

The Determinants of People Credit Funds Efficiency in Mekong Delta of Vietnam

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Abstract— This paper investigates the determinants of technical efficiency of the 134 PCFs in Mekong Delta from 2013-2016. In the combination of quantitative and qualitative analyses, the findings showed that the technical efficiency of the PCFs in Mekong Delta is quite low representing by the cost efficiency (CE) about 43.2%. The explanation for the non-economics efficiency comes from twofold inefficiency in technical and in-efficiency in allocation. Besides, the input factors have not been efficiency employed, about 35.3% costly, by the PCFs in Mekong Delta. Moreover, the PCFs in the studied area have the increase rates of scales (IRS), in which most of the PCFs is a small and medium entity. Lastly, the findings from Malmquist indicated that the performance growth rates the average total factors of the PCFs is about 1.037, meaning that the growth rate of TFP account for 3.7%. This can be explained by the changes of technical efficiency and technical innovation.

Keywords— People credit funds, Efficiency, Mekong Delta.

I. INTRODUCTION

Recently, credit unions and other cooperatives were able to strongly affect many human lives by contributing to seeking for a better quality of life, improving welfare, increasing confidence and the feeling of tolerant interaction by influencing solidarity, cooperation, responsibility, and establishment of a democratic self-governance. These entities play an important social role which is very important for the new developing democracies. The people's credit rules established and developed with the position being strengthened and enhanced, forming a model of the new-type cooperative economic activities in the currency and credit. Over time, the operation of people's credit fund facility has opened a new capital transfer channels, each step contributing to mitigate Hui, currencies of usury, no small role in assisting the participants to improve the standard of living, contributing actively to the hunger, poverty, shifting economic structure and social economic development in agricultural and rural areas.

However, the people's credit fund now is facing many difficulties, especially when Vietnam joined the World Trade Organization (WTO) and opened financial service market. With small scale, limited financial capacity, yet diverse products and services and management capabilities, operating with different credit types make people's credit funds more difficulty. In the coming years, when the level of competition on the banking services in urban areas increasingly fierce, the credit institution will tend to expand operations on the rural market. This means that the people's credit funds will face with increasingly competitive pressure from other credit institutions. Such that circumstances, analyzing the performance of the people's credit fund is extremely important

and valuable. Because it will support the people's credit fund management decisions aimed at enhancing operational efficiency as well as the competitiveness of the unit itself. Thereby, it also is the basis for rational policy framework in the process of managing the operation of people's credit funds system.

This paper is constructed into 5 parts. First part is the introduction. Second part illustrates the literature reviews on the technical efficiency of firms and other entities. Methodology is presented in the third part. Fourth part shows the findings. Conclusion and recommendations regarding to the credit funds efficiency will be on the last part.

II. LITERATURE REVIEWS

This part provides a discussion on the relevant literature that has been reviewed. Among the issues featured in this section are the factors affecting on the performance of pension funds; a review of the relevant theories that explain pension funds and organizational performance; an empirical review that provides evidence from actual studies that have been carried out as well as a summary of the literature.

2.1. The Neo Classical Theory

Various alternative methods of defined benefit pension provision has been discussed. Much of this work takes the view primarily of scheme members, or their trustees. However, recent developments indicate that there has been an increasing emphasis on the viewpoint of the investors in a company. Existing neoclassical economic theory in the area of defined benefit pension schemes starts with the work of Black (1980) and Tepper (1981), but draws on the pioneering work of Modigliani and Miller (1958) and other studies by Exley, et al., (1997).

According to Exley et al., (1997), there seems to no dispute as to the basic theory behind pension provision. The conclusions of given theory are that the cost of providing a defined benefit pension scheme is independent of the way it is funded, or whether it is funded at all. In particular, shareholders do not gain from an equity investment policy over bond investment. Second-order effects include the credit risk of the scheme, and also the possibility of leakage of surplus to members in the form of enhanced benefits. These are affected by the asset mix of the scheme. However, these effects are all zero sum, in that a gain to members is a loss to shareholders, and vice versa. Therefore, to the extent that members and shareholders recognize these issues, the cost will already be factored into the members' equilibrium compensation package.

