DYNAMICS OF VILLAGE UNIT CO-OPERATIVE DEVELOPMENT (CASE STUDY ON KUD TANI MAKMUR IN KASIHAN DISTRICT)

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ABSTRACT

This study aims to (a) determine the dynamics of the development of KUD Tani Makmur (aspects of the organization, type of business, and finance) and (b) determine the forecasting model to estimate turnover. The basic method used is descriptive-analytical. Meanwhile, the data analysis used is descriptive analysis, financial ratios, and trends (linear, quadratic, and exponential). Based on the results of the study, it is known that KUD Tani Makmur has experienced dynamic developments: (a) the number of members, principal savings, mandatory savings, voluntary savings, and the number of managers grew by 2.59%, 27.83%, 9.36, 29.09%, and 1.51% per year, (b) the number of business units managed from 1994 to 2000 was 12 units, but gradually decreased to 4 business units in 2018, and (c) liquidity grew by around 7.37% (current ratio), 8.22% (quick ratio), and 0.81% (cash ratio) per year. Solvability is 2.92% lower, while the debt to equity ratio is 5.06% per year. Meanwhile, profitability consisting of profit margin, return on equity, and return on total assets grew by 0.17%, 0.30%, and 0.08% per year. Finally, the quadratic method is the best with the equation $\hat{Y} = 1.132.252.474 + 1.345.500X + 10,629,725 X2$. The proposed policy implications are (a) Validation of membership to find out the real number of active and passive members, (b) Running a regeneration program to prepare management and supervisors in the future, (c) Organizing education and training on information technology to improve knowledge and ability of HR, (d) Increase own capital through optimization of compulsory savings payments and transaction activities of members, and (e) Further research needs to be done to compare various forecasting methods by separating short-term, medium-term and long-term forecasting.

INTRODUCTION

The agricultural sector faces a complexity of problems, both at the macro and micro levels (Lukmanto and Nirwansjah, 2015; Gupte & Longhurst, 2019). Village Business Cooperatives, namely *Koperasi Unit Desa* (KUD) in Indonesia, were established as an alternative in overcoming these problems (Nafanu, 2016). For its strategic role, the government feels the need to intervene in VUC activities.

The role of government is divided into three stages: (1) initialization, the role of government is quite dominant, (2) deinitialization, gradually the role of government begins to decrease, and (3) autonomy, without direct intervention from the government (Solihin, 2010). The dominance of the role of government is realized through various regulations, including Presidential Instruction No. 4/1973, where KUD is directed as a multibusiness agricultural cooperative. Presidential Instruction No. 2/1978 (rural multi-business cooperative), Inpres No. 4/1984 (rural single cooperative) (Siregar and Jamhari, 2013; Riswan et al., 2017), and Inpres No. 18/1998 which encourages KUD to be independent and compete with other business actors as they should in the perfect competition market (Rahmawati, 2014).

When the government did not involve and encouraged the KUD to be independent, apparently, not many of them are survived. This is because KUD has been doing business for decades, with relatively good conditions and almost no competition (Siregar et al., 2016; Suyono et al., 2019).

About two decades ago, KUD became an institution with a considerable role, especially in the national food procurement program, such as the procurement of seeds, production input, absorption of farmers' grain, and channeling loan funds to farmers. Nevertheless, slowly the KUD's strategic role was eroded in line with changes in government policy. Currently, only 1,905 active KUDs have a food procurement business (Ministry of Cooperatives and SMEs, 2018).

Like cooperatives in general, KUD is not a group of capital but a group of people aiming to improve the welfare of members in particular and society in general (Susilawetty and Supena, 2013; Paramata, 2015; Helmi &Sasaoka, 2018).

The development of cooperatives, in general, is illustrated through trend analysis with the assumption of linear trend lines (Purnaningsih and Soejoto, 2014; Vanetha and Saravanambigaidevi, 2016; Nivedita, 2018; Nurhayati, 2019). Therefore, to predict a variable correctly, it is necessary to compare the existing trend method. MAPE (Mean Absolute Percentage Error), MSD (Mean Squared Deviation), and MAD (Mean Absolute Deviation) are three commonly used measures in determining the accuracy of a forecasting method (Sungkawa and Megasari, 2011). However, based on a review of the available literature, the use of these three measures in selecting forecasting models in the cooperatives field is still minimal.

