

CHAPTER III

RESEARCH METHOD

3.1 Mixed Method

Restating the introduction of this study, the main objective of this study is to analyze the linkage between decentralization and women fertility in Indonesia. To achieve this objective, mixed method approach is selected. Mixed method approach involves collecting and analyzing both forms of data in a single study (Cresswell, 2003). This study used sequential procedures, in which researcher seeks to elaborate on or expand the findings of one method with another method. This study began with quantitative method in which theories are tested and followed by a qualitative method, involving detailed exploration with one case (Cresswell, 2003).

Quantitative approach seeks to explain the relationship between variables through hypothesis testing, whereas the data used in general form of the figures calculated by statistical tests. Quantitative data can be transposed into numbers, in a formal, objective, systematic process to obtain information and describe variables and their relationships (Brink & Wood 1998:5; Burns & Grove 1993:26). Quantitative research begins with a problem statement and involves the formation of a hypothesis, a literature review, and a quantitative data analysis. Creswell (2003) states, quantitative research “employ strategies of inquiry such as experimental

and surveys, and collect data on predetermined instruments that yield statistical data”.

Qualitative approach is one in which the researcher often makes knowledge claim based primarily on constructivist perspectives or advocacy/participatory perspectives, or both (Cresswell, 2003). This study used qualitative data because it can provide a context of time, place and circumstances, thus enabling the researcher to make comparisons with the quantitative findings. The qualitative data were collected through interviews with key persons and supplement data from the annual report.

To capture those two approaches, mixed method design is selected. This study used a large sample of districts and individual data and then followed up by a single district study to obtain the specific data about the topic. In this study, the advantages of collecting both close ended quantitative data and open-ended qualitative data proved to be advantageous to best understand a research problem.

3.2 Quantitative

3.2.1 Hypotheses

Based on the discussion that have been explained in the link of decentralization and fertility in the previous chapter, this study proposes three hypotheses as follows:

First hypothesis: “Fiscal decentralization will decrease fertility if the level of allocative efficiency is high and the share of locally generated revenue is great. In the contrary, fiscal decentralization will increase

fertility if the level of allocative efficiency is low and the share of locally generated revenue is small”

Second hypothesis: “Administrative decentralization will decrease fertility if the capacity of local bodies including qualified personnels and managers is strong. In the contrary, administrative decentralization will increase fertility if the capacity of local bodies is weak”

Third hypothesis: “Political decentralization will decrease fertility if the age of local democracy is mature. In the contrary, political decentralization will increase fertility if the age of local democracy is young”

3.2.2. Population and sampling

By definition, population is the group to which a researcher would like the results of the study to be generalizable. It could also be set of all cases of interest (Richardson, 2005) and might be virtually any size or might cover almost any geographical area (Gay and Diehl, 1992). While Neuman (2000:518), define a sample as “a smaller set of cases a researcher selects from the larger pool, and generalizes to the population”. In summary, according to the researcher, a sample can therefore be described as a component of the overall population under study.

This study will use three levels of population and samples, for the district level, this study will use large population and sample of all districts in Indonesia in 2012, which are 497 districts. For the household and individual levels, the 2012 National Socio-Economic Survey (Survey

Sosio-Ekonomi Nasional/ Susenas) covered 300,000 households sample spread all over Indonesia. This study used total 286,113 households sample and 291,636 individuals' sample. Individual samples selected were women in reproductive age (15-49 years old).

Sampling method used in the 2012 Susenas was a stratified three-stage design. In the first stage, the nh enumeration area (EA) from Nh in Probability Proportional to Size with the size being numbers of household in Population Census 2010 (Mi) is chosen. Afterward, the enumeration area was randomly allocated in four quarters. In the second stage, Two Census Blocks in each selected enumeration area of Susenas quarter II and III and also quarter I are selected to Sakernas quarter I. Afterward, from selected census block that was randomly allocated, one block is for Susenas/Cost of Living Survey (SBH) and another for Sakernas. In the last stage, from each selected census block to Susenas, it was systemically chosen any of usual household ($m = 10$) based on the result of SP2010-C1 household list updated used list of VSEN12-P. List of the head of household's name was arranged from SP2010-C1 extract for variable: name of head of household, address, education levels of head of household, and later field data update is conducted.

