International Journal of Business and Technopreneurship
Volume 11, No 3, Oct 2021 [89-99]

Determinant of Malaysia Cooperative Performance: A Dynamic Estimation

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ABSTRACT

This study investigates factors affecting financial performance, using evidence from cooperatives in Malaysia. This study employs a Pooled Regression Model (OLS), Random Effect Model (REM), Fixed Effect Model (FEM), and Generalized Method of Moments (GMM) for unbalanced data of 100 best cooperative for the period 2010-2014. Our findings indicate that capital structure, cash, and inventory management affect cooperatives' performance. The results also show the impact of dividend and cooperatives member benefit on cooperative performance. These findings will enable the cooperatives to make solid financial decisions for long-term financial excellence.

Keywords: Cooperative financial ratio, Panel data, GMM estimation, Financial performance, Malaysia.

1. INTRODUCTION

The evaluation of cooperatives' financial performance can be done using financial analyses based on financial ratios to assess cooperatives' financial performance, including in the context of established goals and strategies. As cooperative organizations that engage in economic activities, they need to be profitable organizations to meet their main objective of maximizing the benefits and welfare of members. Therefore, the measurement of cooperatives' performance is to evaluate their performance, which also considers the cooperatives' objectives involving the benefits and welfare of members as well as profit stability. Conventional financial analysis that looks at profitability, efficiency, liquidity, and leverage can be adopted in measuring cooperatives' business performance (Kaur 2006). Numerous empirical studies have used ratio analysis as a basic method for assessing the policy and financial position of firms (Margaritis and Psillaki 2010; Soboh, Lansink and Dijk, 2011; Kalogeras, Benos and Doumpos, 2013; Delen and Uyar, 2013; Sasmita 2016; Dodoo Donkor, D. T., & Appiah et al. 2021) but few of the previous studies provides a financial and non-financial factor affecting on cooperatives performance.

Referring to Malaysia cooperatives, this study states that the evaluation of cooperative performance is not only limited to increases in the number of cooperatives, the size of membership, the asset, and capital. However, the main aim of the evaluation of the financial performance of cooperatives is to strengthen cooperatives' financial condition so that their main goal can be met and they can be recognized as stable organizations. Hence, there is a need for in-depth research on the impact of financial and non-financial factors on financial performance for

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cooperatives as cooperatives are similar to other firms in terms of capital, asset, liability, and investment management. Therefore, it is crucial to determine which financial and non-financial factors affect financial performance, as any decision on changes to investment or loan will affect the financial performance of cooperatives.

The purpose of this study is to examine the effect of financial management which more specific we access the direct effect of selected liquidity ratios, leverage ratios, asset management ratios, cooperatives specific ratios (financial factors), and macroeconomic factors (non-financial factors) that affect cooperatives performance. The cooperatives specific ratios include cooperatives size, dividends, cooperatives members interest, and welfare, and macroeconomic factors are proxy by gross domestic product. The result from this study can bridge some of the gaps in the Malaysian cooperatives literature.

2. LITERATURE REVIEW

Research on financial ratios and the financial performance of cooperatives compared to investor-owned firms (IOFs) has been done extensively in the United States (USA). Most of the cooperatives' performances are measured in terms of profit and efficiency ratios that demonstrate the ability and efficiency of the equity capital to generate returns, as well as the capital financing ratio that shows a firm's ability to settle debts and how cooperatives finance their equity (Gengzoglanis 1997; Lerman and Parliament 1991; Harris and Fulton 1996; McKee 2008; Soboh, Lansink and Dijk, 2011; Kromkratoke and Suwanmaneepong, 2019).

Lerman and Parliament (1990) compared the performance of the fruits and vegetables production sector and the dairy production sector in the United States of America (USA). They used four types of financial ratios to measure cooperatives' performance, namely leverage (Liabilities/Assets), efficiency (Sales/Assets), liquidity (Current assets/Current liabilities), and profitability (Pre-tax Profit/Equity) ratios. They found that the cooperatives did not show their real performance level compared to IOFs in terms of return on equity, debt-to-equity ratio, and income-to-interest ratio. The earnings management ratio of the fruits sector was lower compared to IOFs, but dairy cooperatives performed better than IOFs in terms of return on equity. However, other studies have shown no significant difference in financial performance based on profit, liquidity, leverage, and asset efficiency ratios. between cooperatives and IOFs in the USA (Hardesty and Salgia, 2004; Harris and Fulton, 1996; McKee, 2008)