Alfarisi and Sunarmintyastuti (2018) researched the development of forecasting applications in the GAPEBTA Cooperative. To determine the model used as a reference, first look for the smallest error value using ME, MAD, MAPE, and MSE. Based on the calculation results, the smallest error value chosen is ME = 1, MAD = 4, MAPE = 2%, and MSE = 31 from the value of $\alpha = 0.4$ in the single exponential smoothing model method.

The purpose of this study is to find out: (1) the dynamics of the development of KUD Tani Makmur (aspects of the organization, type of business, and finance) and (2) determining the forecasting model for estimating turnover.

MATERIAL AND METHODS

This study was carried out at KUD Tani Makmur using secondary data. Secondary data obtained through annual meeting reports of KUD from 1994 to 2018.

The KUD Tani Makmur was selected purposively as one of an old survive KUD. It established since 1973 and can develop well until now. KUD Tani Makmur is the only KUD in the Special Region of Yogyakarta that has archive organizational and financial documents from 1994 - 2018. Data collected analyze as follows.

Dynamics of KUD Development

The dynamics of the development of KUD based on aspects of the organization and type of business known by descriptive analysis. Meanwhile, for the development of financial performance, ratio analysis is used, with the following formula (Siregar and Jamhari, 2013).

The liquidity calculated as (i) current ratio (CR), which shows the ability of KUD to fulfill its current liabilities with current assets (CR = Current Assets / Current Liabilities x 100%); (ii) quick ratio (QR), shows the ability of KUD to fulfill its current liabilities with current assets without including inventory in calculations (QR= current – inventory assets/current liabilities x 100%); (iii) cash ratio (CashR), shows the true ability of KUD in fulfilling its current liabilities with its cash (CashR = [Cash + Bank] / [Current Liabilities] x 100%)

The solvency also calculated; it shows the total amount of assets used to guarantee total liabilities (Solvency = Total Assets/Total Liabilities x 100%). The debt to equity ratio (DER) calculated as Total Liabilities/Own Capital x 100%. The DER shows the proportion of total liabilities guaranteed by its own capital.

The profitability counted as net profit margin (NPM), return on equity (ROE), and return on total assets (ROA). NPM shows the number of remaining business results (SHU) that KUD can produce every Rp. 1,00 sales. ROE shows the amount of SHU that can be generated from the use of KUD's own capital (ROE = SHU / Own Capital x 100%. ROA shows the ability of KUD in producing SHU through the utilization of all assets owned (ROA = SHU Total Assets x 100%).

Turnover Forecasting Model

The turnover forecasting model is known by comparing various methods of trend analysis, namely linear and non-linear trends (quadratic and exponential). Linear trend calculated as $Y = a + bX$; quadratic trend calculated as $Y = a + bX + cX2$; and Exponential trend calculated as $Y = a (1 + b) X$.

Forecasting is certainly not always the same as what actually happens. The difference between a forecast and actual data is called a forecast error (error). The smaller the error, indicating the better a forecasting model (Alfarisi and Sunarmintyastuti, 2018). Parameters that give an indication of this included.

$$MAD = \frac{\sum (Yt - \hat{Y}t)}{n}$$

$$MSD = \frac{\sum (Yt - \hat{Y}t)^2}{n}$$

$$MAPE = \frac{\sum ((Yt - \hat{Y}t) / Yt)}{n} \times 100\%$$

RESULT AND DISCUSSION

The Dynamics of KUD Tani Makmur Development

The number of members.

Cooperative members are owners and, at the same time, users of cooperative services. Anyone can become a member because the basic principle of cooperative membership is open and voluntary. From 1995 to 2018, there was a growth in the number of KUD Tani Makmur members by 2.59% per year. However, between 2002 and 2006, considerable fluctuations occurred in the development of the number of members. From 2002 to 2003 it grew 32%, from 2003 to 2004 it decreased by 31%, from 2004 to 2005 it rose by 30%, and from 2005 to 2006 it rose by 9%. During this period, member recruitment systems existed but did not work. The new member registered did not understand the obligations as a member of the cooperative (paying principal savings and mandatory savings). As a result, most of the new members resign, while others continue after fulfilling their obligations.