2.2. The Stakeholder Theory

Stakeholders are groups and individuals who benefit from or are harmed by, and whose rights are violated or respected by corporate actions. They are shareholders, creditors, employees, customers, suppliers, and the community at large. The main proposition of the stakeholder theory is that corporate organizations have the responsibility to ensure that their actions meet the expectations of all the stakeholders. Management should not only consider its shareholders in the decision making process, but also anyone who is affected by business decisions. In contrast to the classical view, the stakeholder view holds that "the goal of any company should be the flourishing of the company and all its principal stakeholders (Freeman et al., 2004).

The main provision of the stakeholder theory argue that the shortcomings of the theory lie on its inclusion of non human stakeholders such as the natural environment and absentee ones such as future generations or potential victims (Capron, 2003). The difficulty of considering the natural environment as a stakeholder is real due to the majority of the definitions of stakeholders usually treat them as groups or individuals, therefore excluding the natural environment as a matter of definition because it is not a human group or community as are, for example, employees or consumers (Buchholz, 2004). In addition, Phillips and Reichart (2000) suggested that only humans can be considered as organizational stakeholders and criticize attempts to give the natural environment stakeholder status.

2.3. Theory of Constraints

The theory of constraints is a well-organized philosophy developed by Eliyahu M. Goldratt in the 1980s. The basic issue of this theory is that constraints establish the limits of performance for any system. Most organizations include only a few core constraints. The theory suggested that managers should consider on effectively managing the capacity and capability of these constraints if they are to improve the performance of their organization. Once considered simply a production-scheduling technique, Theory of constraints has broad applications in diverse organizational settings (IMA, 1999). The theory challenges managers to rethink some of their fundamental assumptions about how to achieve the goals of their organizations, about what they consider productive actions, and about the real purpose of managements' cost. Highlighting the need to maximize the throughput revenues earned through sales Theory of constraints give an attention on understanding and managing the constraints that stand between an organization and the attainment of its goals. Once the constraints are identified, Theory of constraints subordinates all the non-constraining resources of the organization to the needs of its core constraints. The result is optimization of the total system of resources (IMA, 1999).

2.4. Previous Studies

Various studies on the technical efficiency of microfinance institutions have been conducted. First, Singh et al. (2013) investigated the technical efficiency and its determinants in micro finance institutions in India on a firm level analysis.

They gathered data from Mix Market Network and a total of 41 micro finance institutions were sampled depending on the availability of data for five consecutive years 2005 – 2009. The DEA model has been employed since it integrates multiple inputs and outputs, and it does not require any price information for dual cost function as is required for parametric approaches. The findings showed that correlation coefficient of value of total assets is positive with all the efficiency measures and that of age is positive with technical efficiency and scale efficiency. The location variable exhibits positive correlation with efficiency measures and it suggests that microfinance institutions from southern India have positive sign with all the three measures of efficiency. However, debt ratio coefficient is negatively effect to pure technical efficiency and scale efficiency measures. Return on assets and operational self sufficiency which illustrates the technical ability of microfinance institution had positive correlation with all the measures of efficiency.

Second, Njenga (2012) studied the relationship between cost X-efficiency and financial performance of companies listed in Nairobi Securities Exchange in Kenya. The data used comprised of firms listed in Nairobi Securities Exchange whose published financial data was available continuously over the sample period of the study between the years 2006 to 2011. It comprised firms in the following sectors; Agriculture, automobile and accessories, banking, communication and services, construction and allied, energy and petroleum, insurance and investment firm. The findings showed that cost X-efficiency may arise because managers use more input than would a best practice firm, or because they employ an input mix that does not minimise cost for a given input vector. Moreover, the results suggested that X-efficiency arises from the fact that neither individuals nor firms work as hard nor do they search for information as effectively as they could.

Third, Amer et al. (2011) carried out the study of determinants of operating efficiency for lowly and highly competitive banks in Egypt used a sample of 24 commercial banks covering the period 2001 – 2008. They used the partial adjustment model that measures the extent to which bank financial performance affects its operating efficiency. The findings showed that in the highly competitive banks, the operating efficiency is positively and significantly affected by the asset quality, capital adequacy, credit risk and liquidity of banks.