Another strand of studies that assess the financial performance of cooperatives and IOFs in Canada from 1986 to 1991, using data obtained from six major dairy cooperatives and six IOFs. According to Gentzoglanis (1997), the financial performance of dairy cooperatives in Canada was comparable and showed no significant difference in terms of profit, productivity, and new technology adoption. Similar studies conducted by Harris and Fulton (1996) examined the financial performance of cooperatives and IOFs in Canada. Their result confirmed that cooperatives had at least the same liquidity as IOFs. The cooperatives in fruits, vegetables, food, and large operation sectors demonstrated better performances compared to IOFs in the same sectors.

Notta and Vlachvei (2007) tested the factors affecting the performance of cooperatives and IOFs in Greece's dairy industry for the years 1990 to 2001 by adopting the panel data method. They used the net profit ratio to measure performance, and market share ratio, asset efficiency ratio, capital structure ratio, and capital reserve ratio as the independent variables. Their findings show that cooperatives had lower ROA and market share rates compared to IOFs since IOFs were subjected to stricter and more competitive market control.

Similarly, Baourakis, Doumpos and Kalogeras (2002) measured the financial performance of 10 cooperatives, two IOFs, and the 15 largest companies in juice marketing and manufacturing

sectors in Greece for the years 1993–1998. They applied multi-criteria analysis based on three groups of financial ratios, namely, profitability ratio, debt-paying ability ratio, and management performance ratio. First, the principal component analysis was performed to determine which ratios had a high effect on financial performance. Among them are the current operating profit ratio, liquidity ratio, leverage ratio, and inventory turnover ratio.

Subsequently, Soboh, Lansink and Dijk (2011) employed the logit regression method to compare the performance of 170 dairy cooperatives and IOFs in Europe. The financial ratios used include the profitability ratio (profit/assets), liabilities/assets, long-term liabilities/equity, current assets/current liabilities, sales/fixed assets, sales/inventory, equity growth, and cooperative size. Results of their analysis demonstrate that dairy cooperatives had relatively lower profits, lower leverage rates, higher asset management efficiency, lower inventory turnover ratios, and higher asset sizes compared to IOFs. A recent study of 120 financial service cooperatives in Indonesia found that capital structure has a positive and significant impact on financial performance. (Sasmita, 2016). Another study in the New Zealand dairy industry attempted to examine risk management policies and financial decisions through decision-making model to increase competitive strategy and mitigate financial risk (Qian and Olsen, 2021).

In Malaysia, the study on cooperatives' performance by Nor Laili and Masanita (2005) only focused on cooperative organizations operating in Kedah, and the performance evaluation was based on liquidity ratio, leverage ratio, and profit ratio. They performed a descriptive analysis of the variables selected from financial ratios using a non-parametric correlation test to determine the relationships of financial performance with size and industry. The results show that the performance of cooperatives varied according to industry. For example, cooperatives in the financial industry had low liquidity ratios, less dependency on debt to support business activities, low sales-to-asset ratios, and low return on assets and return on equity.

The performance measurement of cooperatives in Malaysia was also reported in the study on economic performance and members' benefits performance (Kaur 2006). The study involved a sample of 20 large and 20 small cooperatives that were randomly selected to measure the financial performance and members' benefits. The findings of the study show that financial performance, measured in terms of profit and liquidity ratios, varied between large and small cooperatives. The financial ratios were generally satisfactory, with small cooperatives outperforming large cooperatives in several valuations. For instance, Shamsuddin et al. (2017) and Shamsuddin, Ismail, Mahmood and Yusoff (2018) provide empirical evidence using a panel data model that capital structure, dividend, and cooperative members' interest have significant impacts on ROA and return on capital employed (ROCE) but ROE is only significantly affected by capital structure for credit cooperatives.

From these previous studies, financial performance can be used to measure the financial position and strength of an organization, such as a cooperative. The financial management evaluation of a cooperative in terms of profit, capital structure, efficiency, leverage, liquidity, and the ratio of members' benefit provides an important source of information to the management as well as to the members of the cooperative.

