

## Knowledge Management of Human Capital through the Learning Organization of the Agricultural Cooperative Federation of Thailand Limited.

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### Abstract

Knowledge Management (KM) of Human Capital through Learning Organization (LO) of the Agricultural Cooperative Federation of Thailand Limited (ACFT) has been the most important strategy of human capital development. The research objective tried to investigate how knowledge management of human capital as factors affected the operational cost reduction of the ACFT. The study population was the members of the ACFT in the middle region of Thailand. It turned out with 27,186 individuals of ACT membership. Purposive sampling was applied as the sampling technique. It turned out to be 1,850 individuals of the ACFT membership as a sample size. The primary data were collected by questionnaire. Data analysis was applied Confirmatory Chi-square, Root Mean Square Error Approximation (RMSEA), Goodness Fit Index (GFI), Comparative Fit Index (CIF), and estimated parameters were calculated by Structural Equation Model (SEM) to measure the factors influencing the ACFT operational cost reduction. The research results showed that Chi-square, RMSEA, GFI, and CIF were equal to 4.150, 0.0054, 0.9643, and 0.971, respectively. The estimated parameters were calculated from SEM expressed two positive coefficients of exogenous variable--learning dynamic ( $\hat{\beta}_1$ ) = 0.399 and technology application ( $\hat{\beta}_5$ ) = 0.912 of human capital in the ACFT, which meant that learning dynamic and technology application had positive influencing factors on the operational cost reduction of the ACFT. The KM of the human capital of the ACFT is the main strategy of human capital development. Two categories of KM in the ACFT, which comprised of 1) learning dynamic and 2) technology application, had a significantly positive impact on operational cost reduction of the ACFT.

**Keywords:** *Knowledge Management, Human Capital, Learning Organization*

### 1. Introduction

The Agricultural Cooperative Federal of Thailand Limited (ACFT) (2019) is an organization formed by the gathering of provincial cooperative gatherings across Thailand, with members as agricultural cooperatives and farmers. According to the Cooperative Act BE 2542, registered on May 30, 1952, has a status as a juristic person, using the name "Wholesale Cooperative of Thailand Limited" and requesting registration to change its name to "Agricultural Cooperatives Federal of Thailand Limited" on October 1, 1975, Assembly covering approximately 3,900 agricultural cooperatives with a total membership of over 6,000,000 households. ([www.co-opthai.com](http://www.co-opthai.com)).

Human capital is the most valuable resource among other resources in organizations. Like other organizations, the Agricultural Cooperative Federal of Thailand Limited (ACFT) (2019) has been concerned about this point. One of the main functions of the ACFT, stated in the Cooperative Act, B.E. 2542, is to provide knowledge for human development. Over 50 years, the ACFT has adhered to human capital development through the training program, studies, and others. Recently, the ACFT has adopted the concept of knowledge management and learning organization as the means for human capital development. Theoretically, Knowledge management (KM) is significantly concerned with the three ways of learning, which are the right person, the right knowledge, and the right time. It implied that there were some attachments to the organizational strategy and the knowledge contained. The knowledge creativity to escalate the organizational duties. Also, it is a guarantee that the originations are recognized and encouraged by the members' organization. Besides, knowledge management encloses knowledge creation. Sometimes, it merely focuses on knowledge sharing, knowledge storage, and the process of knowledge refinement ([www.knowledge-management-tools.net](http://www.knowledge-management-tools.net)).

Intimately, knowledge is connected and indicates the know-how process and the understanding procedure. The knowledge itself is owned by the individual as their experience product and besieges the social norms through the evaluation of new inputs of their environment (Davenport & Prusak, 2000). It was proposed that knowledge is the unity among the human experience, the value of the individual, the informative context, the expert's insight, and the basic institution where it supplied the evaluation of experience and framework which embodied the new information and individual's experience. Besides, it commonly generated and utilized people's minds. In terms of organizational function, it frequently implanted the documents, including the organizational routines, personal practice, and social norms.