In the old order era, government regulations placed the KUD as a service center for economic activities in rural areas. Accordingly, Decree No. 84 / M / KPTS / VI / 1984 issued, where Article 2 paragraph (3), "the formation of other cooperatives outside the KUD in rural areas can only carry out with the approval of the Minister of Cooperatives. As a result, people are increasingly enthusiastic about joining the KUD, so they can take advantage of programs provided by the government through the KUD, such as production facilities, procurement of grain, and lending.

The special status of KUD has ended since the issuance of Presidential Instruction No 18/1998 concerning Improvement of Cooperative Development and Development. KUD is no longer the only cooperative in rural areas, and the community freely establish cooperatives. However, the number of people registering for membership in KUD Tani Makmur increased from 1997 to 1998 by 309 people and from 1998 to 1999 by six people. The trend continued until 2008.

Anwar et al. (2011) state that people's perception of KUD's existence is a cognitive process. The existence of the KUD is easily known because the community is aware of the business units managed by the KUD, including the distribution of agricultural production facilities and savings and loans. To be able to participate in utilizing these services, the community then registers as a member.

The number of KUD Tani Makmur members reached its peak in 2010, with a total of 16,844 people. Since that year until now, the number of members has neither increased nor decreased (Figure 1). The stagnation in the number of members is because KUD Tani Makmur continues to want to collect data on the number of active and inactive members. It has not been done entirely because the required budget is quite large.
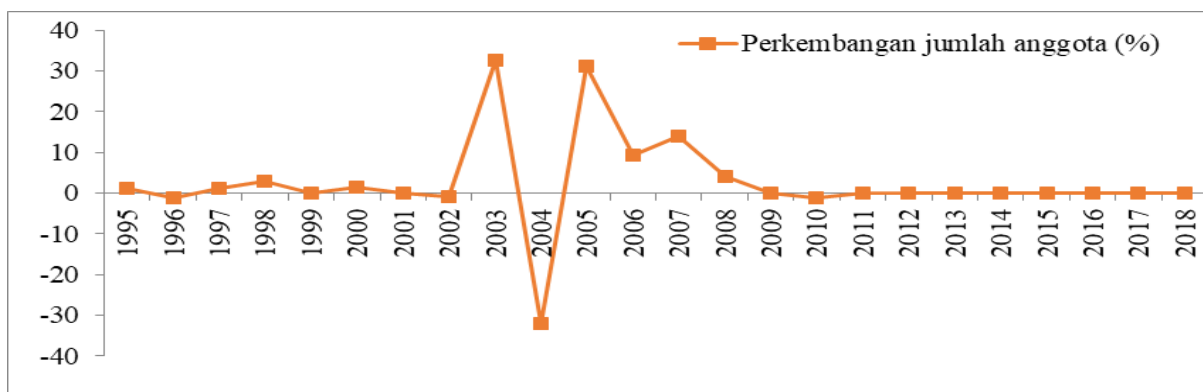

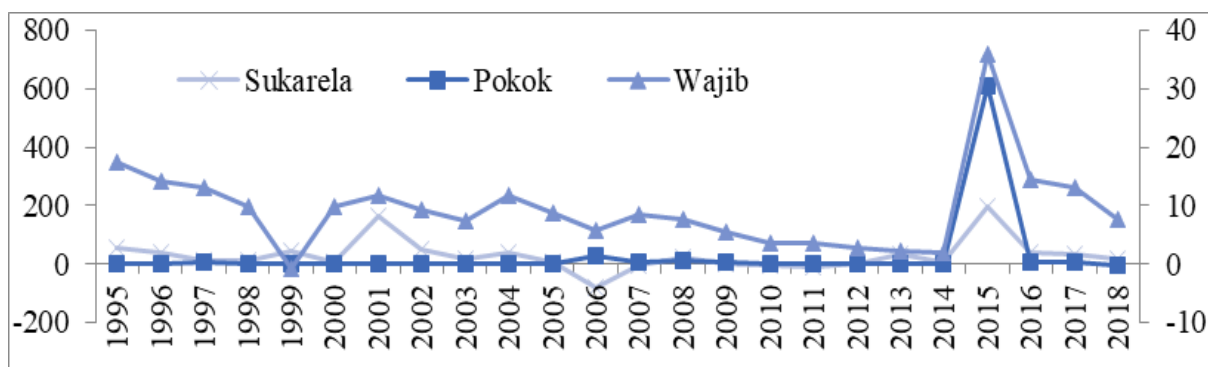Figure 1 Development of the number of KUD Tani Makmur members (%), 1995-2018

