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Understanding the Role of Bank Relationships, Relationship Marketing, and Organizational Learning in the Performance of People's Credit Bank

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Chapter 4

RESEARCH METHODS AND STRATEGIES

The previous chapters presented research questions, the theoretical and empirical evidence to support testable hypothesis formulations, and a review of the existence of MFIs in Indonesia with special attention to licensed BPRs. In this chapter, the focus will be on the research methods and strategies used in data collecting as part of the research design. The function of the research design is to ensure that the evidence (data, information) obtained enable us to answer the initial questions as unambiguous as possible (de Vaus, 2001). Subsequent sections pay special attention to making the “blueprint” of the logical sequence that connects empirical data to the study’s initial research questions and, ultimately, to its conclusions (Yin, 1994), so that they can come to fruition as planned. The field research takes place in Central Java and consists of a survey of licensed BPRs, clients of BPR, and a case (in-depth) study of selected BPRs.

In section 4.1, the background of the field research concerning the characteristics of BPRs is discussed. At the outset, licensed BPRs are not homogenous in nature in many aspects. However, in line with the Chapter 1, the sample selection should be drawn out of those BPRs that fall into the category according to limited aspects, i.e., year of establishment, ownership, and mode of operations. Section 4.2 is about sources of evidence, types of evidence, and data collection. It shows some categories of data, ranging from archival secondary data or documents to primary data collected from the field research. Section 4.3 is a specification of the indicators of the main concepts or constructs taken from the models in section 2.10. It will assist further in the questionnaire formulation. In other words, this section mainly focuses on finding the latent constructs and their corresponding manifests or observed variables. Section 4.4 is concerned with methodological issues and research strategies. Prior to the field research, some steps were taken to get a broader view about the current state of BPRs in Central Java and to choose the proper strategy to achieve the predetermined data requirements to answer the research questions. Section 4.5 covers the method of data analysis. Various alternative statistical methods and corresponding software are available for hypothesis testing.

At first, a regression analysis using SPSS software was chosen as a statistical method to test the proposed hypothesis. However, after further study of the multivariate analysis, the Simultaneous Equation Modeling (SEM) using AMOS software was chosen as a final substitution method of regression analysis.

4.1 Background of the Field Research

The location of the research was in Central Java, which is home to 32.6 million people and roughly 580 units of licensed BPRs. Central Java covers 35 regencies/municipalities. Geographically, Central Java is supposed to be a growth magnet for the surrounding islands outside of Java, but since Jakarta, West Java, and East Java have better economic infrastructures – it puts Central Java at a location disadvantage in competing for an advantageous geographical position. However, the study takes place in Central Java due to the unique characteristics of microfinance institutions in general and specifically licensed BPRs in this region.

Historical studies (Steinwad, 2001) show that the more than 100 years of BPR being in operation as an efficient institution neither emerged automatically from within the economy nor was it the product of a purposeful design by public policies. The endurance of BPR was rather a product of a constant process experiments by trial and error (“alchemy”). Both the local and central government are preoccupied with the presumption that rural communities are credit hungry. This assumption is stated clearly in the generic name *Bank Perkreditan Rakyat*, BPR, (People’s Credit Bank) at the national level and *Badan Kredit Kecamatan* or BKK (District Credit Institution mainly in Central Java). The BKK was established in the 1970s through the decree of the Governor of Central Java as a non-bank financial institution to alleviate poverty in the rural areas of Central Java by disbursing micro loans to the low-level income target. BKK was converted into BPR to become 350 units of BPR-BKKs and under the direct supervision of Bank Indonesia. The other 160 BKK units ineligible to be converted to BPR remain under the supervision of BPD. Newly converted BPR-BKKs have a unique position within MFIs in Central Java for several reasons: they (a) are local provincial and regency/municipality owned; (b) are spread over Central Java in almost as many sub-districts as they are serving; (c) were originally started in Central Java¹; and (d) have a bigger proportion of head offices (350 units) than the licensed BPR non BKK of 231 units. BPR BKKs are unit banks for which they operate independently from one another. For these reasons, PD BPR-BKKs are included in the survey and in-depth (case) study.

¹ Replication of BKK was made in South Kalimantan starting in 1985 (Ravics, 1996).

Table 4-1: The number of BPR head offices and branch offices in Central Java, 1995-2003

Year	Head offices	Addition	Number of offices	Branch offices
1995	401		404	3
1996	411	10	414	3
1997	433	22	436	3
1998	434	1	438	4
1999	586	152	597	11
2000	586	0	598	11
2001	584	-2	587	5
2002	578	-4	585	7
2003	582	4	601	19

Source: Bank Indonesia, Semarang

Note: 2 BPR units experienced closure in 2003 and 1 BPR unit experienced closure in 2004

At the national level, the net increase of BPR reached 303 banks during the financial crisis period (1997-2001). The number of BPRs in Central Java increased over time. During the crisis period in 1998/1999, there was a significant net increase of 152 units (Table 4.1). The additional BPRs are supposed to be those converted from the existing unlicensed microfinance institutions (mostly BKKs) into licensed BPRs in compliance with the Government Decree No. 71/1992. The converted BKK into BPR was then called BPR-BKK.