This study contributes to the literature on cooperatives' financial performance in Malaysia by building and introducing a financial performance model to identify which financial management factors are related to financial performance. This study builds a comprehensive empirical framework on cooperatives' financial performance by incorporating the variables of members' interest and welfare, dividend, and non-financial factor variable (GDP) into a more comprehensive estimation model. Hence, within the limit of knowledge, this study is one of the very few studies that offer new insights on the selected financial management ratios, cooperatives specific characteristic ratios, and macroeconomic variables to cooperatives financial

performance to provide full information on the panel and dynamic estimation model that is of added value to regulatory authority to introduce relevant policy to cooperatives.

3. METHODS

This study uses data from audited annual financial reports obtained from the Statistical Coordination Division, Malaysia Co-operative Societies Commission (SKM). Gross Domestic Product (GDP) growth data were obtained from the website of www.treasury.gov.my. The population of this study consists of 100 best cooperatives for the period of 2010 to 2014, representing 80–90 percent of cooperative earnings in Malaysia. This study employs both static and dynamic panel data.

Static Model:

$$y_{it} = \alpha + ßX_{it} + u_{it} \quad (1)$$

$$ROA_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 CASH_{it} + \beta_3 DEBT_{it} + \beta_4 ETA_{it} + \beta_5 FATA_{it} + \beta_6 OETR_{it} + \beta_7 IVTA_{it} + \beta_8 LnSIZE_{it} + \beta_9 DIV_{it} + \beta_{10} MBEN_{it} + \beta_{11} LnGDP_{it} + u_{it} \quad (2)$$

Dynamic Model:

$$\Delta y_{it} = \alpha \Delta y_{it-1} + ß\Delta Xit + \Delta ή_{it} + \varepsilon_{it} \quad (3)$$

$$y_{it} = \alpha y_{it-1} + ßX_{it} + ή_i t + \varepsilon_{it} \quad (4)$$

$$ROA_{i,t} - ROA_{i,t-1} = \alpha(ROA_{i,t-1} - ROA_{i,t-2}) + \beta_1(CR_{i,t} - CR_{i,t-1}) + \beta_2 (CASH_{i,t} - CASH_{i,t-1}) + \beta_3 (DEBT_{i,t} - DEBT_{i,t-1}) + \beta_4 (ETA_{i,t} - ETA_{i,t-1}) + \beta_5 (FATA_{i,t} - FATA_{i,t-1}) + \beta_6 (OETR_{i,t} - OETR_{i,t-1}) + \beta_7 (IVTA_{i,t} - IVTA_{i,t-1}) + \beta 8(LnSIZE_{i,t} - LnSIZE_{i,t-1}) + \beta 9 (DIV_{i,t} - DIV_{i,t-1}) + \beta_{10} (MBENi,t - MBEN\ i,t\text{-}1) + \beta_{11} (LnGDPi,t - LnGDP_{i,t-1}) + (\varepsilon i_{,t} - \varepsilon i_{,t-1}) \quad (5)$$

In this model, y_{it} is financial performance $(ROA))_n$, x_{it} is the determinant set of financial performance, and u_{it} is the error term where $u_{it} \sim$ i.i.d.$(0, 6u^2)$. The static panel data used in this study are Pooled Ordinary Least Square (POLS), Random Effect Model (REM), and Fixed Effect Model (FEM). Breusch-Pagam LM test and Hausman test were conducted to choose the model between OLS and REM as well as RE and FE. Then, problems of autocorrelation and heteroscedasticity are also examined. After that, the GMM is applied to eliminate the individual effects by differencing the original equation. Furthermore, the performance potential for the current year can be explained by looking at the previous year's performance. In other words, the current year's performance reflects the results and performance achieved in previous years.

It is suggested to use GMM to estimate the dynamic empirical model for financial performance, where the panel data used consist of a larger number of cooperatives compared to periods, as recommended by Arrelano and Bond (1991). The GMM estimation method is efficient, unbiased, and consistent, and uses the instrument variables. This method could eliminate the fixed effect by taking the first-difference transformation, but it has the disadvantages of losing the dependent variable (y_{it}) and changes occurring during the data transformation process (Roodman, 2009). Thus, forward orthogonal deviation or forward Helmert's system transformation procedure (Arellano and Bover 1995) is applied to overcome the problems of missing data during the data transformation process and fixed effect of firms. This data transformation involves subtracting the mean of future observations from the sample, beginning with the T-1 observation. Therefore, the sample size in the panel with a gap can be maintained. This data transformation method was also used by researchers such as Karim and Saini (2013).