Last, Paxton (2003) carried out a study on technical efficiency in Mexico's popular savings and credit sector (PSCIs) with an objective to evaluate the technical and scale efficiency and also to determine the significant determinants of inefficiency. DEA was performed for 350 institutions using both the production approach and the intermediation approach. The findings showed that the average technical efficiency scores, irrespective of methodology or approach are very low in comparison with other studies of banking technical efficiency. One of the most significant outcomes of the analysis was that client profile such as percentage of female, rural client and juvenile did not influence technical efficiency which was significant in the sense that institution with varying client profiles can be equally technical efficiency.

From the above previous, it can be proposed that when a firm operates efficiently, it will improve its financial performance and therefore the greater the economic growth will be. Different factors have been found to explain efficiency levels of firms and some are positively while others are negatively related to efficiency. Savings and Credit Societies therefore need to understand the effect of each variable so that they can find ways of enhancing those that are positively related while mitigating those that are negatively related in order to improve their efficiency and the overall financial performance.

III. METHODOLOGY

Besides the descriptive statistics, financial ratios analysis will be taken into consideration of the paper. Various financial ratios have been documented to evaluate the people credit funds efficiency. The paper will use following ratios:

+ Groups of return ratio of the credit funds which is used to analyze the return of one capital such as NIM (Net Interest Margin), NOM (Net Out-Interest Margin), IOM (Income Operational Margin), ROA (Return on Assets), ROE (Return on Equity).

$$NIM = (Total\ Interest\ Income - Total\ Interest\ Expenses) * 100 / Total\ profit\ assets$$

This ratio help the management investors to forecast the possible profit of the bank by accurately monitoring the profitability assets and finding out the financing possibility with lowest costs. The ratios mean that if counting the interest income individually it is known that how much the ratio of profit to investment is?

$$NOM = (Total\ out\ Interest\ Income - Total\ out\ Interest\ Expenses) * 100 / Total\ profit\ assets$$

This ratio measures the diffirent between the total out interest income to total out interest expense, especially the expenses on the out interest services which the credit fund must bargain (such as wage, repair costs, tool guarantees, credit costs). The negative sign of the ratio reflects the credit fund only focus on the loan not on the services activities. Other variables have been widely known in the financial subjects.

+ Alternative method of Data Envelopment Analysis – DEA and Stochastic Frontier Approach - SFA

DEA is a nonparametric method. It is a linear programming model, assuming no random mistakes, used to measure technical efficiency. Efficient firms are those that produce a certain amount of or more outputs while spending a given amount of inputs, or use the same amount of or less inputs to produce a given amount of outputs, as compared with other firms in the test group.

How to access non-indirect parameters: use the model analysis of the database covers lieu (DEA – Data Envelopment Analysis), other random editor pre-production function vóii (SFA) models, the DEA does require identifying the functional form for vién efficiency as well as does not require the binding of the deliverables the phi factor effective in metric, except for binding the effective index must be between 0 and 1. at the same time, the DEA model also enables hybrid

multiple input and output in the calculation and how much measure efficiency.

Indirect way can take dark chocolate: using the production function of random variables (SFA-Stochastic Frontier Approach) allows to determine the technical performance and cost effective techniques for each credit funds by the wrong chocolate droppings decay both models of random variables are not observed and the random noise by diocese in Africa technical efficiency. In addition, this approach requires asking to specify is a specific functional form of jamming non-deliverables and performance results, stated the appointment of this function will affect the effective index estimate.

+ The scale efficiency (SE)

Utilizing the linear planning technique to analysis technical efficiency proposed by the Charnes, Cooper and Rhodes (1978). Fare, Grosskopf and Lowell (1985) divided the technical efficiency into scale efficiency and other efficiencies. To obtain particular result analysis, three measures will be considered such as constant to return scales (CRS), non return to scales (NRS) and Variable to returns to scales (VRS). Three given ratios will be considered in the analysis of the paper.

$$e_s = \frac{\sum_{i=1}^m u_i y_{is}}{\sum_{j=1}^n v_j x_{js}} \quad (i = 1, 2, \dots, m; j = 1, 2, \dots, n)$$