In order to succeed in organizational knowledge management (KM), human capital requires deep expertise of knowledge constitutes. At present, the scholars have to set up the barriers between the data and information. It is viable to move one step. Besides, they take a look at the knowledge pattern that contains and the unique approaches which all of them could be accessed, shared, and combined. The boundary of knowledge management (KM) is not extensively accepted. Knowledge management is the way to make the right intellect available to fit the right person. Also, it is to ensure that any business enterprises can learn. Moreover, it would be able to retrieve and utilize its information linked to the present-day application. Peter Drucker stated that the coordination of organizational expertise resources and its exploitation is to shape both usefulness and competitive usefulness (Drucker, 1999). Sometimes, the new knowledge creation disagreement occurs. Wellman (2009) defined the limits of the knowledge boundary of learning and its technique applied for the management of people already realized. Also, he argues that knowledge creation is frequently comprehended as a segregate regulation and frequently falls along with innovation arrangement. Bukowitz and Williams (1999) connected knowledge management (KM) straightly to tactical knowledge and strategic desire. Due to his point of view, he explained the knowledge management as a broad significance. His explanation is in the same direction as Davenport and Prusak (2000), which stated that knowledge manipulation is the process of the cooperation's information through a systematical organization which particularizes the system for following situations which are acquiring and organizing. It is also attained the sustaining and applying situation, and the knowledge sharing and knowledge renewing in terms of both the tacit knowledge and specific skillfulness of personnel to increase the organizational performance and value.

In terms of human capital development, learning organization (LO) is considered as the way to generate new knowledge and improve human capacity. There is a variety of debating concerning the mechanisms and scope of human learning in the organization. In the scope of research work, the researcher set up the Knowledge Management (KM) functioned as a means for human deployment identified as the exogenous variables following the work of Cook and Leidner (2019). In their research work, they constructed their research works for the companies in the states of Minnesota, Atlanta, and Texas, USA (Cook & Leidner, 2019). The research idea was adopted for the author's research and variables testing. For the correctness and suitability of the research methodology of the ACFT case, the researcher applied Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) (Kline, 2015). It statistically turned out of the significance of 5 exogenous variables of KM which were learning dynamics, organizational culture, organizational transformation, human capital empowerment and technology application ( $x_1 - x_5$ ).

Nowadays, it is the challenge of organizations to encounter with the disruptive technology and digital era and business competitiveness (De Long, 1997). Organizations have to adjust themselves for business competitiveness. Similarly, the ACFT performs its business like other business operations. It has been faced with competitiveness, which has to make its organizational management as cost reduction. The paradigm of cost reduction has been adopted to the ACFT since 2005. By doing that, it encourages all cooperative members and others to concern about the cost reduction in the ACFT, for example, paperless working, online working, electronic financial activities. Cost reduction is the procedure applied by an organization to diminish its cost and to raise their returns. Fundamentally, both fixed and variable costs are concerned. In this case, the ACFT focused on operating cost reduction, which emphasized on their expenditures associated with the running and administrative cooperation expenses included the expenses in operating appliances, equipment, and materials (Belyh, 2020). From the last ten years of the cost reduction paradigm application, the ACFT reported that its operating cost had been declined by 15 to 25 percent ([www.co-opthai.com](http://www.co-opthai.com)). Cook and Leidner (2019) studied knowledge management systems in the organization. They identified that operating cost reduction was one of the corporate strategies that led to the viability and enduringness under the condition of competitiveness. Also, they defined the operating cost reduction as an endogenous variable. Following their research work, the idea was adopted. With the

accuracy and propriety of research methodology, the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) (Kline, 2015) was applied to identify cost reduction as an endogenous variable for my research work.

From past to present, there were plenty of research works of knowledge management in the organization, both domestic and international research outcomes. However, there was no research work emphasized on the Agricultural Cooperative Federation of Thailand Limited, even if it was formed over 65 years. Its organizational functions also got involved in the Agricultural Cooperative members as the members of the ACFT and the farmers as members of Agricultural Cooperatives throughout the kingdom of Thailand. Again, the ACFT performances redounded to over 6 million farmers' households accounted for 85 percent of the whole nation (www.statbbi.nso.go.th/staticreport & www.co-opthai.com). It is very interesting to conduct the pilot research project to investigate how factors of Knowledge Management (KM) of human capital as affected the operational cost reduction of the ACFT. Besides, the research outcomes would be some benefits for the ACFT to apply for the organization strategies, business plan, and organization policy in terms of the human capital development goal.