As mentioned in Chapter 3, the increase in the number of BPRs does not necessarily indicate that they are without banking problems. The Bank of Indonesia reports that 96 BPRs were frozen during these years along with the disbursal of guaranteed deposits that accounted for Rp. 1.3 billion in 2001 all over Indonesia. Fortunately, the closure of BPRs in Central Java is fairly smaller than the surrounding provinces.

For the purpose of the survey and case study research, a sample was drawn from around 580 conventional BPRs and two Sharia Banks (Table 4-2).

However, although a BRI unit is internationally recognized and well documented as among one of the successful microfinance institutions in the world, it will be excluded in this study for three reasons. First, international researchers had intensively studied the

BRI units. Second, a BRI unit is a strategic business unit of BRI- a commercial and state-owned bank that has a huge market share in the MFI industry in Indonesia. Third, the BRI units are actually well diversified geographically as having key location advantages. The other MFIs in Central Java, such as KSP, BKD, BMT, etc., are excluded as well for practical reasons. They are diverse in management, ownership structure, size, and location. Therefore, the survey and case study members are drawn from licensed BPRs. Licensed BPRs are growing commercial MFIs in Indonesia, which only get a little attention from national and international researchers.

Table 4-2: A data cross-section on the number of banks and branches by category in Central Java as per March 31, 2003

			Scope of bank operation		Total
			Commercial bank	BPR	
Mode of operation	Conventional	bank	40	584	624
		office	1,550	589	2,139
	Sharia	bank	1	2	3
		office	3	2	5
	Total	bank	41	586	627
		office	1,553	591	2,144

Source: Bank Indonesia Semarang, March 31, 2003

Note: Since 2 BPRs were liquidated, the number of remaining banks is 582.

The preliminary study from the period of September-December 2002 suggests that some factors may affect the business climate of BPRs and thereby affect their performance as well. Among these factors are: (a) the ownership of BPRs ranging from the local government (public), organizations or groups, and individual private shareholders, (b) the synergetic cooperation between BPRs and funding agents or wholesale finance corporations (PT. UKBIMA, PT. PNM, and PT. Mirta Dana Jimbaran) and commercial banks, etc., (c) the year of establishment before and since the removal of entry barriers into the banking industry in 1988, (d) the existence of a dual banking system, (e) the strategic alliance between bank Bukopin and *Swamitra* cooperatives, and (f) an increasing intense competition following the penetration of some commercial banks into the microfinance loan market. The study considers these factors in the

questionnaire development and in the sample selection process for both the survey and case study.

4.2 Sources of Evidence, Types of Evidence, and Data Collection

To achieve high quality and comprehensive data for this research, the following six category sources of evidence (Yin 1994, 80) were used during the field research stages as shown in Table 4-3.

Table 4-3: Six category sources of evidence undertaken prior to and during the survey and in-depth study.

Category sources of evidence	Types of data	Sources
1.Documentation	Rules and regulations on MFIs, research reports on MFIs, and newspaper clippings or articles about BPRs or related information appearing in the mass media, journals, and magazines	Bank Indonesia Semarang and Jakarta, BPR Association (Perbarindo) in Central Java, the Ministry of Finance, local newspapers and other kinds of printed media, and websites
2. Archival Records	The most recent list of BPRs by the addresses, phone/fax numbers, names of Directors, years of establishment, ownership, etc. Statistics of Banking and Finance	Bank Indonesia Semarang, BPR Association (Perbarindo) in Central Java, and research publications on MFIs
3. Interviews	Overview on banking competitions, questionnaire pretest, etc	Key informants from Bank Indonesia, the Chairperson of the BPR Association in Central Java, and Focus Group Discussions (Semarang, Salatiga, Magelang, and Banjarnegara)
	Bank relationship indicators, relationship marketing indicators, organizational learning, and selected financial reports in the questionnaires of both BPRs and clients	During the survey stage Directors of BPRs, clients, and loan (account) officers
	The relationship process in a BPR’s daily activities	As part of an in-depth study.
4. Direct Observations	The relationship process in a BPR’s daily activities Observe interactions between bank officers and their clients, the behavior and activities of bank officers in repayment collection, monitoring, negotiations, etc.	Mostly as part of an in-depth study. Preliminary field visits to BPRs and Swamitra Cooperatives in Semarang, Ungaran, Ambarawa, and Purwodadi Field visit – formal or casual visit to the BPRs and their clients, while undertaking data collection
5. Participant-Observation	Management style, daily activities of Account officers, relationship process between AO and clients, AO with directors through field visits with account officers Perbarindo meeting Workshops, Seminars, Exhibitions, FGD, “lottery” cycles of deposit prizes	Mostly as part of an in-depth study. The chairperson of the Commissioner of BPR AHS in Central Java, BPR consultants, and committee members in monitoring and evaluating BPRs in West Papua (Irian Jaya)
6. Physical Artifacts	Brochures, SOP, and prize items:	During an in-depth study

umbrellas, calendars, diary, mugs, etc.

Note: This category classification is adapted from Yin (1994, 80). These six categories do not necessarily fully represent the sequence of the study.