Where y_{js} is the I outcome of the s credit funds, x_{js} is the income j of the credit fund s used, u_i is the weighted of outcome and v_j is the weighted of income variables. Ratio (e_s) then will be maximized to choose the maximazation, with the obligated:

$$\frac{\sum_{i=1}^m u_i y_{is}}{\sum_{j=1}^n v_j x_{js}} \leq 1 (s = 1, 2, \dots, N) \quad u_i \geq 0; v_j \geq 0$$

First obligation ensures the maximization efficiency of 1 and the second obligation guarantee the inputs and outcomes weighted not negative. However, the problems of given equation are uncountable solutions. To solve given problems, Charnes, Cooper and Rhodes (1978) suggested more obligations:

$$\sum_{j=1}^n v_j x_{js} = 1$$

The the regression can be rewritten as follows:

$$Max_{u,v} e_s = \sum_{i=1}^m u_i y_{is}$$

With obligation:

$$\sum_{j=1}^n v_j x_{js}$$

$$\sum_{i=1}^m u_i y_{is} - \sum_{j=1}^n v_j x_{js} \leq 0 (s = 1, 2, \dots, N) \quad u_i \geq 0; v_j \geq 0; \forall i, j$$

Similarly, the given equation can be proposed as follows:

$$\text{Min}_{\varepsilon, \phi} \varepsilon_s$$

With obligations:

$$\sum_{s=1}^N \varphi_s y_{is} \geq y_{is} \quad (i = 1, 2, \dots, m)$$

$$\varepsilon_s x_{js} - \sum_{s=1}^N \varphi_s y_{is} \geq 0 \quad (j = 1, 2, \dots, n)$$

$$\varphi_s \geq 0; \forall s$$

Where ε_s measures the technical efficiency of all credit funds s , with the value equals to 1 which lines on the marginal lines.

IV. EMPIRICAL RESULTS

4.1. Summary Statistics the Variables

Table I presents the summary descriptive statistics the input and output variables by the average values, maximum and minimum values.

TABLE I. Summary statistical variables.

Year	Variables	NIM (tr.d)	NOM (tr.d)	Assets (tr.d)	Loan (tr.d)	Labor cost (tr.d)
		Y1	Y2	X1	X2	X3
2013	Average	2.359	47	2.649	12.455	321
	Maximum	16.96	458	50.715	133.555	1.761
	Minimum	204	1	59	766	40
	Observation	134	134	134	134	134
2014	Average	3.753	73	2.680	15.345	424
	Maximum	32.248	895	35.211	201.575	2.120
	Minimum	327	1	63	613	52
	Observation	134	134	134	134	134
2015	Average	3.960	61	3.180	18.957	505
	Maximum	39.617	586	80.715	243.764	3.234
	Minimum	452	1	109	1.726	59
	Observation	134	134	134	134	134
2016	Average	5.486	78	5.671	26.228	633
	Maximum	51.035	1.407	87.850	373.995	3.397
	Minimum	204	1	208	1070	95
	Observation	536	536	134	134	134

Source: from the annural report of 134 People Credit Funds in Mekong Delta.

TABLE II. Growth rate of the variables.

Variables	2013	2014	2015	2016
NIM (Y1)	59.11	5.51	28.55	34.39
NOM (Y2)	55.67	-16.69	28.76	22.58
Net Assets (X1)	1.16	18.65	78.32	32.71
Loan (X2)	23.20	23.54	38.35	28.36
Labot cost (X3)	31.99	19.09	25.35	25.48

Source: from the annural report of 134 People Credit Funds in Mekong Delta.

In general, all variables in the table II showed the gradually growth rates during the study period. In particular, a significant number is that the output variables growth rates are unstable comparison to those of input ones such as 2014 compared to 2013, variable Y1 (NIM) increased only 5.51% whereas the Y2 (NOM) decreased more than 16.50%. Due to given growth rates, the People Credit Funds in Mekong Delta in the operational activities used to more carefully calculate, overview and employ the input variables in order to maximize the output and obtain the maximum profits.

4.2. The Results of Economic Efficiency Analysis

Using the DEA model with 134 observations on the People Credit Funds in Mekong Delta, three type of efficiency measures have been considered such as Technical Efficiency (TE), Allocation Efficiency (AE) and Cost Efficiency (CE) for each People Credit Fund. Then, the findings have been filtered and classified into three groups according to their capital standards for analysis, comparison and evaluation. All descriptive statistics findings have been depicted in the table III.