Blundell and Bond (1998) and Alonso-Borrego and Arellano (1999) stated that if the lagged dependent variables and independent variables change randomly, then the lagged levels of these variables are weak instruments for the regression equation in differences. Then, Blundell and Bond (1998) proposed the GMM-system by combining specifications at the first-difference level and system level.

Specification test is done as proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). First, the Hansen J test is performed to test the validity of the instrument and model used. The failure to dismiss the Hansen Null Hypothesis shows that the instrument used is valid and the GMM estimation model is accurate. Second, the correlation test is performed to test that no serial correlation exists at either the first or the second order for the error term. If the error is found to have no serial correlation, then the first difference transformation will be inclined towards the serial correlation at the first instead of the second order. The first-difference equation is then combined with the equation at level, where the dependent variable at a level will correlate with the firm-specific effect, and at the same time, the explanatory variables will be allowed to correlate with the firm-specific effect. This means that any variable can be used as an instrument in the equation at a level. The null hypothesis for the serial correlation test is not to reject the null hypothesis if there is no serial correlation at the first-order AR1 and/or not to reject the null hypothesis when there is no serial correlation at the second-order AR2.

The GMM estimation method can eliminate the fixed effect by taking the first-difference transformation but has the disadvantages of losing the dependent variables and changes occurring during the data transformation process (Roodman, 2009). Therefore, the transformation procedure of forward orthogonal deviation or forward Helmert's system (Arellano and Bover 1995) is used to address the issues of data loss during the data transformation process and the firm's fixed effect. The GMM estimation method consists of two steps (Arrelano and Bond 1991). GMM-Step one is an independent weight matrix that is independent of the estimator. Meanwhile, GMM-Step two is an efficient estimator, obtained asymptotically by selecting the smallest covariance matrix among all possible weight matrices. GMM-step two has better accuracy in terms of the coefficient, less bias, and error compared to GMM-Step one. In order to obtain a more precise estimator, this study chooses two-step estimator to conclude the results of the analysis as it takes the structure of the variance-covariance matrix of errors into account.

Table 1. Summary of variables in the study model

Variables			Symbol	Measurement
Dependent Variables:	Cooperatives financial performance	Return on asset	ROA	Net profit/Total assets
		Return on equity	ROE	Net profit/Total equity
Independent variables:	Cash ability	Liquidity ratio	CR	Current asset/Current liability
		Cash ratio	CASH	Cash/Current liability
	Capital structure	Leverage ratios	DEBT	Total liability/Total asset
			ETA	Total liability/Total asset
	Asset Efficiency	Fixed asset efficiency	FATA	Fixed asset/Total asset
		Operating management	OETR	Operating expenses/Sales
		Investment management	IVTA	Investment/Total asset
	Cooperatives Specific characteristic	Cooperative size	SIZE	Total asset
		Dividend	DIV	Total dividend/Net profit
		Members benefit and welfare	MBEN	Total members benefit/Net profit

Variables		Symbol	Measurement
Macroeconomic variable	Economic growth	GDP	Current year GDP

Source: Compiled by the author

4. RESULTS AND DISCUSSION

Descriptive statistics and correlation coefficient test are displayed in Table 2 and Table 3, respectively.

Table 2. Descriptive statistics of variables

Variables	Minimum	Maximum	Median	Standard deviation
ROA	0.0024	0.5242	0.0807	0.0517
ROE	0.0062	57.4480	0.6910	2.9905
CR	0.0742	4619.519	18.9844	190.6114
CASH	-0.0238	743.0208	5.9523	37.2389
DEBT	0.0006	1.6797	0.2278	0.1968
ETA	0.0026	1.3473	0.3529	0.2388
FATA	0.0004	0.7697	0.1628	0.1610
OETR	0.0786	2.2573	0.8372	0.2534
IVTA	0.0003	0.7687	0.1084	0.1229
LnSIZE	11.1932	25.0953	16.3360	2.0259
DIV	0.0088	25.0927	0.4157	0.2521
MBEN	-0.0492	17.5235	1.2927	1.9284
LnGDPN	27.1688	27.3459	27.2461	0.0648