3.2.3 Data

a. National Socio-Economic Survey (Susenas) 2012

National Social Economic Survey (Susenas) was conducted for the first time in year 1963. Susenas is a national survey designed to collect population and social data. The data resulted by Susenas is in the form of

data from various aspects of Socio Economic and fulfillment of needs, likes clothing, foods, house, education, health, safety, and employment. These data is required by the government to inform the achievement of development program and to know how far the development programs already implemented can increase public welfare. Starting from year 2011, collected consumption data/household expenditure is done in quarterly. In each year, data collection was conducted in March (quarter I), June (quarter II), September (quarter III), and December (quarter IV). Sample of Susenas 2012 Module of Education and Socio-Culture is sample of Susenas quarterly III year 2012. The enumeration result of Susenas, Module of Education and Socio-Culture, can be presented in national and provincial levels.

Susenas is one of the oldest national representative survey in a developing country and is the best-regarded of them (Friedman & Levinsohn, 2002; Ravallion & Lokshin, 2007). Susenas also the only such survey in Indonesia that covers the entire archipelago (Pradhan et al., 2007; Biro Pusat Statistik, 2009).

b. Official Statistics

This study will use several data obtained from various official statistics including:

a. Statistical reports from National Board of Population and Family Planning (BKKBN)

BKKBN has accessible internal statistical reports that provide all family planning-related data called Sistem Informasi Kependudukan

- dan Keluarga (SIDUGA). SIDUGA administer family and individual nested within family data, which are very important and strategic to use in formulating national level program and policy. The data consist of information related to family planning, demography and prosperous family stages. The data of the number of family planning fieldworkers and family planning clinics in 2012 that used as the measurement of administrative decentralization are directly obtained through the official website of BKKBN, <http://aplikasi.bkkbn.go.id/sr/DALLAP/Laporan/Tahunan/Tabel3A.aspx> (for family planning fieldworkers data) and <http://aplikasi.bkkbn.go.id/sr/DALLAP/Laporan/Tahunan/Tabel17.aspx> (for family planning clinics data)
- b. District fiscal data is collected by the Ministry of Finance, in e-government system named as Sistem Informasi Keuangan Daerah (Local Government Financial Information System) under Direktorat Jendral Perimbangan Keuangan / DJPK (Directorate General Balancing Fund). This dataset provides detailed information ranging from each district's own revenue source, balancing funds and general allocation funds deriving from central government, and to sectoral development expenditure.
 - c. Official statistics data from Central Bureau of Statistics is used to obtain Gross Domestic Regional Product.
 - d. Official statistics data from Ministry of Home Affairs is used to obtain the data of districts that had already implemented direct elections

(Pemilihan Kepala Daerah Langsung), which are used as indicators in political decentralization.

3.2.4 Variables and Indicators

a. Dependent Variable

The dependent variable for this study is women fertility. Fertility in simple terms refers to the total number of children born or likely to be born to a woman in her life time if she meets the prevailing rate of the age-specific fertility in the population (WHO, 2014), for this study, a woman fertility is calculated by the number of live births of a woman in her reproductive (childbearing) age, that is between 15-49 years old.

b. Independent Variables

The independent variables in this study will follow the types of decentralization proposed by Schneider (2003), which are:

- (1) Fiscal decentralization, measured by local expenditures on Family Planning from the general allocation fund (DAU) and special allocation fund (DAK) distributed to each districts;
- (2) Administrative decentralization, measured by the number of family planning fieldworkers and family planning clinics in each districts;
- (3) Political decentralization, measured by the age of direct local elections in each districts.

The table below presents detailed information about independent and dependent variables with their definitions and sources.