This data collection phase took place from September 2002 until March 2004. In fact, informal observations had already taken place far before September 2002. As a result, some documentation and archival records have been collected before September 2002.² The first two category sources of evidence concern the secondary microfinance data, in which some major issues still exist, i.e. (a) fragmented sources of data because of different supervisory authorities on different types of MFIs, (b) a lack of standardization on financial data among MFI types, (c) no coordination or integration among the authoritative bodies in dealing with microfinance data, and (d) a lack of timely updating of the data.³ For these reasons, the BPR Supervision Division of the Central Bank cannot collect the microfinance data in a timely and accurate way, except for the BPR data, which is under its control. The category sources of evidence points 3 to 6 were obtained during the field survey, through observations, and by conducting in-depth interviews with the respondents.

4.3 Measurement Model: Measuring Instruments of Main Constructs

This section explains the measurable variables (indicators) of the main and sub-constructs (concepts) as a focus, so the arrangement of the questionnaire would have a clear focus to address the third and fourth research questions. These main constructs are presented in both the hypothesized bank performance model and the intention to leave model (section 2.11) in a pictorial path diagram based on simultaneous equation modeling (SEM). These models can be dissected into two sub-models, i.e., (a) a measurement model and (b) a structural model (Byrne: 2001,12; Hair et al: 1998,577-584).

While the measurement model include the relationship between latent constructs and measuring variables (indicators), the structural model is, mainly, the relationship or links between the unobserved (latent) constructs.

² We have been actively involved in the banking (especially as a licensed BPR) network since 1989. This involvement ranges from being a consultant, commissioner of some BPRs, and a seminar participant or presenter

³ Recently, ProFi (Promotion for Small Financial Institutions) handles some of these problems.

The hypothesized bank performance model has four constructs (Table 4-4) respectively: (1) bank performance, (2) relationship marketing, (3) organizational learning, and (4) bank relationship.

Table 4-4: List of Selected Latent Constructs and Corresponding Measurable Variables (Indicators) of the Bank Performance Model

LATENT COSTRUCTS Measurable variables	LATENT COSTRUCTS Measurable variables
<p>P: Bank (BPR) PERFORMANCE P1: Asset Growth P2: Loan Growth P3: Loan to Deposit Ratio P4: Spread P5: Return On Assets P6: Return On Equity</p> <p>RM: RELATIONSHIP MARKETING RM-SI: Strategic intention A1: Long term relationship A2: Monitoring of a client’s intention to leave A3: Tracking repeat borrower data RM-PA: Prevention action via Negotiation B1: Interest rate B2: Pledge asset/collateral B3: Tenure B4: Principal B5: Let the client exit B6: Informal & personal approach</p> <p>OL: LEARNING ORGANIZATION OL-S: Information Sharing C1: Routine coordination meeting C2: Non routine coordination meeting C3: Circulate written report C4: Potential loss of client information OL-C: Codification of Soft Information D1: Recording all client information D2: To improve risk management D3: Only suspected client data</p>	<p>BR: BANK CLIENT RELATIONSHIP BR-TR: Track records E1: Client classification E2: Personal relations E3: Reputation of a big depositor E4: Reputation of an institutional depositor E5: Loyal deposit clients F1: Loan size F2: Loyalty/exclusiveness F3: Repayment BR-ID: Credit Investigation & Decision G1: Character G2: Repeat borrower G3: New client with reference (referral)</p> <p>BR-V: Value of a relationship -source H1: Interest rate H2: Tenure H3: Collateral H4: Shorter Loan Processing H5: Principal Amount (availability) H6: Installment H7: Easier in negotiating during trying times of a business</p> <p>BR-M: Monitoring I1: Formal I2: Casual I3: Information gathering I4: Motivate client repayment I5: Anticipative</p>

Note: P, RM, OL, BR and their descriptions represent main constructs (latent variables). RM-SI, RM- PA, OL-S, OL-C, etc., and their descriptions represent sub-constructs. The remaining notations and descriptions represent measurable variables (indicators or observed variables).

Since the last three constructs are at a higher level of abstract position than the first construct, sub-constructs are developed to bring them into lower level of abstraction

accordingly. Table 4-4 presents a list of measurable variables linked with their respective constructs or sub-constructs.

Chapter 7 will discuss the hypothesized bank performance model within a context of the explanatory study. Chapter 5 is an interrelated subject of exploration with Chapter 7 in terms of the unit of analysis, the BPR. It focuses on an exploratory analysis in addressing the first research question. All necessary indicators are derived from research question one and research question three, which are translated into a questionnaire through a deliberate study of a theoretical and empirical [review](#) (Chapter 2). The questionnaire structure for BPR consists of: (0) respondent information (I) basic data, (II) competition, (III) BPR resistance during the peak of the banking crisis in May 1998 which consisted of: (a) the third-party⁴ fund (b) credit (c) spread and profit/loss (IV) structure of ownership, (V) geographical service extensions, (VI) relationship marketing and bank-client relationships from two sides: (a) funding and (b) credit sides, (VII) organizational learning, and (VIII) BPR Performance: (a) perception of the Director and (b) financial statements publicly available from [June](#) 1996 to June 2003.