Figure 2. Development of Basic Savings (pokok), Mandatory Deposits (wajib), and Voluntary Deposits (Sukarela) of KUD Tani Makmur, 1995-2018

Mandatory Deposits, Principal Deposits, and Voluntary Deposits.

The primary, mandatory, and voluntary savings of KUD Tani Makmur eachgrewby 27.83%, 9.36%, 29.09% per year. Mandatory deposits are generally used as a parameter ofmemberactivity. When compared to thein formation in Figure 1 and Figure 2, it is known that the percentage in crease in mandatory saving sislower than the percentage increase in then umber of members. That is, there are quite a severalin active members.

From 2014 to 2015, primary saving sand mandatory savings were relatively large. This isbecause KUD established a new business unit called Saving sand Loan Tabur Puja Unit, a saving sand loan business unit explicitly in tended forcitizens who are members of the Family Empowerment Post (POSDAYA). In order for the community to access the service, They must first access the service to ful fill it so bligations as a member of the cooperative by paying primary saving sand mandatory savings.

Organizational Member.

The organizational board that holds thehighestaut hority in the cooperative is the Member Meeting. At a particulartime, the Member Meeting will choose who will be fully responsible for the management for the interests and objectives of the cooperative (management). One period of management in KUD Tani Makmur lasted for five years. At present, the average management experienceis 17 years, where the lowest in ten years and the highestis 24 years.

Table 1. Experiences of being a KUD Tani Makmur Board.

No	Experiences (year)	Number of people	%
1	0-10	1	25
2	11-20	2	50
3	21-30	1	25
Total		4	100

The board has significant capital in understanding the conditions of the times and what strategies need to be applied based on the duration of the experience. However, KUD also has homework to carry out regeneration. So that when the management transition, there is no setback in managing cooperatives.

In general, the board consists of managers and staff. Based on its essential role, the management of KUD Tani Makmur includes managers in activities to increase the capacity of human resources. For the last three years, there have been 3 events of training, 17 education and training, two technical guidance, and two workshops. From 1995 to 2018, the average growth in the number of KUD Tani Makmur managers was 1.51% or as many as one person per year. Most managers (65%) can be loyalists because they have worked in KUD for more than ten years. There are 13% have worked for more than 30 years. It shows that KUD Tani Makmur can manage human resources well so that relatively many managers survive.

From 2004 to 2005, KUD Tani Makmur added nine workers to support operations, particularly in the savings and loan division. Four of the nine people were placed as field officers. In terms of employment, the KUD Tani Makmur has a better performance than the average cooperative in DIY. According to cooperative performance data published by Bappeda DIY (2019), the number of cooperatives in DIY in 2018 was 1,989, with a total of 8,441 managers and employees. That is, the average cooperative absorbs as many as four people.

On the other hand, KUD Tani Makmur can manage as many as 31 people. This shows that KUD Tani Makmur can manage business units and other cooperative activities well during dynamic business competition.

Supervisor.