Source: Stata Analysis

Summary variables for the variables used in this study are reported in Table 2. The minimum value for these variables is 0.0024 (ROA), followed by 0.0062 (ROE). Meanwhile, the maximum values are 0.5242 (ROA) and 57.4480 (ROE). There is a huge difference between the minimum and maximum ROE values of 0.0062 and 57.4480, respectively. It means that there is a huge difference in the current profit to the total equity between one cooperative and another cooperative in Malaysia. Proxy variables for the liquidity ratio, namely, CR and CASH, the mean values are 18.9844 and 5.9523, respectively. Both have positive values. This finding shows that most of the cooperatives representing the data in this study do not suffer from severe liquidity problems. The proxy variables for the capital structure and agency cost are DEBT and ETA. For these two variables, the minimum and maximum values are for the DEBT variable, at 0.0006 and 1.6797, respectively.

The cooperatives' financial management efficiency variables are FATA, OETR, and IVTA. The minimum value is for the IVTA ratio at 0.0003, and the maximum value is for the OETR ratio at 2.2573. The standard deviation values of FATA and OETR are smaller than the mean values, while the standard deviation value of IVTA is greater than the mean value. This finding indicates that most of the cooperatives have lower efficiencies in fixed assets management (FATA) and expenses management (OETR) compared to the average efficiency of the cooperatives. Meanwhile, investment management (IVTA) reveals that most of the cooperatives have slightly higher investments than the average investment value.

The variables for cooperatives' characteristics are LnSize, DIV, and MBEN. For dividends, the minimum and maximum values are 0.0088 and 1.8287, respectively, while the mean value is 0.4157. This shows that the average dividend payment of the cooperatives in Malaysia is 41.57%.

Some cooperatives pay lower dividends while some cooperatives pay higher dividends. The mean value of members' welfare (MBEN) is 1.2927, which is less than the standard deviation value of 1.9284. This shows that most of the cooperatives have or pay members' welfare higher than the average members' welfare. As for the macroeconomic variable, LnGDP, has a mean value of 27.2461. The minimum value is 27.1688 while the maximum value is 27.3459, indicating that there is a small difference among the cooperatives in Malaysia in terms of GDP.

Table 3 shows that the VIF values for all variables are in the range of 1.03–9.05. This indicates that there is no serious multicollinearity problem among the variables used in the study, as all of the VIF values and the mean VIF value (2.94) of the variables do not exceed 10.

Table 3. Correlation coefficients and variation inflation factors (VIF)

Variable	CR	CASH	DEBT	ETA	FATA	OETR	IVTA	LnSIZE	DIV	MBEN	LnGDP	VIF
CR	1.000											8.91
CASH	0.924*	1.000										9.00
DEBT	-0.035	-0.061	1.000									1.38
ETA	-0.055	-0.077	-0.099*	1.000								1.92
FATA	-0.046	-0.063	0.023	-0.252*	1.000							1.16
OETR	-0.050	-0.045	0.262**	-0.303*	0.208*	1.000						2.42
IVTA	-0.008	-0.021	-0.146*	-0.002*	-0.117*	-0.101*	1.000					1.08
LnSIZE	0.004	0.029	0.172*	0.335*	-0.190*	-0.584*	0.114*	1.000				2.40
DIV	0.058	0.037	-0.207*	0.585*	-0.205*	-0.405*	0.041	0.338*	1.000			1.81
MBEN	0.090*	0.144*	-0.042	-0.165**	0.049	0.065	0.032	-0.035	0.109*	1.000		1.17
LnGDP	0.041	0.050	-0.064	-0.076	0.024	0.020	0.069	0.048	0.046	0.092*	1.000	1.03

Notes: *, ** indicates significance at 5% and 1%, respectively. The Median for VIF is 2.94