The second hypothesized client intention to leave the relationship model (hereafter, client intention model) has six constructs i.e., (a) intention to leave, (b) satisfaction of services, (c) lured by competing MFIs, (d) prevention, (e) perceived value, and (f) duration of relationships. The six constructs or latent variables, of which some have indicators, are listed in

Table 4-5.

Chapter 8 will discuss the hypothesized client intention model that focuses on an explanatory analysis. Chapter 6 is interrelated with Chapter 8 in terms of unit analysis – BPRs' clients. Chapter 6 focuses on an exploratory analysis in addressing research question two. All necessary indicators are derived from the second and fourth research questions and are translated into the questionnaire through a deliberate study of theoretical and empirical review (Chapter 2). The questionnaire for the client survey consists of: (0) respondent information, (I) basic data, (II) credit in a crisis situation, (III)

⁴ The first party is the shareholder, the second party is another bank, and the third party is the rest of the people/institutions.

relationship marketing and the bank-client relationship, and (IV) intention to leave and other relevant factors.

Although the indicators are developed based on the knowledge of a rich and extant theoretical and empirical review, a pre-test was conducted on some microfinance institutions⁵ and further refining and revising of questionnaires of both BPR and client surveys was done. This effort is necessary to achieve a better quality of data collection, since the existing theories and empirical research mainly focus on clients of commercial banks in developed countries.

Table 4-5: List of Selected Latent Constructs and Measurable Variables (Indicators) of The Client Intention to Leave Model

LATENT CONSTRUCTS Measurable variables	LATENT CONSTRUCTS Measurable variables
<p>IL: INTENTION TO LEAVE</p> <p>SA: SATISFACTION</p> <p>B: Overall satisfaction (i.e. products)</p> <p>B1: Loan officer B2: Front office B3: Security B4: Director</p> <p>LU: LURE (promise of a competitor)</p> <p>C1: Lower interest rates C2: Lower collateral C3: Larger principal C4: Shorter processing time C5: Lower installments</p>	<p>PR: PREVENTION (prevention to switch/ terminate a relationship through negotiation)</p> <p>D1: Interest D2: Collateral D3: Tenor D4: Principal D5: Let the client leave D6: Personal approach</p> <p>PV: PERCEIVED VALUE (by source)</p> <p>E1: Interest E2: Tenor E3: Collateral E4: Processing time E5: Principal availability E6: Installments E7: Negotiation E8: Progressive lending</p> <p>DU: DURATION</p>

Indicators in questionnaires for BPR and client surveys are not only those part of the two models but also indicators relevant to answering research questions one to four. Most of the measurement scale levels were used on the indicators. For example, a ratio scale was used to measure the age of the director, the number of employees, a firm’s

⁵ Four Swamitra savings and loan cooperatives were included as part of the pretest.

founding date, the starting year of a relationship, financial statements, etc. Some indicators were measured at a lower measurement level –nominal, ordinal, and interval scale. Most of the indicators of the two hypothesized models (Table 4-4 and Table 4-5) correspond to the attitudes, preferences, perceptions, and subjective reactions of the respondents. A Likert scale is used to measure them, which has, in general, a possible degree of response ranging from 1 to 4, 1 to 5, and 1 to 7. In this study, a five-point Likert scale of response category (for example; 1 = completely disagree to 5 = completely agree, or 1 = strongly unfavorable, to 5 = strongly favorable, etc.) has been used for each of the statements that correspond to the indicators. Respondents are asked to rate the level at which they are in favor of a certain response category. The duration and BPR performance are measured at a ratio scale that is derived from the starting year of a relationship and from financial statements respectively.

4.4 Field Research: Field Issues, Sampling, and Research Strategies

To achieve higher data quality, good relationships were built with key persons⁶, who became sources of data at both (a) the preliminary stage and (b) during the field survey followed by in-depth studies. From September 2002 – January 2003 the relevant key persons were approached. The approaches were done by taking part in workshops, seminars, bazaars, and focus group discussions related to financial institutions. Even the *Perbarindo* provided an opportunity to join their semi formal meeting. The activity was concentrated in Semarang, the capital city of Semarang province. Due to having relationships with several BPR directors, permission was given to visit three BPRs to ask for information related to the relationship between a BPR and its clients. That initial stage of field research had enriched the proposal substance, which was subsequently discussed with promoters in Amsterdam from February – March 2003. Based on the proposal results, it was decided to do a survey and in-depth study. The survey had a planned sample size of 100 licensed BPR units, 100 BPR clients, and the planned case studies were 12 BPRs (Table 4-6).