The KUD supervisor has to supervise and give advice to the management. In KUD Tani Makmur, supervision is carried out every three months through meetings with the management. In addition to the supervisory and management meetings, a joint meeting was held at the Tani Makmur Village Cooperative involving stakeholders. This has a positive impact on KUD activities. With regular communication and coordination patterns, the similarity of perception in achieving organizational goals is getting better.
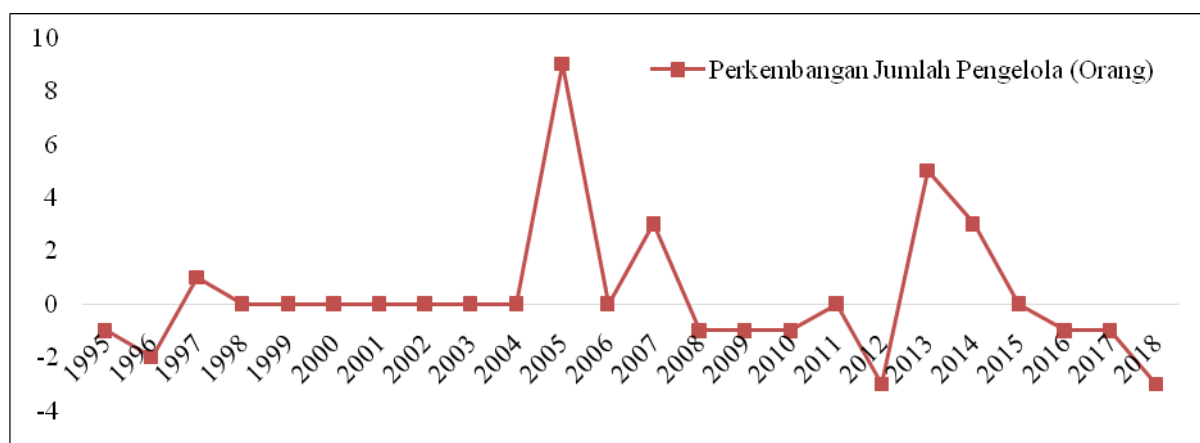

Figure 3. Development of Number of boardKUD Tani Makmur,1995-2018.

Table 2. The Board of KUD Tani Makmur Based on Length of Work.

No	Length of work	Total	%
1	2 - 14	18	58
2	15 - 27	9	29
3	28 - 39	4	13
	Total	31	100
	Average	15	
	Minimum	2	
	Maximum	39	

Type of business. In the 1990s, especially before the issuance of Presidential Instruction No. 18/1998, KUD Tani Makmur carried out its role as a single rural cooperative. During the period 1994 - 2000, the types of businesses that had been managed were food procurement, granulated sugar distributors, multi-purpose food stalls, electric payment counters, grain mills (RMU), distribution of agricultural production facilities for food crops and people's sugarcane intensification programs, savings and loans, telecommunications stalls, farm credit, business credit, kulak credit, as well as processing and marketing the results of production.

Since 2001, the diversity of types of businesses managed by KUD Tani Makmur began to decrease. At this time, KUD Tani Makmur focuses on multi-purpose food stalls, savings and loans, PPOB, and distribution of agricultural production facilities. To optimize services,

KUD Tani Makmur diversifies its savings and loan business units by presenting products that suit the needs of diverse members
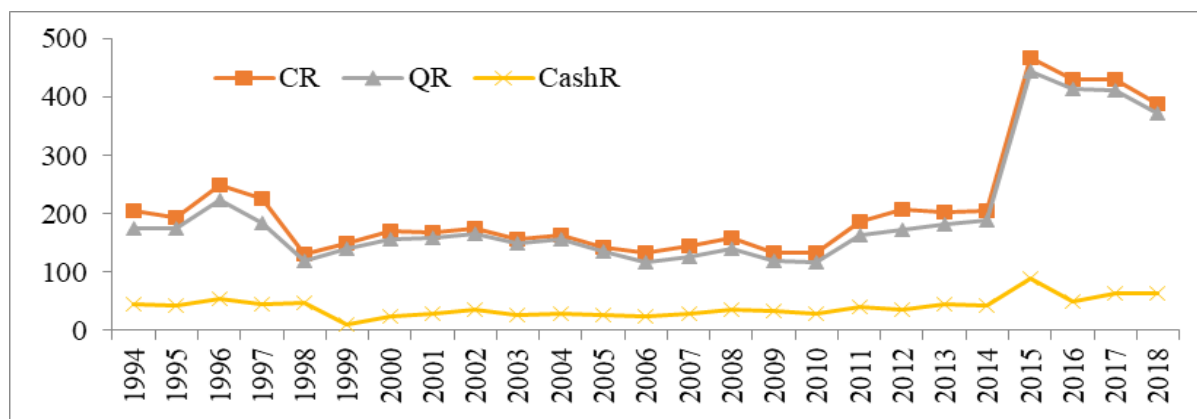

Figure 5. CR, QR, and Cash R of KUD TaniMakur, 1994 – 2018.

