red line, has the highest mean rate of early marriages over the years, whereas region A, shown by the green line, has the lowest mean value. Meanwhile, regions B and C have the second and third mean rates, respectively.

Discussion

The results of data processing in general show that each region has a significant difference or different characteristics. The differences in these characteristics indicate the need for specific treatments of policy proposals for each region. Figure 3 reveals the order of child marriage cases according to the division of main development programs as follows: region C has the highest average number of cases, followed by regions B, D, and A. The trend of cases in each region seems to be unique. The trend fluctuated in region C over the years. Meanwhile, trends in regions B and D converged only at the second year; however, for the rest of the years, the trends were as in the initial year of data. The trend in region A showed that the cases that occurred every year had an average value that was relatively the same as the highest number of child marriage cases.

The presumption of the root of the problem was first used before proposing policies to deal with child marriage cases, as Akoglu, et al. (2015) argued that mapping with suspicion will provide an anomaly of accuracy in the analyses results. In region C, the alleged root of the problem for the large number of child marriages is the low access to education services, in particular, educational services that support knowledge of sexual and reproductive health. It is because the coverage of quality education services is also crucial in the child-age years. The alleged root problem in region B is high poverty rates. The proposed policy solution for region B is to increase the capacity of primary caregivers for children, and efforts to strengthen the child welfare system are also important, for example, social assistance and protection programs. The impacts of child marriage will be experienced not only by the children who are married off early but also by children born of such marriages, and this has the potential to create intergenerational poverty.

In region D, the probable root of the problem is a low level of health awareness. The proposed recommendation is to implement a social participation model (Duadji and Tresiana, 2018a) for all age levels through community forums, to strengthen the awareness of health and prevent child marriages in the future. Lastly, in region A, the number of cases tends to average every year, and strengthening the policy of the laws and regulations is highly recommended. As Duadji and Tresiana's (2018b) empirical study showed, the collaborative governance-based city program can be applied as the proper policies from each district government might be developed holistically, interactively, and in a sustained manner.

In general, the policy proposals on child marriage for each region in Indonesia are the policy implementation of Law No. 16/2019 concerning amendments to Law No. 1/1974, which states that the minimum age of marriage for women be increased from 16 to 19 years. Furthermore, the role of parents and the community is regulated in the Child Protection Act Law No. 35 of 2014, which stipulates that parents and the community are obliged to prevent child marriages. Finally, the good implementation and planning of child marriage prevention policies will increase children's productivity for their future lives.

CONCLUSION

Child marriage has been a major issue in the world, including in Indonesia. As a developing country, Indonesia finds this issue as one of priorities to be solved because it can affect the country's economic growth. The Indonesian government has determined the four main regions of development planning to enhance not only the economy but also social welfare. This study aimed to classify and analyze the characteristic profiles of each region for their respective number of child marriages by implementing a profile analysis approach. The results of the parallel hypothetical tests revealed that each region has a significant difference for child marriage, as the regions were not parallel.

Therefore, different policies are recommended for different regions as each region has their root problems that need special treatment. In region C, with the highest mean number of child marriages, enhancing the quality of services on education is needed the most. Social assistance and protection programs for children are proposed in region B, whereas a social participation model to increase the health awareness of the community, particularly reproductive health, is recommended in region C. Finally, in region D, a collaborative governance-based city program is suggested to strengthen the communities' knowledge of health (reproductive health) regulations.

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