Table 4-6: Category of data collection and the sample size or respondents

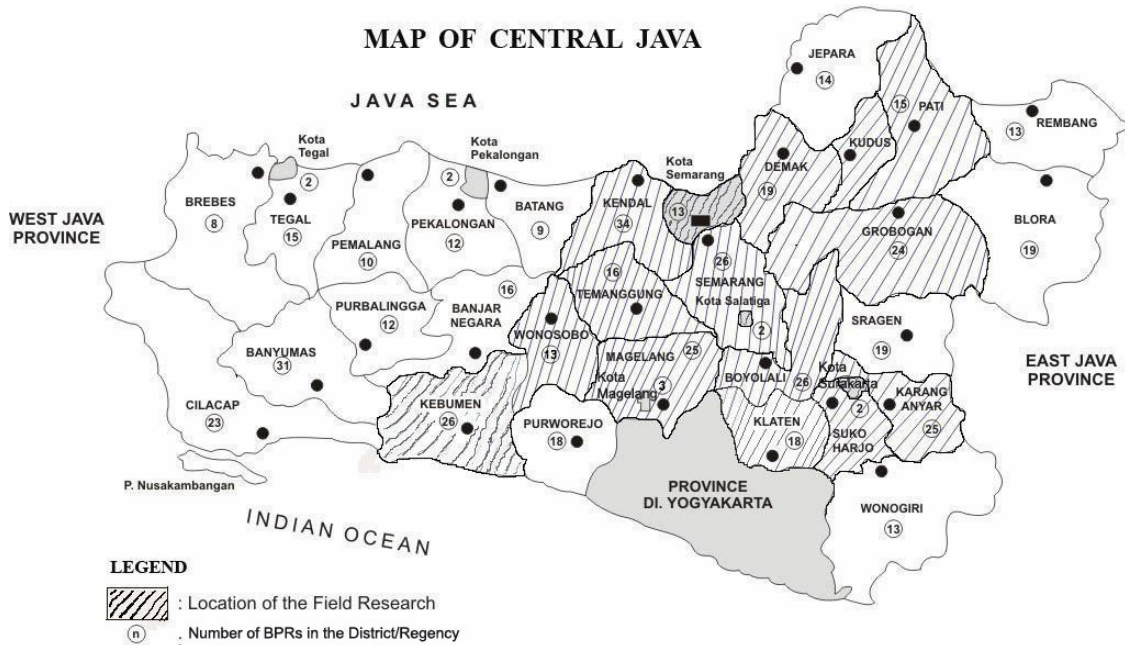
No	Data Collection	Sample Size/Respondents			Description
		Planned	Realization	Allowance	

⁶ Such as, chairpersons of BPR Associations, Bank Indonesia management, government officials, BPR Board of Directors, etc.

I	Survey			
a	BPR	100	154	54%
b	Bank clients	100	146	46%
II	Case Study			
a	BPR	12	17	42%
b	Clients	0	10	Supplement

The sample size of the BPRs and clients used in the survey was larger than planned in order to provide an allowance for missing data to guarantee the quality of the data and to meet the requirements of further statistical analyses. There are about 200 variables (number of columns occupied in the excel worksheet) in the BPR questionnaire and 75 variables in the client questionnaire.

Figure 4-1: Location of the field survey, in-depth interviews and observations in parts of Central Java Province



Source: Original map was adapted from the Statistical Bureau, Indonesia. The shaded areas indicate the location (regency/district) of the field research.

The location of the survey is spread over 17 regencies/municipalities out of 35 regencies/municipalities in Central Java (Figure 4-1).

The field issues deal with how to approach the key persons and deal with bureaucratic procedures. The bureaucratic procedures have to do with obtaining (a) consent letters from both the provincial and regency levels and (b) a sample selection of

BPRs and their clients as members of the sample. Although these actions took much time, it proved to be valuable and received a good response from the BPR directors during the survey and in-depth study. The core of the survey was done from September to December 2003 and the in-depth study was done from November 2003 to January 2004. Beyond the planning, there was an additional in-depth study on two BPRs in West Papua (Irian Jaya) in April 2004 along with a three-week monitoring and evaluation period of the performance of three BPR Phidectama group⁷.

The response rate of the BPR survey reached nearly 90%. 10% of the respondents were non-responsive due to some possible reasons: (a) on the third visit, the director was not there because he/she was assigned to go to another city, (b) BPR could not fill out the financial data, since the file was not found because of a move to a new office or a change in leadership, (c) after the second visit, some of the BPRs promised to send the questionnaire results, but obviously they were not sent or the results were missing unintentionally, and (d) some directors were unwilling to be respondents⁸.

The response rate of the BPR client survey was almost 96%, since only a few BPR clients could not answer the questions completely. It was easier to meet clients without making prior appointments. Client visits could be made directly after receiving a list of BPRs' clients' names from the director. The non-responsive clients comprised those who could not give a comprehensive answer, were not available, or rejected the questionnaires for any reasons.

An in-depth study was chosen on BPRs, which joined the sample survey. The in-depth study was done by asking about some aspects related to the relationship processes between BPR and its clients. The key informant was the head director of BPR and the results of the interviews were recorded using video in order to capture the way he or she speaks and to fully understand the substance or the meaning. Sometimes an in-depth study was added when the director was met informally or outside the office.

The BPRs are classified (Table 4-2, Table 4-7, and Table 4-8) by the year of establishment that reflect or represent mainly on the duration dimension of bank relationships, those BPRs categorized by the ownerships will represent controlling

⁷ In a companion with (deceased) Mr. Stephen Kakisina

⁸ Among them are misunderstandings that their BPRs are not microfinance institutions as stated in the questionnaire and the rest, perhaps, because their BPRs are "slightly" struggling.

parties, and finally those BPRs categorized by a mode of operation will mainly represent a scope of the dimension of bank relationships.