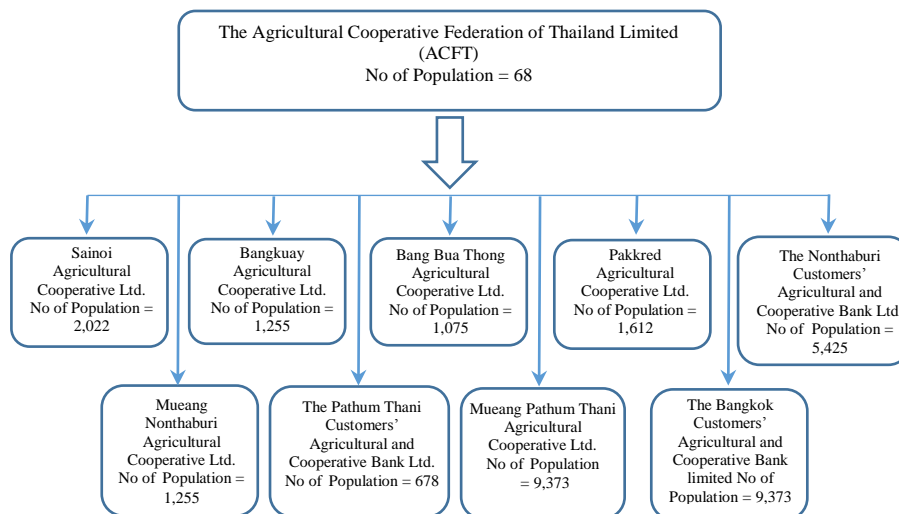
**2. Objectives**

This research aimed to investigate how knowledge management of human capital as factors affected the operational cost reduction of the ACFT.

**3. Materials and Methods**

**3.1 Data Collection**

The study population was the human capital of Agricultural Cooperatives Limited, who are the members of the Agricultural Cooperative Federation of Thailand Limited (ACFT). Since it is the pilot research project, the researcher made the scope of population study only the agricultural cooperatives located in Bangkok and vicinities, which were Patum Thani and Nonthaburi province whose adopted the Knowledge Management and Cost reduction paradigm of their practical performance regularly. The human capital of 10 agricultural cooperatives limited, including the ACFT were considered as the study population, which comprised three categories of human capital--cooperative committees, cooperative officers, and cooperative members. The total numbers of 27,186 human capital from these ten agricultural cooperatives limited were identified as the study population. (See Appendix). The study population is shown in Figure 1.



**Figure 1** The Study population

According to Neuman (2019), the purposive sampling technique was applied as a sampling technique. It turned out to be 18,500 individuals of human capital in the ACFT and its agricultural cooperatives members and their members, which could be expressed in Figure 2. The determination of the

sample size was specified based on the Structural Equation Model (SEM) as the data analysis. Due to the studies of Kline (2015), Lacobucci (2009), and Chareonwongsak (2017), they stated that the minimum number of sample size was equal to 200. Therefore, 1,850 samples were adequate for collecting.