Financial aspect.

In 2006, the Ministry of Cooperatives and SMEs issued a Regulation of the Minister of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia 06 / Per / M.UKM / V/2006. The main contents of the regulation regulate the guidelines for evaluating outstanding cooperatives. One of the four aspects measured is the aspect of productivity, namely, financial performance. Thus, knowing the development of KUD financial performance can be additional information about financial management to achieve organizational goals.

Liquidity.

From 1994 to 2018, KUD Tani Makmur was classified as liquid because the value of current assets as a whole (current ratio) and without calculating inventory (quick ratio) still exceeded current liabilities. Even if members withdraw voluntary deposits at any time, the cash ratio of KUD Tani Makmur is sufficient to pay for the whole.In the last 24 years, the liquidity of KUD Tani Makmur grew positively by 7.37% (current ratio), 8.22% (quick ratio), and 0.81 percent (cash ratio) each year, as shown in Figure 5.

Solvency.

KUD Tani Makmur assets come from liabilities and equity. If the majority of assets come from liabilities, especially external parties, KUD has a relatively large financial responsibility, which is to bear the principal and interest. However, on the contrary, if the equity has an ideal proportion, then the KUD does not bear the burden of interest and at the same time proves that the KUD can optimize members in the payment of mandatory savings, routinely set aside reserve funds from the rest of the business, and can also successfully work with other parties so that get donations/grants.

The average solvency and DER of KUD Tani Makmur from 1994 to 2018 were 192.63% and 130.41%, with the growth of -2.92% and 5.06%, as shown in Figure 6. Based on the DER value, it was concluded that capital alone could not be fully relied upon in paying off cooperative financial obligations. Therefore, KUD Tani Makmur's stakeholders need to be careful in accessing loans. A relatively better choice is to prioritize loans over the long term rather than the short term.

Profitability.

The remaining results of operations do not become the sole purpose of cooperative activities. Cooperatives can offer product prices that are cheaper than market prices, provide very low-interest loans, or simply repay principal debt to

improve the welfare of members. However, these policies tend not to last long.

The cooperative is expected to be able to adjust its activities to the dynamics of business competition. For this reason, cooperatives need to get a positive surplus (surplus). That way, cooperative activities can take place on an ongoing basis and provide services to members better.

From 1994 to 2018, the average growth of NPM, ROE, and ROA was 0.17%, 0.30%, and 0.08%, as shown in Figure 7. This shows that KUD Tani Makmur was able to reduce the inefficiency of time after time so that the remaining results of operations can increase more than the increase in turnover, equity, and total assets.

Turnover Forecasting Model

Based on the turnover of KUD Tani Makmur from 1994 to 2018 using the linear method, the equation Y = 1,684,998,184 + 140680774X was obtained. Meanwhile, the quadratic method produces the equation Y = 1.132.252.474 + 140680774X + 10,629.725X2. While the results of the exponential method, the equation is Y = 1,313,807,688 + (1+ 0,087) X.

A forecasting model is better if it has the smallest value among the three measurements. The measurement of the three parameters shows that the quadratic has the smallest MAD, MSD, and MAPE values, and thus, it is determined as the best model for use in forecasting the turnover of KUD Tani Makmur.
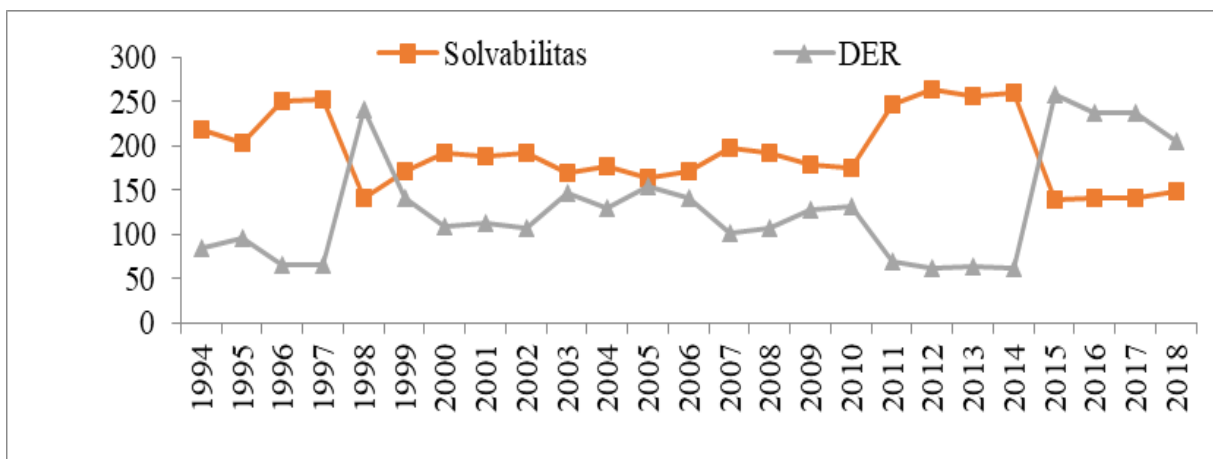