Table 4-7: Realization of sample size of BPR by category: Mode of operation, year of establishment, and ownership

		Year of Establishment					
		Old version BPRs (Established before 1988)			New version BPRs (Established since 1988)		
		Ownership			Ownership		
		Local Government (Public)		Private	Public		Private
Conventional	PD BPR BKK	64	PT BPR	6	Not available	PT BPR	76
	PD BPR	4				PT BPR (*)	2
Sharia (Islamic)	Not available		Not available		Not available	PT BPRS	2
Total	68		6		0		80
TOTAL							154

Note: *) outside Central Java (in West Papua, Irian Jaya)

The case study was drawn from 15 main BPRs in Central Java, including two additional BPRs from West Papua, as shown in Table 4-8. These BPRs situated in West Papua (Irian Jaya) give more insight into the business life of BPR, notwithstanding they may not fully be part of further discussions.

Table 4-8: Realization of sample size of BPR in the multiple-case study by category : Mode of operation, year of establishment, and ownership

		Year of Establishment			
		Old version BPRs (Established before 1988)		New version BPRs (Established after 1988)	
		Ownership		Ownership	
		Local Government (Public)	Private	Public	Private
Conventional	PD BPR-BKK Bringin PD BPR-BKK Ungaran PD BPR BKK Tulung PD BPR Temanggung PD BPR Klaten	PT.BPR-Gunung Kawi – Semarang PT. BPR Kridaharta Salatiga PT.BPR Guna Daya Boyolali	Not Available		PT. BPR BMMS Klaten PT. BPR Sinar Enam Permai, Delanggu PT. BPR AHS Ambarawa PT. BPR Phidectama Abepura*) PT. BPR Phidecama Biak*)

Sharia (Islamic)	Not Available	Not Available	Not Available	BPRS Iksanul Amal, Gombong BPRS Asad Alip, Sukorejo, Kendal
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Note: 12 BPRs were originally expected to be the case study but were finally dropped because of difficulties in making appointments with them.

A distinction between what “case” is and what “unit analysis” is – cannot be easily recognized and may be blurred. Yin (1994: 21-22) explains that a case can be an individual, or any objects about decisions, programs, organizational change, clinical patients, etc. While Babbie (2001) mentions that a unit of analysis can be an individual, group, household, organization, relationship, lifestyle, or social artifact- any product of a social being or one’s behavior.

It is even difficult to choose between possible units of analysis, for example, choosing between (a) a minicomputer or (b) a small group dynamic- the engineering team (Yin, 1994: 23) or choosing between crime or criminals, corporations or corporate executives (Babbie, 2001:97). To have better insight to help guide the researcher in deciding the case and the unit of analysis, a description of the following discussion from Yin (1994:24) was adapted.

Ira Magaziner and Mark Patinkin’s book *The Silent War: Inside the Global Business Battles Shaping America’s Future* (1989), it presents nine case studies. Each case study helps the reader to understand a real-life situation of international economic competition. Two of the cases appear similar but in fact have different main units of analysis.

No.	Case	Embedded unit of analysis
1	Korean Samsung firm	Samsung’s development of a microwave oven
2	Apple computer factory in Singapore	National policy that affects foreign investment

In referring to these analogies, 15 selected licensed BPRs are the cases, while the embedded unit of analysis is the relationship process in BPR. Chapter 9 will discuss the results of this case study.

4.5 Method of Data Analysis

4.5.1 Measurements, Sample Sizes, and Method of Data Analysis

Simple descriptive statistics were used to start analyzing data in Chapter 3 – to highlight the microfinance institutions in Indonesia. However, Chapter 3 is

complementary to proceeding chapters in gaining insight to some elements of the BPR study in a bigger picture. The focus of this study is from Chapter 5 to Chapter 9. The descriptive statistical analysis will help to disclose information and the meaning behind the available data in Chapters 5, 6, and 9 in exploring BPRs, clients, and the relationship process between BPRs and their clients.

Chapter 7 and Chapter 8 put special emphasis on an explanatory analysis between constructs that need a causal statistical analysis. After considering available alternative methods of data analyses given, including a parsimonious principle, simultaneous equation modeling (SEM) was chosen.

Before explaining SEM choice, it is worth mentioning some of the existing research on MFIs in Indonesia and corresponding methods of data analysis, for example in Table 4-9:

Table 4-9: The existing research on MFIs in Indonesia and corresponding methods of data analysis

Researcher	Object/Unit of analysis	Method of data analysis
Konta et al (1999)	Multi-case study: three BPRs in Java and Mataram and 210 BPR clientele	Descriptive statistics, mainly central tendency analysis
Martowijoyo (2001)	Survey of MFIs non-licensed BPR in Central Java	Regression and correlation (inferential)
Asia Foundation (2002)	374 MFIs (incl. 24 BPRs) and 1,438 households in Indonesia.	Descriptive statistics of financial services
Widyaningrum (2002)	a case study on three BMT in West Java	Statistic descriptive, mainly central tendency analysis
Maria C Stephens(2003)	44 BPR partners of PT. UKABIMA	Descriptive statistics of financial data.

Source: Collected by the author.