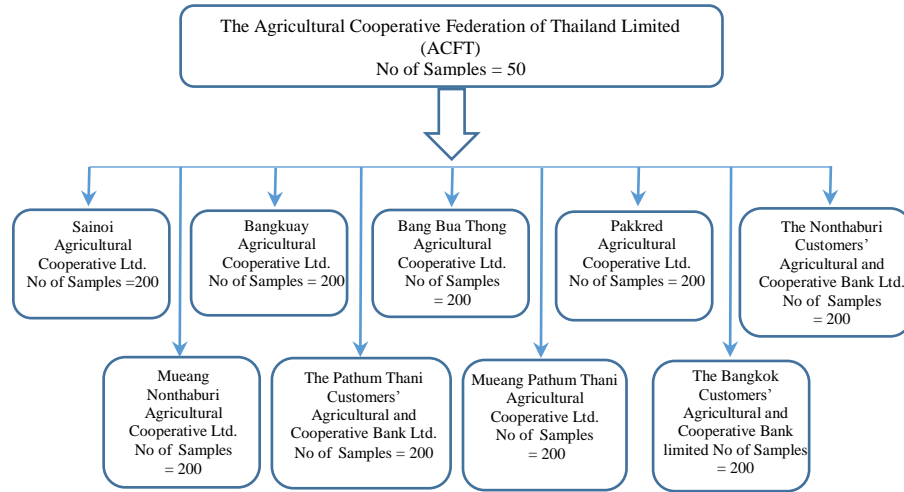


Figure 2 Number of Samples

The primary data were collected by questionnaire. Following to Neuman (2019), the examination of content validity of the questionnaire as the data collection tool expressed by Index of Item-Objective Congruence: (IOC) which evaluated by three specialists, a professor of Michigan State University, USA, an expert of Ministry of Education, The Royal Thai Government, and a statistician of the National Statistics Office, Ministry of Digital Economy and Society (2020), The Royal Thai Government. The result showed the IOC value of 0.906, which expressed the content validity of the questionnaire as a data collection tool. Reliability was evaluated by Conbranch’s alpha. The pre-test of 30 questionnaires was conducted as tryouts at Mahasa Rakam Agricultural Cooperative Limited (Bryman, 2016; Neuman, 2019 & Kline, 2015). It turned out with the 0.910 Conbrach’s alpha coefficient, which expressed the reliability of the questionnaire as the data collection tool. According to Kohl and Reisman (1994), Bryman (2016), Neuman (2019) & Kline (2015), the Conbrach’s alpha coefficient was good enough and also met the requirement of reliability. Therefore, both validity and reliability tests met the requirement (Neuman, 2019). The exogenous variables of  $x_1$  to  $x_5$ ; learning dynamics, organizational culture, organizational transformation, human capital empowerment, and technology application, were collected by a questionnaire that was measured using a Likert scale of 1 to 5, scaling given to provide samples to respond how much they replied from strongly agree to strongly disagree with a specific question (Neuman, 2019; Chareonwongsak, 2017).

**3.2 Data Analysis**

As a multivariate statistical analysis, the Exploratory Factor Analysis (EFA) was conducted. The EFA was applied as a methodology of statistics to find out the foundation of the data structure of a significant number of variable categories applying factor analysis technique to determine the fundamental relationship between variables that were measured. It is widely applied to a scale developing and provides to determine a group of latent established a bundle of variables measured (Finch, 2019; Kohl & Reisman, 1994; Fabrigar & Wegener, 1994). Besides, the Confirmatory Factor Analysis (CFA) was applied in social science to examine the measurement of fundamentals along with the researcher’s realization with the factors nature formulate (Brown, 2015 & Schumacker, Lomax & Schumacker, 2015).

The Structural Equation Model (SEM) was applied as data analysis. It is the analysis of multivariate variables to determine the foundation or structural relationship of variables. This statistical technique is the aggregate of 2 statistical analyses--factor analysis and multiple regression. (Kline, 2015 & Boomsma, 2012). Theoretically, this statistical methodology is applied to the structural relation analysis of 2 variables, which are variables measured and latent variables (Schumacker et al., 2015). The statistics were applied as Confirmatory Chi-square, Root Mean Square Error Approximation (RMSEA), Non-Normed Fit Index

(NNFI), Comparative Fit Index (CIF), and estimated parameters applied Structural Equation Model (SEM) to measure the factors influencing the operational cost reduction of the ACFT (Kline, 2015; Hoyle, 2012 & Schumacker et al., 2015).

#### 4. Results and Discussion

The Exploratory Factor Analysis (EFA) is shown in Table 1 below.

**Table 1** Descriptive Statistics of Exogenous Variables

	Mean	Std. Deviation	Analysis N
$x_1$ (learning dynamics)	3.8953	0.6732	1,850
$x_2$ (organizational culture)	3.9567	0.7132	1,850
$x_3$ (organizational transformation)	4.0281	0.6313	1,850
$x_4$ (human capital empowerment)	3.9532	0.8132	1,850
$x_5$ (technology application)	3.7582	0.6423	1,850

Source: Calculation

**Table 2** Correlation Matrix of Exogenous Variables

	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$
$x_1$ (learning dynamics)	1.000	0.432	0.321	0.281	0.425
$x_2$ (organizational culture)	0.432	1.000	0.352	0.382	0.412
$x_3$ (organizational transformation)	0.321	0.352	1.00	0.362	0.462
$x_4$ (human capital empowerment)	0.281	0.382	0.362	1.00	0.362
$x_5$ (technology application)	0.425	0.412	0.462	0.362	1.00