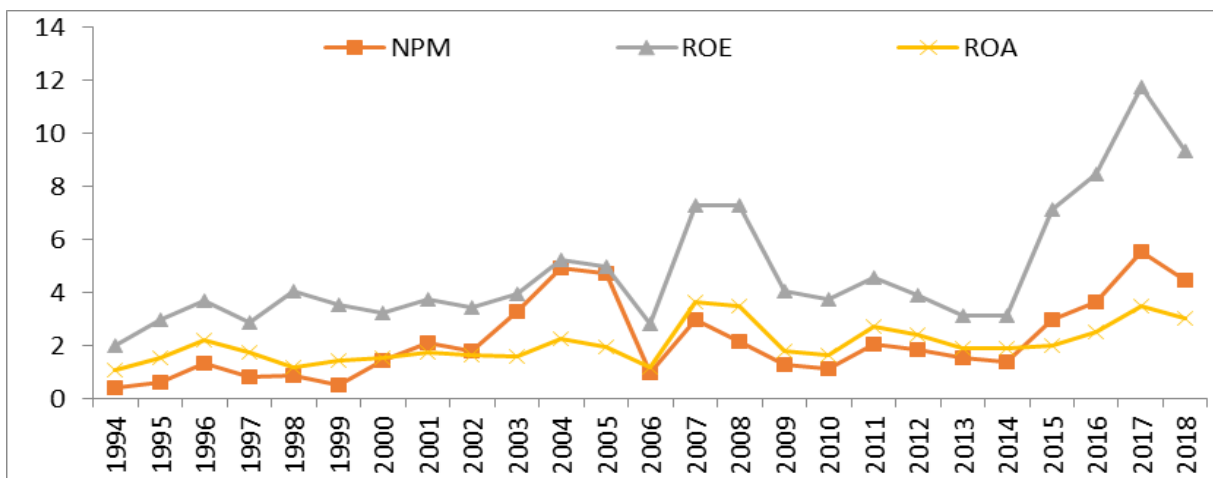Figure 6. Solvency and DER of KUD Tani Makmur, 2014 – 2018.

Figure 7. Profitability of KUD Tani Makmur, 2014 – 2018.

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CONCLUSION

The KUD Tani Makmur experienced dynamic developments: (a) the number of members, primary savings, mandatory savings, voluntary savings, and the number of managers grew by 2.59%, 27.83%, 9.36, 29.09%, and 1.51% per year, (b) the number of business units managed from 1994 to 2000 was 12 units, but gradually decreased to only four business units in 2018, and (c) the liquidity ratio grew by around 7.37 % (current ratio), 8.22% (quick ratio), and 0.81% (cash ratio) per year. Solvency decreased 2.92% per year while the debt to equity ratio rose 5.06% per year. Meanwhile, profitability consists of net profit margin, return on equity, and return on total assets, which grew by 0.17%, 0.30%, and 0.08% per year. Finally, among the three models, quadratic is the best with the equation $\hat{Y} = 1.132,252,474 + 1,345,500X + 10,629,725X2$. The proposed policy implications are (a) Validation of membership to find out the real number of active and passive members, (b) Running a regeneration program to prepare management and supervisors in the future, (c) Organizing education and training on information technology as an effort improve knowledge and capabilities of HR, (d) Increase own capital through optimization of compulsory savings payments and transaction activities of members, and (e) Further research is needed to compare various forecasting methods by separating short-term, medium-term and long-term forecasting.