The average of CE tends to be decreased during study period from 52.8% in 2013 to 40.6% in 2014, and 42.6% in 2015 and 36.6% in 2016. It is accepted that the cost economics of the People Credit Funds in Mekong Delta is quite very low. The other two measures are likely stable in given time in which the TE and AE measures are on average of 64% and 67%, respectively. The distance between TE and AE has been mitigated during time of study. In short, it is widely accepted that the non-economic efficiency of the People Credit Funds in Mekong Delta is due to their quick and low good and service quality in the operation.

TABLE III. Technical Efficiency (TE), Allocation Efficiency (AE) and Cost Efficiency (CE) of the People Credit Funds in Mekong Delta 2013-2016.

	2013			2014			2015			2016		
	TE	AE	CE									
Average	0.635	0.884	0.528	0.690	0.599	0.406	0.669	0.643	0.426	0.595	0.610	0.366
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.178	0.302	0.150	0.329	0.200	0.164	0.349	0.274	0.196	0.332	0.221	0.139
Obs	134	134	134	134	134	134	134	134	134	134	134	134
Average 1	0.811	0.890	0.716	0.852	0.709	0.600	0.822	0.725	0.588	0.748	0.696	0.525
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.375	0.751	0.353	0.495	0.491	0.397	0.491	0.507	0.343	0.463	0.463	0.325
Obs	14	14	14	14	14	14	14	14	14	14	14	14
Average 2	0.572	0.875	0.496	0.651	0.641	0.412	0.668	0.678	0.451	0.583	0.666	0.403
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.178	0.457	0.150	0.390	0.373	0.232	0.361	0.408	0.220	0.332	0.420	0.212
Obs	44	44	44	44	44	44	44	44	44	44	44	44
Average 3	0.640	0.818	0.511	0.683	0.554	0.367	0.642	0.607	0.382	0.574	0.562	0.316
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.284	0.302	0.222	0.329	0.200	0.164	0.349	0.274	0.196	0.340	0.221	0.139
Obs	76	76	76	76	76	76	76	76	76	76	76	76

4.3. The Technical Efficiency Estimate Results

TABLE IV. Technical Efficiency (TE), Net technical Efficiency (PE) and Scale Efficiency (SE) of the People Credit Funds in Mekong Delta.

	2013			2014			2015			2016		
	TE	PE	SE									
Average	0.635	0.703	0.904	0.690	0.732	0.942	0.669	0.732	0.920	0.595	0.708	0.848
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.178	0.263	0.304	0.329	0.398	0.445	0.349	0.349	0.387	0.332	0.335	0.344
Obs	134	134	134	134	134	134	134	134	134	134	134	134
Average 1	0.811	0.829	0.976	0.852	0.881	0.971	0.822	0.896	0.922	0.748	0.877	0.860
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.375	0.403	0.931	0.495	0.498	0.878	0.491	0.502	0.722	0.463	0.474	0.702
Obs	14	14	14	14	14	14	14	14	14	14	14	14
Average 2	0.572	0.623	0.915	0.651	0.668	0.977	0.668	0.680	0.983	0.583	0.619	0.940
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.178	0.263	0.304	0.390	0.398	0.824	0.361	0.261	0.926	0.332	0.335	0.838
Obs	44	44	44	44	44	44	44	44	44	44	44	44
Average 3	0.640	0.725	0.883	0.683	0.742	0.918	0.642	0.731	0.883	0.574	0.728	0.792
Maximum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Minimum	0.284	0.407	0.472	0.329	0.431	0.445	0.349	0.349	0.387	0.340	0.386	0.344
Obs	76	76	76	76	76	76	76	76	76	76	76	76

Table IV presents the average technical efficiency (TE) of whole sample during the study period about 64% meaning that the People Credit Funds in Mekong Delta with the same given output used only about 64% of the input variables. In other words, the People Credit Funds cost about 36% input variables. The lowest TE of whole sample is explained by the decrease likely of TE in 2016 with 59.6% comparing to those from previous years. In conclusion, the People Credit Funds are like to uses below their current resources possibility.