Source: Calculation

**Table 3** KMO and Bartlett's Test of Exogenous Variable

Kaiser-Mayer-Olin (KMO) Measure of Sampling Adequacy	0.853
Bartlett's Test of Sphericity Approx Chi-Square	283.236
Df	7
Sig	0.000

Source: Calculation

**Table 4** Communities of Exogenous Variables

	Initial	Extraction
$x_1$ (learning dynamics)	0.216	0.305
$x_2$ (organizational culture)	0.356	0.605
$x_3$ (organizational transformation)	0.286	0.505
$x_4$ (human capital empowerment)	0.386	0.625
$x_5$ (technology application)	0.362	0.614

Source: Calculation

**Table 5** The Rotated Factor Matrix of Exogenous Variables

	Factor	
	1	2
$x_1$ (learning dynamics)	.875	.065
$x_2$ (organizational culture)	.759	.089
$x_3$ (organizational transformation)	.679	.072
$x_4$ (human capital empowerment)	.676	.036
$x_5$ (technology application)	.758	.078

Extraction Method: Maximum Likelihood.

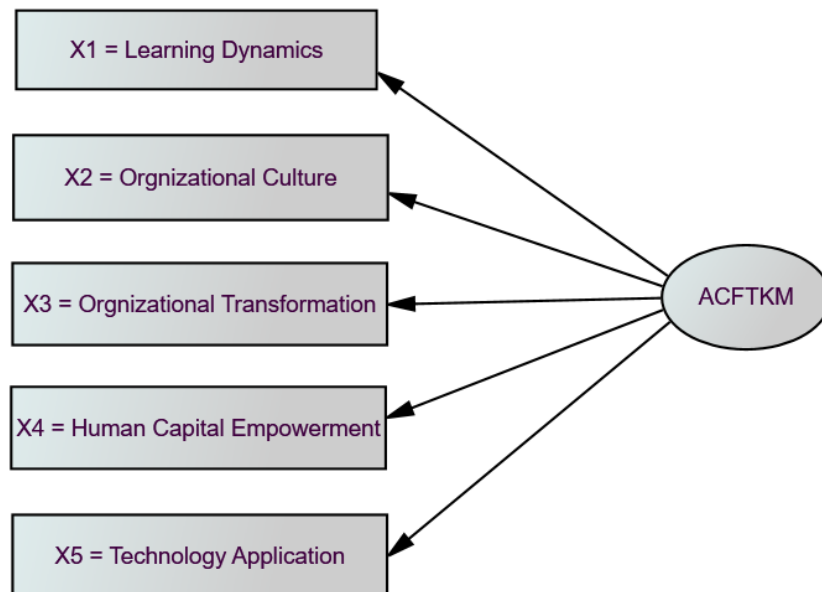
Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in 3 iterations.

**Table 6** The Initial Eigenvalues of Exogenous Variables

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.921	48.032	48.032	1.420	35.502	35.502
2	1.826	25.125	73.157	.556	13.895	49.398
3	1.635	15.885	89.042			
4	1.438	10.958	72.690			
5	1.429	10.863	100.000			

According to Table 1, the average of exogenous variables ranged from 3.7582 - 4.0281, while the standard deviation ranged from 0.6423 - 0.8132, with 1,850 observations. Table 2 expressed that there had a mild correlation between 2 exogenous variables which were  $x_1$ (learning dynamics) and  $x_2$ (organizational culture) with the correlation value of 0.432, which was quite true for the case of the ACFT. In Table 3, the Kaiser-Mayer-Olin Measure of Sampling Adequacy value was shown up of 0.853, which means that the exogenous variables could explain this model by 85.30 percent, which was a good explanation. For Bartlett’s Test of Sphericity Approx Chi-Square, the value showed 283.236 with the statistical significance of 0.000. It was explained that the test of fit for these exogenous variables was suitable for this model (Finch, 2019; Kohl & Reisman, 1994; Fabrigar & Wegener, 1994; Schumacker, ey al., 2015). In Table 4, the initial and extraction statistics of exogenous variables expressed from 0.216 to 0.386, meaning that all exogenous variables were suitable for the model building. So, the researcher should keep all of the exogenous variables ( $x_1 - x_5$ ) in the model (Kline, 2015). In Table 5, the rotated factor matrix expressed two categories of exogenous variables 1, 2. With the factor statistic comparison, the values showed statistical values of Categories 1 and 2. Obviously, in Category 1 the factor statistics were more significant than Category 2, which suggested the research to make only one category in the model (Kline, 2015). In Table 6, the initial eigenvalues of exogenous variables expressed the extraction sums of squared loadings with the cumulative percentage of 49.398. It means that in case the researcher divided the exogenous variables into two categories, then the exogenous variables could explain the model only 49.398 percent. Following the works of Kline (2015), he suggested that in case the cumulative percentage less than 0.50, then the researcher should not divide the exogenous variables. Therefore, the researcher designed to make exogenous variables; only one category showed in Figure 3 below.