The study of Martowijoyo (2001) is closer to this study because the use of a similar latent construct – social relationship and duration of cooperation. Instead of using multi-item indicators, he uses a single indicator to measure each construct. It means he treats theses constructs as observed variables. The degree of social relationship is measured by a proxy of distance between the MFI and its clients. The aggregate score of distance is measured as follows:

Microfinance institutions	Score	Coverage (distance)
1. KSM (self help group)	1	Neighborhood
2. BKD (village bank)	2	Village

3. BKK (sub-district credit institution) 3 sub-district

Note: Score 1 implies the strongest social relationship. He implicitly assumes that the shorter the distance, the stronger the social relationship.

The score assigned to this indicator reflects the degree of the client acquaintance to the managers (executives) of MFIs and the frequency of repeat loans. These measurements are at a high risk of validity and reliability. A social relationship is one of the variables included in his correlation analysis to measure the impact of the BPR system toward the performance of rural micro finance institutions or MFIs.

Martowijoyo contributes to the body of MFI studies. However, this study treats the social relationship as given, and therefore it does not inquire into the processes involved in a relationship.

The variable measurement by using a scoring⁹ system is usual and frequently used in behavioral science, including economics and business, sociology, psychology, etc. Statistical methods are used worldwide, among others the simple statistic descriptive method (e.g., central tendency), regression and correlation analysis, Chi-square, etc. (Nan Lin, 1987; Ihalauw, 2003; Babbie, 2001, etc.). The regression and correlation analysis that is used as a statistical tool deals mostly with variables measured by ratio scale; this tool has been used to deal with those variables measured by a scoring system. Besides Martowijoyo (2001), as mentioned above, Rosengarten (1999) also used the regression and correlation analysis in analyzing the learning organization in a UK automotive company. These practices have inspired this study to use the regression and correlation analysis provided in SPSS software from the beginning of this study.

The issue of measurement levels of observed variables and conformity with a statistical method has been a discussion between researchers and statisticians for a long time. Byrne (2001, p.71-72) presents a comprehensive explanation to justify the use of a simultaneous equation modeling (SEM) statistical application based on Likert-type scaled data with estimations of parameters using ML (maximum likelihood estimation) procedures. She shows these practices have been implemented for decades. In addition to this, the discussion also covers other issues related to sample size and continuity of data.

⁹ The scoring includes the measurement of variables in intervals and at an ordinal scale. The highest measurement is a ratio scale, and the lowest level of measurement is a nominal scale.

In her book entitled “Structural Equation Modeling with AMOS”, Byrne uses SEM with Likert-type scaled data with an estimation of parameters using ML, and all data is treated as if it is part of a continuous scale. This book has been one of the recommended books by AMOS software suppliers until now. López et al (2005) uses a five-point Likert scale for each of the statements corresponding to the observed variables of organizational learning and performance with an SEM method of analysis. However, they use the EQS program (version 5.7a for Windows rather than AMOS software.

After considering all relevant aspects of SEM¹⁰ and AMOS software, this book is used as a main reference and AMOS 4 is utilized to facilitate the explanatory analyses in Chapter 7 and Chapter 8. In 1992, Loehlin (in Research Consulting, 2001) concludes that a reasonable sample size is at least 100 cases, with 200 even better (if possible). The sample size of the survey consists of 154 BPRs and 146 clients.

4.5.2 Simultaneous Equation Modeling (SEM), AMOS, and Hypothesized Models

In this sub-section, the most important elements related to method of data analysis that are used in Chapter 7 and Chapter 8 are mentioned briefly. The focus of discussion is on the practical aspects rather than theoretical of SEM and AMOS that are readily available to researchers. Although the debate between these two models is interesting, their synthesis is utilized to assist in analyzing the data given for the hypothesized bank performance model and client intention to leave model. This is summarized into two topics of discussion; they are (a) the choice of SEM and AMOS, and (b) the model assessment, as follows.

The choice of SEM and AMOS

A Multivariate Analysis, such as simultaneous equation modeling (SEM), is available in some references (Hair et al, 1998; Byrne, 2001, Ferdinand, 2002, etc.). It offers a more rigorous: parsimonious and efficient tool to deal with hypothesis testing of (mostly) latent variables in the path models. According to the Research Consulting

¹⁰ Dr. Sony Heru (Satya Wacana Christian University) and Prof. Effendy (Ailranga State University) gave me additional insight about the AMOS, LISREL and SEM methods.

Division, University of Texas (2001), SEM encompasses such diverse statistical techniques as path analysis, confirmatory causal modeling with latent variables, and even an analysis of variance and multiple regressions. Hair et al (1998) mentioned that SEM encompasses an entire family of models known by names, among them the covariance structural analysis, latent variable analysis, and confirmatory factor analysis. SEM is a result of multi-equation modeling in multidisciplinary sciences, i.e. econometrics with the principles of measurement from psychology and sociology. It becomes an integral tool in both managerial and academic research. During the period 1977-1994, out of four well known marketing journals, 149 articles used the SEM methodology of marketing and consumer behavior research at an increasing rate (Baumgartner and Homburg, 1996).