TE is calculated by the multiple of net technical efficiency (PE) and Scale Efficiency (SE), thus the magnitude of given measures reflect the sources of non-economics in the People Credit Funds' operation. It is likely that the average PE of sample is an average about 71% that is smaller than these of SE about 90%. Therefore, it is concluded that factors affecting

on the scale economics of the People Credit Funds contribute to the net technical efficiency. In other word, the factors affecting on the net technical efficiency are the major issues of non-technical efficiency.

The People Credit Funds in group 2 have lower technical efficiency, about 61.8% and it increase gradually from 2013 and occupy the second position of total sample. For the group 3, although the average TE is on the second place, higher than these of group 2. This means that the People Credit Funds (PCF), the lowest scale firm size, are unlikely to harvest the good and services in comparison to other groups. The findings confirm that within 17 People Credit Funds acting the foreign exchange the group 3 has two PCF doing that about 11.7%.

Furthermore, table V depict the number of PCFs with the IRS, DRS and CONS during the study period.

TABLE V. Number of PCFs with the Increase Rates of Scale (IRS), Decrease Rates of Scale (DRS) and Constant Rate of Scale (CONS).

		2013		2014		2015		2016	
		No.	%	No.	%	No.	%	No.	%
IRS	Sample	109	81.34	77	57.46	88	65.67	112	83.58
	Group 1	4	28.57	2	14.29	0	9	1	7.14
	Group 2	36	81.82	17	38.64	21	47.73	39	88.64
	Group 3	69	90.79	58	76.32	67	88.16	72	94.74
DRS	Sample	12	8.96	41	30.60	26	19.40	11	8.21
	Group 1	5	35.71	10	71.43	10	71.43	10	71.43
	Group 2	6	13.64	24	54.55	14	31.82	0	9.00
	Group 3	1	1.32	7	9.21	2	2.63	1	1.32
CONS	Sample	13	9.70	16	11.94	20	14.93	11	8.21
	Group 1	5	35.71	2	14.29	4	28.57	3	21.43
	Group 2	2	4.55	3	6.82	9	20.45	5	11.36
	Group 3	6	7.89	11	14.47	7	9.21	3	3.95

Source: Summary the results from DEAP version 2.1

Table V illustrates the number of PCFs in Mekong Delta which has gradually the increase rates of scales yearly from 77 PCFs in 2014 to 88 PCFs in 2015 and 112 in 2016. The findings showed that the PCFs do not increase the rates of scale thus leading the decrease of whole sample.

Regarding to groups, most of PCFs has the increase rates of scales (IRS) that belongs to the group 2 and group 3 with the increased numbers yearly. In short, the Technical

Efficiency (TE) of two given groups can be contributed by the scale efficiency (SE). It is possible that the PCFs operation is not sufficient, thus the two groups can enhance the investment scale to increase the technical efficiency. While the group 1 of PCFs are facing the decrease rate of scale (DRS) with 71.43% and keep constant from 2013 to 2016. Therefore, this group should consider carefully to widen the investment scale in the technical innovation, quality control to improve the input

employed performance to maximize the operation instead of diversify the current good and services. In addition, the group

1 should also enhance the technical efficiency by narrowing the investment scale.

TABLE VI. Average Malmquist index of the People Credit Funds in Mekong Delta.

Year	PCFs	Obs	TE (Effch)	Technical Innovation (Techch)	Net TE (Pech)	Scale Efficiency (Sech)	Total outcome change (TFP)
2013-2014	Whole sample	134	1.104	1.149	1.076	1.025	1.269
	Group 1	14	1.087	1.182	1.097	0.993	1.288
	Group 2	44	1.265	1.146	1.234	1.023	1.436
	Group 3	76	1.099	1.163	1.059	1.040	1.295
2014-2015	Whole sample	134	0.968	0.910	0.984	0.983	0.881
	Group 1	14	0.983	0.929	1.037	0.945	0.912
	Group 2	44	1.034	0.896	1.024	1.017	0.923
	Group 3	76	0.987	0.929	1.000	0.980	0.908
2015-2016	Whole sample	134	0.887	1.127	0.941	0.943	1.000
	Group 1	14	0.930	1.151	1.019	0.923	1.070
	Group 2	44	0.875	1.200	0.896	0.979	1.054
	Group 3	76	0.923	1.092	0.993	0.941	1.002
2013-2016	Whole sample	134	0.982	1.056	0.999	0.983	1.037
	Group 1	14	0.981	1.077	1.035	0.947	1.057
	Group 2	44	1.021	1.067	1.017	1.004	1.089
	Group 3	76	0.970	1.048	0.992	0.980	1.017