**Figure 3** The Exploratory Factor Analysis of Exogenous Variables

For the Confirmatory Factor Analysis (CFA), it could be expressed in Table 7 below:

**Table 7** Confirmatory Factor Analysis (CFA) Indicators of Exogenous Variable ( $x_1$ -  $x_5$ )

Confirmatory Factor Analysis Indicators	Statistic	Criteria
Chi-square	3.842	< 5
Degree of Freedom (df)	3	
P-value	0.397	> .05
Root Mean Square Error of Approximation (RMSEA)	0.062	< .08
Goodness of Fit Index (GFI)	0.987	> .09
Comparative Fit Index (CFI)	0.987	> .09

Source: Calculation

According to Table 7, after the researcher made the CFA, so the next step of data analysis was constructed the Confirmatory Factor Analysis (CFA). It turned out with Chi-square statistic of 3.842 df = 3 p = 0.397, meaning that the Chi-square statistic was statistical insignificance (p > .05). It implied that the CFA was suitable for the exogenous variables ( $x_1$ -  $x_5$ ). The Root Mean Square Error of Approximation (RMSEA) was 0.062. Kline (2015, pp. 212-216) gave the criteria for good RMSEA statistics was the range from .05 to .08. The output showed the RMSEA statistic of 0.062 which meant the CFA of the exogenous variables ( $x_1$ -  $x_5$ ) met the requirement, and all exogenous variables were suitable for the model. Besides, the goodness of fit statistic (GFI) and comparative fit index (CFI) was equal to 0.987 and 0.987, respectively. Kline (2015, pp. 212-216) suggested that the GFI and CFI should be higher than 0.90. The outputs showed both of GFI and CFI statistics were more significant than 0.90, which meant the all exogenous variables ( $x_1$ -  $x_5$ ) were suitable for the model.

### The Structural Equation Model (SEM)

The results of the structural equation model are shown in Tables 8 and 9 below.

**Table 8** The Estimated Parameters of Exogenous Variables by Structural Equation Model (SEM) Endogenous Variable = Cost Reduction

Exogenous Variables	Estimated Parameters	P-value
$x_1$ (learning dynamics)	$\widehat{\beta}_1 = 0.399$	.00001
$x_2$ (organizational culture)	$\widehat{\beta}_2 = 0.002$	.08450
$x_3$ (organizational transformation)	$\widehat{\beta}_3 = 0.010$	.15067
$x_4$ (human capital empowerment)	$\widehat{\beta}_4 = 0.0167$	.28067
$x_5$ (technology application)	$\widehat{\beta}_5 = 0.912$	.00001
R-square = 0.8752		
Number of Observations = 1,850		

Source: Calculation

**Table 9** the Structural Equation Model Fit Indicators for Knowledge Management of Human Capital through the Learning Organization of the Agricultural Federation of Thailand Limited

Structural Equation Model Fit Indicators	Statistic	Criteria
Chi-square	4.150	< 5
Degree of Freedom (df)	3	
P-value	0.674	> .05
Root Mean Square Error of Approximation (RMSEA)	0.00054	< .08
Goodness of Fit Index (GFI)	0.9643	> .09
Comparative Fit Index (CFI)	0.9710	> .09

Source: Calculation

According to Table 8, as the output of the structural equation model (SEM), the exogenous variables, defined as the knowledge management of the ACFT, were comprised of  $x_1$  (learning dynamics),  $x_2$  (organizational culture),  $x_3$  (organizational transformation),  $x_4$  (human capital empowerment), and  $x_5$  (technology application) while the endogenous variable was determined as the cost reduction  $y_{61}$  of the