Table 3.1
Variables, Definition, Scale and Source of Data

Variable	Indicators	Definition	Sources
Independent Variables	Fiscal Decentralization	Log district general balancing fund	SIKD 2012
		Logarithmic of district general balancing fund (<i>dana alokasi umum</i>) for family planning (2012)	
	Administrative Decentralization	Log district special allocation fund	BKKBN
		Special allocation fund (<i>dana alokasi khusus</i>) for family planning (2012)	
		Number of family planning fieldworkers	SIDUGA
Political Decentralization	Number of family planning clinics	SIDUGA	
	Age of direct democracy	Ministry of Home Affairs	
Age of direct local election (2002-2012)			
Dependent Variable	Level of women fertility	A Dummy indicator indicating low or high fertility	Susenas 2012

c. Control Variables

Control variables in this study are organized into three levels; (1) Districts Level, (2) Household Level, and (3) Individual Level, as seen in the table:

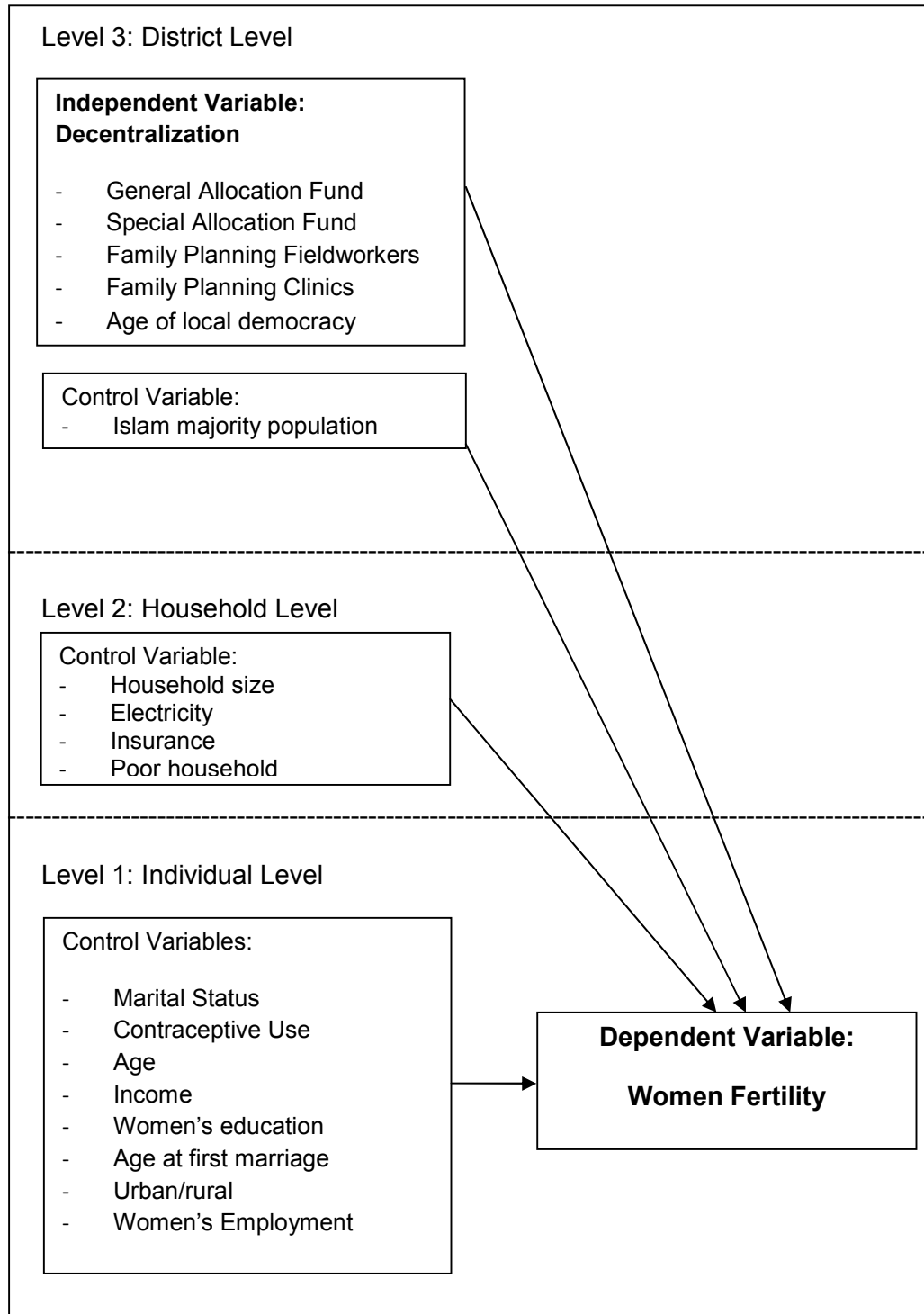
Table 3.2
Control Variables

Determinants	Definition	Sources
District Level		
Islam majority population	Regions with islam majority population	SP BPS 2010
Household Level		
Household size	The total member of a household	Susenas 2012
Electricity	The availability of electricity in a household / the source of lighting	Susenas 2012
Insurance	The availability of health insurance for medical needs	Susenas 2012
Poor	Dummy variable for the household with averages of daily expenditures below USD 1.25	Susenas 2012
Individual Level		
- Direct Factors		
Marital Status	Marital status of women in reproductive age (15-49 years old)	Susenas 2012
Contraceptive Use	Whether using family planning tools/method	Susenas 2012
- Indirect Factors		
Age	The age of women in reproductive age (15-49 years old)	Susenas 2012
Income	The amount of net income (money and goods) generally received in a month from the main job	Susenas 2012
Women Education	The education level of women in reproductive age (15-49 years old)	Susenas 2012
Age at Marriage	The age of a woman in her first marriage	Susenas 2012
Women Employment	The employment status of women in reproductive age (15-49 years old)	Susenas 2012
Urban Rural	Place of residence, village/kelurahan classification	Susenas 2012

After the identification of all variables and indicators, the conceptual framework for this study can be presented as in Figure 3.1

Figure 3.1

Conceptual Framework for Multilevel Analysis



3.2.5 Multilevel Regression Analysis