Source: Calculation by author through the DEAP version 2.1

The findings showed that the contribution of the technical innovation to the TFP are higher in technical efficiency that can be seen by the higher of techch comparing to effch during the study time exception in 2015. On the average 2013-2016, 21.43%, 47.73% and 26.32% are the growth rate of TFP for group 1, group 2 and group 3 of PCFs respectively. In short, the PCFs group 2 reaches the highest efficiency in TFP in given time of study. The lower in group 1 and group 3 of PCFs is explained by the decrease in the effch, therefore these groups of PCFs need to be considered in technical efficiency change.

4.4. Possible Solutions for the Operation Efficiency of the PCFs in Mekong Delta

The findings in previous part showed that most of PCFs still underestimate and cost the input resources in making the output and they are on the increase rate of scale (IRS). In other hand, the PCFs in Mekong Delta have quite small technical efficiency, operate based on the traditional products, face a lot of risks, technical change slowly, technical innovation change slowly, not diversify the good and services. In order to improve the technical efficiency, possible solutions need to be considered by the PCFs in Mekong Delta:

+ *Improving the financial possibility*: The regular capital of PCFs is currently too low which limits the loan amount and borrow of them. To overcome this, the PCFs need to consider the plan of widening the regular capital, advertise their images to attract the PCFs members to contribute and share the capital. This may help to improve the financial possibility, solve the capital thirsty and diversify the risk of the PCFs.

+ *Technical modernization and products and services diversification*: The findings showed that most of PCFs are currently focusing on the traditional products and services that may leads to the limitation in their operations. In order to solve the problem, the PCFs need to continue with technical modernization, enhance in development investment the technical stuff, improve the information technical management

to maximization employs to serve customer perfectly. Besides traditional products and services, diversification the products and services in order to mitigate the operational risks by bill services, money transfer, and foreign exchange agency.

+ *Improve the PCFs' staff quality*: The human ability is quite significant for all the success of PCFs operations. Although the findings indicated that labour force of the PCFs are not really high and increased yearly but they are not sufficient for the current comparative market. Therefore, the PCFs need to be continued to improve the planning activity, training and education the labor force which is a importance part in their work plan. In addition, possible good policy to attract the high quality labour force needs to be considered.

V. CONCLUSIONS AND SUGGESTIONS

5.1. Conclusions

This paper investigates the determinants of technical efficiency of the 134 PCFs in Mekong Delta from 2013-2016. In the combination of quantitative and qualitative analyses, the findings showed that the technical efficiency of the PCFs in Mekong Delta is quite low representing by the cost efficiency (CE) about 43.2%. The explanation for the non-economics efficiency comes from twoford inefficiency in technical and in-efficiency in allocation. Besides, the input factors have not been efficiency employed, about 35.3% costly, by the PCFs in Mekong Delta. Moreover, the PCFs in the studied area have the increase rates of scales (IRS), in which most of the PCFs is a small and medium entity. Lastly, the findings from Malmquist indicated that the performance growth rates the average total factors of the PCFs is about 1.037, meaning that the growth rate of TFP account for 3.7%. This can be explained by the changes of technical efficiency and technical innovation.

5.2. Suggestions

In order to improve the operation efficiency and develop the comparative ability, the given possible solutions need to be

carefully considered by the PCFs. Some possible suggestions are also taken into account. For state bank of Vietnam: It is suggested that the Vietnamese State Bank may change and complete the establishment conditions for the PCFs due the the problem of lowest regular capital of 100 million dong. It is widely accepted that the decree 141/2006/ND-CP needs to be increasingly adjusted. In addition, widen the products and services with income generating, operation scope and diversify the customers of the PCFs need to be considered by the Vietnamese State Bank. Furthermore, loan and borrow capital together as activity operation by the Commercial Banks needs to be ban by the Vietnamese State Bank.

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