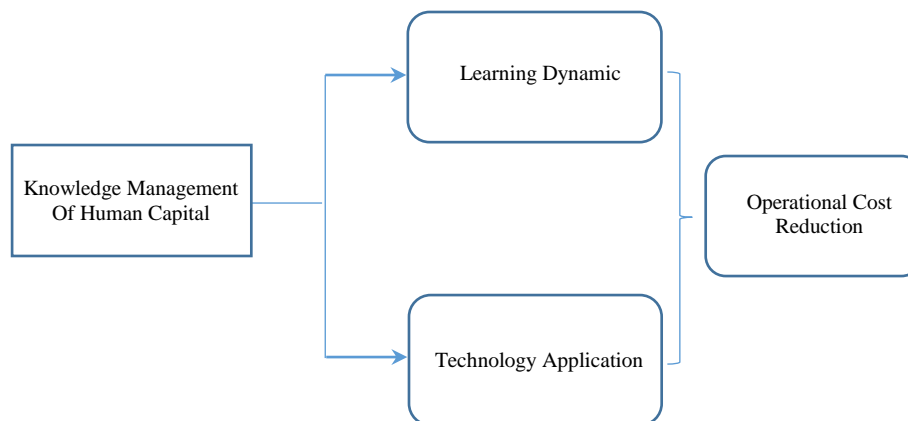
ACFT and  $E_1$  was the error term of the endogenous variable. The estimated coefficients of  $x_1$ ,  $x_2$ ,  $x_3$ ,  $x_4$ , and  $x_5$  were expressed as 0.40, -0.05, -0.19, -0.05, and 0.91. All estimated coefficients were statistically significant at 99 percent of the confidence interval, which means that all endogenous variables had an impact on the endogenous variable, the cost reduction ( $y_{61}$ ).

Following the research objective, the research results showed in Table 9 expressed the statistics of Chi-square, RMSEA, GFI, and CIF was equal to 4.150, 0.0054, 0.9643, and 0.971, respectively, meaning that the structural equation model constructed by the researcher was appropriated (Kline, 2015, pp. 235-240). Since the research objective attempted to find out the endogenous variables, which had a positive impact on the cost reduction of the ACFT. In other words, the researcher tried to investigate the positive impact of knowledge management factors that had a direct impact on the cost reduction of the ACFT. In the sense of positive or direct impact, it could be expressed that when the ACFT as an organization encourages these knowledge management factors, and then it would be led to the cost reduction of the ACFT. The research results expressed these two positive estimated parameters of endogenous variables, which were learning dynamics and technology application of knowledge management factors. The estimated parameters were calculated from the Structural Equation Model (SEM) expressed two coefficients of an exogenous variable-- learning dynamic ( $\widehat{\beta}_1$ ) = 0.399 and technology application ( $\widehat{\beta}_5$ ) = 0.912 of human capital in the ACFT. It meant that learning dynamic and technology application had positive influencing factors on the operational cost reduction of the ACFT. The researcher results were consistent with Cook & Leidner (2019) and Long (1997) who found that learning dynamics was the key factor for cooperating cost reduction since employees or human capitals whose encourage themselves to learn, study and apply new things in their life would be easier to understand and practice the way of cost reduction in the organization. Following Chareonwongsak (2017), who studied the enhancing board motivation for competitive performance of Thailand's cooperatives, found that learning dynamics and technology application had strongly influenced the competitive performances.

For the rest of 3 exogenous variables of knowledge management factors which were  $x_2$  (organizational culture),  $x_3$  (organizational transformation),  $x_4$  (human capital empowerment). The estimated parameters ( $\widehat{\beta}_2$ ), ( $\widehat{\beta}_3$ ) and ( $\widehat{\beta}_4$ ) were statistical insignificance ( $p > .05$ ), which meant that organizational culture, organizational transformation, and human capital empowerment had no impact or influenced on cost reduction of the ACFT. This research results had the contradictory output with Long, D. D. (1997, pp.3-7) who studied building the knowledge-based organization: how culture drives knowledge behaviors, stated that the organizational culture had affected on cooperating cost reduction. However, for the ACFT research results, the output was different. It was a possible reason to explain the different cultures between Thai and US-led to the different research outcomes. Also, in terms of organizational transformation, there was a small chance for the ACFT to transform its organizational structure since it was drawn by the Thai cooperative act, which legislated by the Royal Thai government. Human capital empowerment in cooperatives would be the key factor for its performance (Chareonwongsak, K., 2017, pp.5-8). In this study, the human capital empowerment did not effect cost reduction. The possible reason to explain would be that the majority of agricultural cooperatives' members live with farming ways. Most of the time the authority of cooperative administration depended on the committees or the cooperative board (Chareonwongsak, 2017)