This study used the multilevel regression analyses for examining the association of decentralization and woman fertility mainly due to its commonly use in social sciences and nested structural of data. Snijders and Bosker (1999) constituted that the model is used mainly in the social science (e.g sociology, education, economics, and human security). This analysis is an appropriate approach to analyze data with complex patterns of variability which come from different levels of the hierarchy, with a focus on a nested sources of variability, e.g pupils in classes, employes in firms, as well as woman fertility within households across districts.

By using this analysis, this study provided with several advantages. First, this analysis can be used to adress multilevel heterogeneity, assuming that the association between the dependent variable and its covariates vary between district, households and individual level (Ballas and Tranmer, 2012). Hence, the model account for the clustering of households in district by separating their variance in woman fertility from the districts' variance (Rabe-Hesketh and Scrandal, 2012) . Second, the model addresses the contextual analysis which is a development in the social sciences that focusing on the effects of the social context on individual characteristics (Snijders and Bosker, 1999). Third, this model can address structural falacy due to its nested data structure. When the variance of the residual error is correlated between individual observations of these nested structures, the aggregating procedures could make that structural falacy or well-known as “the robinson effect” (Robinson, 2009). Using this model is thus the most

appropriate to test hypothesis about the effects of varying districts, households, and individual characteristics on woman fertility.

Furthermore, this study used three-level logistic regression with the dichotomous outcome variable and explanatory variables in individual and households, as parts of multilevel logistic regression. Snijders and Bosker (1999) suggested using multilevel logistic regression for the dichotomous outcome variable. The basic data structure of three-levels logistic regression is a collection of k groups ($k=1,..N$) ('units at level three') within group j ($j=1,..N$) ('units at level two'), as well as a random sample of i ($i=1,..N$) (unit at level-one'). The outcome variable is dichotomous and denoted by Y_{ijk} for level-one unit i in level-two j which are nested in level three k , while the explanatory variables vary at i , j and k level.