Acknowledgments

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Attachment :

Table 3. Actual Turnover Value and Prediction Turnover Based on Linear Method and Non-Linear Method (Quadratic And Exponential) (Rp. 000,000,000), 1994 – 2018.

Year	Y	$\hat{Y}$			$Y- \hat{Y}$			$(Y- \hat{Y})^2$		
		L	K	E	L	K	E	L	K	E
1994	0,68	0,00	0,97	0,48	0,68	-0,30	0,20	463.085.759	88.465.004	38.383.722
1995	0,79	0,14	0,87	0,52	0,14	-0,08	0,27	425.653.090	6.565.876	71.025.400
1996	0,52	0,28	0,79	0,57	0,28	-0,27	-0,05	59.204.596	71.239.274	2.264.766
1997	0,74	0,42	0,73	0,62	0,42	0,01	0,12	100.448.632	75.243	13.699.914
1998	1,09	0,56	0,69	0,67	0,56	0,40	0,41	276.204.420	158.399.890	170.030.979
1999	1,74	0,70	0,67	0,73	0,70	1,07	1,01	1.078.760.046	1.146.019.313	1.014.864.684
2000	0,60	0,84	0,67	0,80	0,84	-0,07	-0,19	57.685.773	4.914.434	37.851.913
2001	0,55	0,98	0,69	0,86	0,98	-0,14	-0,31	184.471.421	20.305.903	97.716.585
2002	0,70	1,12	0,74	0,94	1,12	-0,04	-0,24	177.749.309	1.515.790	57.347.044
2003	0,49	1,26	0,81	1,02	1,26	-0,32	-0,53	596.309.245	99.308.454	282.426.515
2004	0,49	1,40	0,89	1,11	1,40	-0,40	-0,62	832.646.381	161.819.369	384.696.934
2005	0,54	1,54	1,00	1,21	1,54	-0,46	-0,67	1.006.512.971	212.645.686	445.285.209
2006	1,33	1,68	1,13	1,31	1,68	0,19	0,01	127.982.480	38.024.735	180.744
2007	1,41	1,83	1,28	1,43	1,83	0,13	-0,02	170.030.125	16.839.965	228.666
2008	1,95	1,97	1,46	1,55	1,97	0,49	0,39	411.486	240.042.864	154.426.154
2009	1,90	2,11	1,65	1,69	2,11	0,25	0,21	43.760.046	61.449.038	43.773.183
2010	2,00	2,25	1,87	1,84	2,25	0,13	0,16	61.461.368	18.159.199	26.837.767
2011	2,01	2,39	2,10	2,00	2,39	-0,09	0,02	140.813.566	7.787.843	287.424
2012	2,21	2,53	2,36	2,17	2,53	-0,15	0,04	101.540.024	22.075.378	1.603.163
2013	2,19	2,67	2,64	2,36	2,67	-0,45	-0,17	227.614.249	198.203.196	27.925.351
2014	2,55	2,81	2,94	2,57	2,81	-0,39	-0,02	68.144.082	151.010.672	265.787
2015	3,33	2,95	3,26	2,79	2,95	0,07	0,54	146.011.415	5.454.172	295.552.381
2016	3,68	3,09	3,60	3,03	3,09	0,08	0,65	348.915.125	6.474.386	421.821.465
2017	3,95	3,23	3,97	3,30	3,23	-0,02	0,65	514.672.224	257.424	425.373.571
2018	4,68	3,37	4,35	3,59	3,37	0,33	1,10	1.719.197.603	111.053.589	1.207.578.891

1. Linear model : $Y = 1.684.998.184 + 140.680.774X$
2. Quadratic model : $Y = 1.132.252.474 + 140.680.774X + 10.629.725X^2$
3. Eksponentialmodel : $Y = 1.313.807.688 + (1 + 0,087)^X$

Note: Y = actual turnover value, $\hat{Y}$ = forecast turnover value, L = linear method, K = quadratic method, E = exponential method