Source: Stata Analysis

Table 4. Results of research models
Performance: ROA

Variables	OLS (a) Coefficient (Standard Deviation)	RE (b) Coefficient (Standard Deviation)	FE (c) Coefficient (Standard Deviation)	GMM-Sistem (One-Step)(d) Coefficient (Standard Deviation)	GMM-System (Two-Step)(e) Coefficient (Standard Deviation)
$ROA_{i, t-1}$				0.2320* (0.0932)	0.01008* (0.1008)
CR	-0.00005** (0.00001)	-0.00003* (0.00001)	-0.00002* (0.00006)	-0.00004 (0.00002)	0.00005 (0.00003)
CASH	0.0002** (0.0001)	0.0001* (0.00007)	0.0001** (0.00004)	0.0002* (0.0001)	0.0003* (0.0001)
DEBT	-0.0513*** (0.0090)	-0.0131 (0.0093)	0.0066 (0.0103)	-0.0617*** (0.0170)	-0.0624*** (0.1835)
ETA	-0.0263** (0.0080)	-0.0165** (0.0063)	-0.0192** (0.0081)	-0.0333** (0.0116)	-0.0320* (0.0127)
FATA	0.0028 (0.0087)	0.0198 (0.0130)	0.0326 (0.0411)	0.0224 (0.0224)	0.0246 (0.0255)
OETR	-0.0619*** (0.0087)	-0.0506*** (0.0113)	-0.0191 (0.0392)	-0.0348 (0.0209)	0.0303 (0.0229)
IVTA	0.0414*** (0.0115)	0.0146 (0.0144)	-0.0172 (0.0258)	0.0527* (0.0234)	0.0530* (0.0259)
LnSIZE	-0.0079*** (0.0010)	-0.0059*** (0.0015)	-0.0040 (0.0106)	-0.0017 (0.0026)	-0.0009 (0.0027)
DIV	-0.0792*** (0.0070)	-0.0880*** (0.0069)	-0.0954*** (0.0177)	-0.0493*** (0.0151)	-0.0473*** (0.0165)
MBEN	-0.0054*** (0.0008)	-0.0030*** (0.0006)	-0.0022*** (0.0006)	-0.0041*** (0.0011)	-0.0039** (0.0011)
LnGDP	0.0030 (0.0210)	0.0076 (0.0134)	0.0099 (0.0160)	-0.0081 (0.0153)	-0.0081 (0.1536)

Variables	**OLS (a)** Coefficient (Standard Deviation)	**RE (b)** Coefficient (Standard Deviation)	**FE (c)** Coefficient (Standard Deviation)	**GMM-Sistem (One-Step)(d)** Coefficient (Standard Deviation)	**GMM-System (Two-Step)(e)** Coefficient (Standard Deviation)
Constant	0.2343 (0.5708)	0.0540 (0.3605)	-0.0634 (0.3624)		
R^2	0.4787	0.3011	0.3246		
Significance F	45.41		8.15		
P value	0.000		0.0000		
Wald Test		283.62			
Observations				402	402
Wald Chi2				166.13	201.30
Arrelano Bond test for AR(2)				0.605	0.557
Hansen test (P-value)				0.515	0.513

Note: *, **, ***, indicate significance level at 5%, 10% and 1%. P-value for significance F < 0.5 at 5% significance level. It shows that variables used in this study model are valid.

Source: Stata Analysis

Even though the recent empirical evidence on cooperatives has litte to say about the effect of financial management on cooperatives' performance, this study offers an extensive empirical analysis that may contribute to cooperatives. Tables 4 refer to two estimation results from the Static Model and Dynamic Model. The result of the static model test in column (a) of Table 4 shows that most of the variables are significant towards ROA, except FATA and GDP. The number of significant variables towards ROA in column (b) is smaller than in column (a). However, the fixed effect estimation, which is column (c), is selected as the best model after performing the Hausman test. Referring to the results of the fixed effect estimation Table 4, column (c), five variables are found to have a significant relationship with the ROA financial performance, namely CR, CASH, ETA, DIV, and MBEN. The CASH variable, for example, has a significant positive relationship at 10% significance level. This finding indicates that cooperatives can manage current liabilities using cash (Mc Kee 2008; Soboh et al. 2010; Delen et al. 2013; Li and Sun 2011) that will result in increased ROA. Meanwhile, CR is negatively significant at 5%, which shows that an increase in asset usage will reduce performance. This finding is consistent with our expectation that cooperatives in Malaysia have more access to internal sources of funds which is cash at a lower cost, but which in turn affects performance negatively (Liargovas and Skandalis, 2010).