In this study, I used the three levels logit regression model. Assume that I have data from group k districts ($j = 1,..N$), with a different number of individual n_i , i ($i=1,..,N$) which is nested in household j ($j=1,..,N$) in each district. On the individual level, I have the dichotomous outcome variable Woman Fertility (Y_{ijk}), measured by defining all the woman of reproductive age (15-49 years old) with number of live births more than 2 children as "0", and else as 1 which mean the woman of reproductive age with number of live births less than 2 children.

To analyze these data, we can set up the three levels logit regression model equations with random intercepts in individual level (unit level 1) to predict the outcome variable Y_{ijk} using the explanatory variables of individuals, household, as well as explanatory variables of districts or

municipalities (unit level 3). Considering an individual i nested in j household in district or municipal k , the three level logit regression model is:

$$Y_{ijk} = E_{ijk^*}; Y_{ijk} \sim \text{Binomial}(n_{ijk}, E_{ijk^*})$$

$$\text{logit}(E_{ijk^*}) = \beta_0 + \sum \beta_k V_k + \sum \beta_{jk} W_{jk} + \sum \beta_{ijk} X_{ijk} + \mu_k + \epsilon_{jk} +$$

$$\mu_k \sim N(0, \sigma_\mu^2)$$

$$\epsilon_{jk} \sim N(0, \sigma_\epsilon^2)$$

$$i = 1, \dots, n_{jk}$$

$$j = 1, \dots, n_k$$

$$k = 1, \dots, 497$$

with

$E_{ijk^*} = \text{logit}(P(E_{ijk^*} = 1))$

E_{ijk^*} is outcome variables (woman fertility) in individual characteristic (i) nested within household (j) at each district (k)

β_0 is a random intercept

V_k is a set of district characteristics (e.g. General Allocation Fund, Special Allocation Fund, Family Planning Fieldworkers, Family Planning Clinics, Age of Local Elections)

W_{jk} is a set of household's characteristics, e.g. household size, electricity, insurance and poor household

X_{ijk} is a set of individual's characteristics (e.g. Marital Status, Contraceptive Use Age, Women's Education, Age at Marriage, women income, Women's Employment, urban/rural)

ϵ_{jk} is error which is assumed normally distributed with zero and variance σ_ϵ^2

μ_k is a random intercept varying over districts with mean zero and variance σ_μ^2

Which also assumed normally distributed

By developing this model, the anticipated result may be presented like this: The probability of woman fertility decreases or increases significantly with fiscal decentralization, administrative decentralization, and political decentralization, adjusting the effect of all predictors in level i,j, and k. To put in a different words, fiscal decentralization, administrative decentralization, and political decentralization may increases or decreases the probability/the risk of woman fertility, adjusting/controlling the effect of all explanatory variables in level i, j, and k.

3.3 Qualitative

3.3.1 Research Focus

The research focus aims to give limitations of a study so that the object to be observed and its discussion are not too broad and wide. Research focus is also used to address how the study will be narrowed in scope (Creswell, 1998). In this study, research focuses can be detailed as follows:

- a. Decentralization related issues faced by Family Planning Board as in Empat Lawang Regency;
- b. Socio-economic factors influencing women fertility in Empat Lawang Regency during decentralization.

3.3.2 Research Location

Empat Lawang Regency is chosen to be the location of the research of the implementation of decentralization in regency and how its impact to the family planning programs in that regency. Empat Lawang

regency is one of proliferated regencies in South Sumatera Province, Indonesia. Empat Lawang became its own regency after proliferate from Lahat Regency in 2007. The population of this regency continues to grow every year. Based on population projection, Empat Lawang population in 2015 were 238.118 people with annual population growth rate of 1,38%. Total Fertility Rate (TFR) of Empat Lawang is 2,58 which is still above the target of Millennium Development Goals of 2,1 TFR.