According to the research results, it is shown that among five exogenous variables which were  $x_1$ (learning dynamics),  $x_2$ (organizational culture),  $x_3$ (organizational transformation),  $x_4$ (human capital empowerment) and  $x_5$ (technology application). In terms of knowledge management (KM), there were only two exogenous variables had statistically significant (Table 7). The 1<sup>st</sup> variable was learning dynamics, and the 2<sup>nd</sup> variable was technology application, which had a direct positive influence on cost reduction. In the way of simple explanation, the research outcome could be drawn as the figure 4 below, for the expression of figure 4, it expressed that the knowledge management of human capital through the learning organization paradigm of the Agricultural Cooperative Federation of Thailand Limited (ACFT) should be emphasized on two dimensions of knowledge management which were learning dynamics and technology application as shown in figure 4. In terms of research output application, the ACFT and other agricultural cooperatives can make the drawn picture below as a simple application of KM.





**Figure 4** the Results of Knowledge Management of Human Capital through the Learning Organization of the Agricultural Cooperative Federation of Thailand Limited

## 5. Conclusion

The Agricultural Cooperative Federal of Thailand Limited (ACFT) (2019) is an organization performed as a non-profit organization which has mainly concerned on the human capital development and the organizational cost reduction through the concept of the learning organization. Knowledge management (KM) of the human capital of the Agricultural Cooperative Federation Thailand limited (ACFT) is the main strategy of human capital development following the concept of the learning organization. Two categories of knowledge management in the ACFT, which comprised of 1) learning dynamic and 2) technology application, had a significantly positive impact on operational cost reduction of the ACFT. According to the research results, the ACFT should have its strategy to encourage and support human capital to get involved in learning's dynamic behavior through life-long learning. Also, the ACFT would have the strategy of technology application to support its business operation.

Technology utility in the ACFT is considered one of the important know-how management for human capital. Technology application also allows creating much less costly, environment, and purchaser friendly solutions. The technology application is applied in the enterprise to have a focus on the day by day life problem-solving. Technology application which comprised of artificial intelligence, cloud technology, machine learning, blockchain, robots, the internet as well as digital marketing. Those functioned as a part of the innovation and problem base solving methodology in organizations (Sharma, 2019; Chareonwongsak, 2001; Cook & Leidner, 2019). According to the studies of Kolb, Ho, Mancini, & Gary (2011) and Bhatt (2001), they stated that technology application had a strong influence on cost reduction. With the time dimension change, human beings would concern with cost reduction by technology substitution to reduce cost and energy consumption. Technology applications would be a part of the human being.

## 6. Acknowledgments

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**Appendix**

The name of Agricultural Cooperative Limited	Numbers of Population				Numbers of Samples			
	Cooperative Committee	Cooperative Officers	Cooperative Members	Total Numbers	Cooperative Committee	Cooperative Officers	Cooperative Embers	Total Numbers
The Agricultural Cooperative Federation of Thailand Limited	17	51		68	10	40		50
Sainoi Agricultural Cooperative Limited	12	13	1,997	2,022	2	3	195	200
Bangkuay Agricultural Cooperative Limited	9	4	1,242	1,255	2	3	195	200
Bang Bua Thong Agricultural Cooperative Limited	11	7	1,057	1,075	2	3	195	200
Pakkred Agricultural Cooperative Limited	13	7	1,592	1,612	2	3	195	200
The Nonthaburi Customers' Agricultural & Cooperative Bank limited	12	10	5,403	5,425	2	3	195	200
Mueang Nonthaburi Agricultural Cooperative Limited	10	5	663	678	2	3	195	200
The Pathum Thani Customers' Agricultural & Cooperative Bank limited	13	12	9,348	9,373	2	3	195	200
Mueang Pathum Thani Agricultural Cooperative Limited	7	4	319	330	2	3	195	200
The Bangkok Customers' Agricultural and Cooperative Bank limited	12	9	5,327	5,348	2	3	195	200
Total	116	122	26,948	27,186	28	67	1,755	1,850