SEM (Byrne, 2001) is a statistical methodology that takes a confirmatory (i.e., hypothesis-testing) approach to facilitate the analysis of the proposed (hypothesized) bank performance model and client intention to leave model. The proposed models can fulfill two important aspects of the SEM procedure: (a) that causal processes in the study are or can be represented by a series of structural (i.e. regression) equations, and (b) that these structural relations can be modeled pictorially to enable a clearer conceptualization of the theory under study. Hair et al (1998: 592) explain that SEM covers seven stages, which are: (1) developing a theoretically based model, (2) constructing a path diagram of causal relationships, (3) converting a path diagram into a set of structural and measurement models (4) choosing an input matrix type and estimating the proposed model, (5) assessing the identification of the structural model, (6) evaluating goodness-of-fit criteria, and (7) interpreting and modifying the model, if theoretically justified. The structure of this study (Figure 1.1) follows this flow of procedures but stages (4) and (5) are **tested** with AMOS software.

AMOS software offers two alternative model specifications, i.e. (1) AMOS graphics – working directly from a path diagram and (2) AMOS Basic – working directly from equation statements. AMOS graphics was chosen to directly accommodate the hypothesized models in section 2.11 rather than AMOS Basic. For further analysis, the AMOS program provides a dual approach to analyze the confirmatory factor analysis (CFA) and full (complete) SEM models that are used in Chapter 7 and Chapter 8.

Model assessment

The extent to which a hypothesized model adequately describes the sample data (model-fitting) is the primary interest in an SEM analysis (Byrne, 2001, p.75). The model-fitting process is to determine the goodness of fit of both: (a) the measurement model – the links between measurable variable scores (indicators or observed variables) and underlying constructs (latent/unobserved variables) that are designed to measure, and (b) full (complete) latent variable model that consists of structural models¹¹ (section 2.11) and all adequate indicators (Byrne, 2001, pp.4-14). Given the multiple indicators to represent the latent constructs (variables) do not perfectly measure according to what they have to be, the models' adequacy or goodness-of fit (or badness of fit) will be assessed based on five selected GFIs, i.e., χ^2 (Chi-sq) and probability, relative χ^2 (CMIN/DF)¹², RMSEA (root mean square error of approximation), TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index) to judge the degree of fitness between hypothesized models and survey data. Generally accepted rules of thumb of the GFIs threshold level are χ^2 , probability value ≥ 0.05 , CMIN/DF ≤ 2.00 , RMSEA ≤ 0.08 , TLI ≥ 0.95 , and CFI ≥ 0.94 (Ferdinand, 2002). The GFIs will be used to assess the discrepancies of both the measurement model and full (complete) variable model to the data. The models are expected to be a good fit. However, if the models are an ill-fit or a very poor model (misfit), an attempt will be made to modify the models in such a way that a better model is likely to be found. However, Byrne (2001, p.88) concludes that an assessment of model adequacy must be based on multiple criteria – theoretical, statistical, and practical considerations. By considering these criteria, the researcher can proceed to investigate the extent to which indicators accurately measure the constructs they are supposed to measure. AMOS outcome provides regression weights and critical ratio (CR) to facilitate this investigation.

In addition to a goodness of fit assessment with GFIs, an investigation of statistical significance of estimated parameters is undertaken concurrently. Each of the models has parameters, i.e., path coefficients (regression weights). In the SEM analysis,

¹¹ Bank performance model and client intention to leave model

¹² CMIN stands for minimum discrepancy and DF: degree of freedom. The plethora of newly developed fit indexes to address the χ^2 limitations with a more pragmatic approach to evaluate the model fitting process (Byrne, 2001, p. 81).

there are two types of regression weights: (a) the regression weight between an observed and unobserved variable – also known as a loading factor, and (b) the regression weight between a dependent construct and an independent construct – also known as a path coefficient. Each type of relationships has its own type of error as follows.

No.	Path coefficients or regression weight	Type of error
1	Regression of an observed variable to an unobserved/latent construct	Measurement error of an observed variable
2	Regression of one latent construct to another construct ¹³	Residual error of prediction

All SEM software packages facilitate a parameter estimation that minimize these errors. During the parameter estimation, SEM is taken into account to a possible presence of multi-collinearity among exogenous latent constructs (see Hair, 1998, p. 587-589; Biderman, 2000). The test statistic is critical ratio (CR), which represents a ratio between parameter (path coefficients or regression weights) estimates and its standard error. It is similar with the z-statistic in testing the regression coefficient, which is statistically different from zero if $CR > \pm 1.96$ based on a 0.05 significant level. Non significant regression weights can be considered unimportant in the model and they can be eliminated from the model (Byrne, 2001, p.76). All statistically significant indicators are considered as adequate indicators.

All measurement models having: (a) good fit and (b) adequate indicators will be incorporated in the full latent variable model. The adequacy assessment of the full latent variable model follows the same procedures of the measurement model assessment through the goodness of fit and statistical significant investigation. Unlike the measurement model that deals with only regression weight of indicators, the full latent variable model deals with both regression weights between indicators and related latent constructs (loading factors) and regression weights between dependent and independent constructs (path coefficients). Ultimately, the generally accepted SEM analysis pays more attention to path coefficients – the impact measure of independent (exogenous) variables and independent (endogenous) variables and disregards the constant variable (see e.g., Brown and Chin, 2004, p.542).

¹³ In some cases, the construct may be an observed variable.