3.3.3 Data

The qualitative data used for this study were obtained from primary and secondary data.

- a. Primary data were collected through in-depth interviews with key informants using interview guide assistance. Key informants in this study are :
 - (1) Head of Family Planning Board of Empat Lawang Regency;
 - (2) Family Planning fieldworker (PLKB) of Empat Lawang Regency;
 - (3) Women in reproductive age (150-49 years old) with more than 5 children reside in Empat Lawang Regency.
- b. Secondary data were collected from annual report and official documents by Family Planning Board of Empat Lawang Regency.

3.3.4 Data Analysis

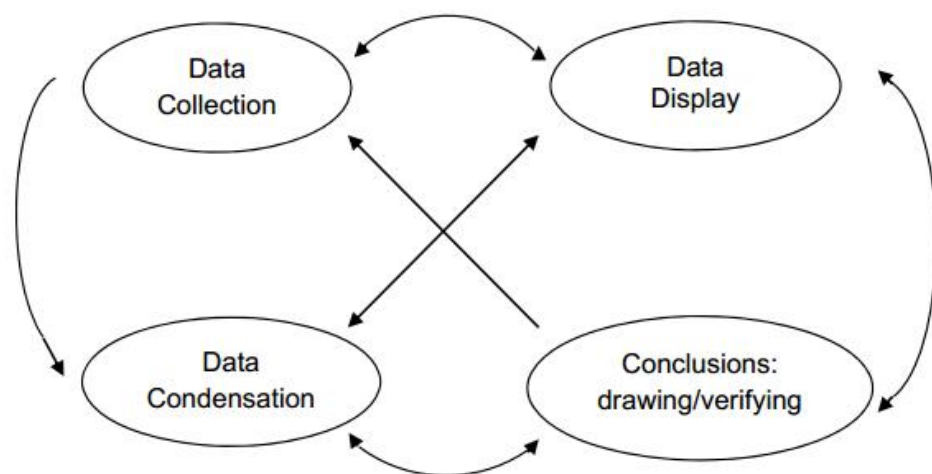
Miles, Huberman and Saldana (2014) do data analysis procedures through three concurrent flows of activity: data condensation, data display and conclusion drawing/verification.

- a. Data condensation illustrates how researcher conduct the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes, interview transcripts, documents, and other empirical materials. In this study, the researcher will collect the data and gather information comprehensively from the field through interviews and documentary. After the data and information collected, the researcher selects data relevant to the objectives of this research. Those data and information summarized, compiled more systematically, categorized, and highlighted the important points.
- b. Data display presents information systematically to the reader. At this stage, the researcher organizes the data and information into one form in order to understand data entirely. The researcher presents the qualitative data in narrative. While quantitative data are presented in tables, graphs, charts, lines and figures. At this stage, the researcher would try to classify and present the data in accordance with sub-categories.
- c. Conclusion drawing/verification. After completing the data reduction and data display, next stage is the conclusion. At this stage, the researcher would do analysis and search for the meaning of the data collected by finding similarities or differences.

- d. The three components of data analysis can also be represented as shown in figure 4.1. These three aspects are interrelated to each other, starting from data condensation, then data display and conclusion drawing/ verifying.

Figure 3.2

Components of Data Analysis: Interactive Model



Source: Miles, Huberman and Saldana (2014)

3.4 Quantitative-Qualitative Data Analysis

This study began with quantitative method in which theories are tested and followed by a qualitative method, to elaborate the findings of the quantitative data analysis, involving detailed exploration with one case study of Empat Lawang Regency. The first step in the analysis was to collect data from Susenas survey and official statistics (from various sources), and then I analyzed them by using multilevel regression analysis with STATA software. After the results were turn out, the next step was to collect data from interview and documentation, followed by data analysis to select the most relevant data. The results of the

qualitative data analysis then used to elaborate the results of multilevel regression analysis, thus become the finding of this research. The steps of data analysis in this study are illustrated in Figure 3.4.

Figure 3.4 Quantitative-Qualitative Data Analysis