The capital structure variable, ETA, shows a significant negative relationship with ROA that exerts inversely ROA by 0.0192. This finding is in line with earlier findings of Park and Jang (2013), Notta and Vlachvei (2007). While the variables of dividend and cooperative members' welfare have a significant negative relationship with financial performance at 1% significance level. This negative relationship suggests that most of the cooperatives in this study will continue to pay members' welfare and benefits lead to a decrease in performance.

Nevertheless, the estimation results obtained from the fixed effect method should be extended by applying the GMM System estimation method to ensure the most optimal study results. In Table 4 (d) and (e), the results show that number of significant independent variables has increased. The lagged dependent variable, ROA, is significant at 5% significance level. This finding shows that the cooperatives' performance in the current year is highly affected by the prior year's performance. An important diagnostic test for the GMM model is the statistical probability for AR (2) and the Hansen test, which are also not significant at 10% significance level, thus indicating that no serial correlation exists at either the first or the second-order (degree) of the error term.

Therefore, the instruments used in this study model of GMM estimation are valid. This is further supported by Wald Chi2 test, which proves that the overall estimation model is significant and accurate.

This study further discusses the results robust specification which is the GMM System (Two-Step) as shown in Table 4 (e). The result of the study shows that CASH variable has a significant positive relationship with ROA. This indicates that CASH ratio for the prior period has a positive effect on the current period of ROA.

The negative and significant relationships for capital structure ratios (DEBT and ETA) show that cooperatives with more debt and equity financing have lower performance using ROA measures of performance. This finding supports the argument that debt financing affects firms' performance (Zeitun and Haq, 2015; Shamsuddin et al., 2018). Table 4 (e) shows that the economic importance of DEBT (0.0624) is higher than ETA (0.0320). This finding implies that the performance of the cooperative ROA is more affected by total debt rather than equity financing. This also reflects that most of these cooperatives need to manage an optimal structure of debt and equity to contribute positive effects to performance.

We found that efficiency ratios (FATA) and OETR were not significant in performance. The estimation results of IVTA variable have a significant positive relationship at a 5% significance level. The positive and significant coefficient for investment shows that a 5% increase in investment of the prior year would result in to increase current ROA by 0.0527%. This shows that cooperatives in this study choose to use viable investment strategies to increase profit. A profitable or competitive investment indicates that the investment is managed in line with the established objectives.

This study results show that variables of cooperatives' specific characteristics; payments of dividend and members' benefits have significantly negative related to performance. This implies that both variables in the prior year affect the current ROA negatively. Dividend payment coefficient (0.0473) is higher than members' benefit coefficient (0.0039). This supports what is reported by Shamsuddin, et al. (2019) reveals that most of the cooperatives in Malaysia prioritize dividend payments and members' benefit despite slow growth in performance.

Cooperatives size and GDP were found statistically insignificant impacts on performance. This shows that cooperatives' decisions whether to invest or spend in total assets do not affect performance. Reflecting on GDP variables that do not affect performance, is may be due to the small size of capital and assets of cooperatives compared to other types of business such as banks, manufacturing industry, and others. The justification could be that a cooperative is a business entity that focuses on the activity for members without considering the importance of contributing to the country's economic growth. The business activities carried out by cooperatives are not sufficient to contribute to the performance of the country's activities. This evidence could be considered as an important input for the economic activities carried out by cooperatives in Malaysia.

5. CONCLUSION

This study examined the effect of financial management in determining cooperative performance. Although investigating the effect between liquidity, capital structure, and another financial ratio has been enduring research in corporate finance, evidence on the effect of financial management ratios on cooperatives has been mixed and very limited in both effects of financial management, the specific ratio for cooperatives, and external factors, especially in Malaysia cooperatives.

Based on the available panel dataset of 100 best practices cooperative in Malaysia and using a robust model of Dynamic System GMM, the result indicate that cash and investment management

positively impact performance. As for capital structure, dividend, and members interest benefit negatively impact performance. The positive effect of the cash ratio and investment management shows that cooperatives use cash to improve performance in profitable short-term investments. While debt ratio, equity to total asset ratio, dividend and members' interest benefit ratio affect cooperatives' performance negatively. This finding implies that Malaysian cooperatives should find the most appropriate debt-equity structure that maximizes performance. This paper has some limitations in terms of its macroeconomic variables: cooperative age, and other financial indicators such as return on equity, return on sales, sales to total asset could be used in future studies to investigate their impact on cooperatives' performance.

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