UNIVERSITI PUTRA MALAYSIA

RELATIONSHIP BETWEEN TRANSFER OF TECHNOLOGY SKILLS, HUMAN RESOURCE DEVELOPMENT SKILLS AND WORK PERFORMANCE OF MALAYSIAN COCOA BOARD EXTENSION AGENT IN SARAWAK, MALAYSIA

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By

NUR SYAHIRAH BINTI ABD HALIM

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

RELATIONSHIP BETWEEN TRANSFER OF TECHNOLOGY SKILLS, HUMAN RESOURCE DEVELOPMENT SKILLS AND WORK PERFORMANCE OF MALAYSIAN COCOA BOARD EXTENSION AGENT IN SARAWAK, MALAYSIA

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June 2020

Chair : Salim Hassan, PhD
Faculty : Agriculture

This study was conducted to evaluate the work performance of extension agent in transfer of technology based on the perceptions of cocoa farmers. Extension agents play important role in transferring the technology to the farmers; thus extension agent should be competent in performing the duty. Extension agent of Malaysia Cocoa Board (MCB) Sarawak need to improve their competency in transfer the technology to the farmers so that the productivity of the cocoa plantation could be improved.

The objective of the study; i) to determine the perception of cocoa farmers on level skills of extension agents in Transfer of Technology (ToT) skills, Human Resource Development (HRD) skills and Work performance. ii) to evaluate the relationship between ToT skills and HRD skills with work performance. iii) to determine skills that contribute the most towards the work performance of extension agents in Sarawak.

The ToT skills needed by extension agents are technology skill, delivering skill and evaluating skill and HRD skills need by extension agents are leadership skill, help in making decision skill and social skill. This research employed Model of Iceberg by Spencer & Spencer (1993) as this model often use in determining the work performance of the individual. This study focuses on the visible part of the Iceberg Model which is knowledge and skill.

Stratified random sampling employed in this study with 148 respondents of productive cocoa farmers selected to evaluate extension agent performance through structured questionnaire. Strata sampling was used in this study as are

regional offices which were Kota Samarahan and Betong. Collected questionnaires were analysed using the correlational analysis to determine the relationship and multiple regression analysis for identification which skills contributed the most. Descriptive analysis was used to collect demographic information of respondents and level determination.

Results revealed that the level of extension agents in all skills were high as perceived by productive cocoa farmers. Based on the findings, positive relationships found between ToT skills and HRD skills with work performance. Multiple regression was conducted to determine the skills that contributed to the work performance of extension agents. Help in making decision skill, social skill and technology skill have significant values < 0.05. The adjusted r square reported was 0.772.

Technology skill help in making decision skill and social skill contribute the most towards the work performance of extension agents in MCB Sarawak. Help in making decision skill, social skill and technology skill explained about 77% of the variance of work performance of MCB extension agents in Sarawak. ToT skills and HRD skills are very important to be viewed by organisations to improve the performance of the individual. Based on the result, it shows that extension agents were not competent enough as perceived by the productive cocoa farmers. This research should be conducted in qualitative approach either from the extension agents' perceptive or upper management perceptive. MCB and other agency of agriculture should evaluate the knowledge and skill of extension agents from time to time for continuous performance in their work.

Keywords: transfer of technology, human resource development, extension agent, cocoa,

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

HUBUNGAN ANTARA KEMAHIRAN PEMINDAHAN TEKNOLOGI, KEMAHIRAN PEMBANGUNAN SUMBERDAYA MANUSIA DAN PRESTASI KERJA AGEN PENGEMBANGAN LEMBAGA KOKO MALAYSIA DI SARAWAK, MALAYSIA

Oleh

NUR SYAHIRAH BINTI ABD HALIM

Jun 2020

Pengerusi : Salim Hassan, PhD
Fakulti : Fakulti Pertanian

Kajian ini dijalankan untuk menilai prestasi kerja agen pengembangan dalam pemindahan teknologi berdasarkan persepsi petani koko. Agen pengembangan memainkan peranan yang penting dalam proses penyebaran teknologi dan maklumat kepada petani, justeru itu agen pengembangan harus menjadi individiu yang kompeten dalam menjalankan tugas. Kompetensi agen pengembangan di Lembaga Koko Malaysia Sarawak dalam proses pemindahan teknologi kepada petani koko perlu dipertingkatkan supaya produktiviti tanaman koko petani bertambah baik.

Objektif kajian ini adalah untuk 1) menentukan tahap agen pengembangan dalam kemahiran Pemindahan Teknologi (PT), kemahiran Pembangunan Sumberdaya Manusia (PSM) dan prestasi kerja berdasarkan persepsi petani koko. 2) menilan hubungan antara kemahiran PT dan PSM dengan prestasi kerja agen pengembangan. 3) menentukan kemahiran mana yang paling menyumbang kepada prestasi kerja agen pengembangan Lembaga Koko Malaysia Sarawak.

Kemahiran PT yang diperlukan oleh agen pengembangan adalah kemahiran teknologi, kemahiran menyampaikan teknologi dan kemahiran menilai teknologi, manakala kemahiran PSM yang diperlukan oleh agen pengembangan adalah kemahiran kepimpinan, kemahiran membantu dalam membuat keputusan dan kemahiran sosial. Kajian ini menggunakan Iceberg Model oleh Spencer & Spencer (1993) sebagai model rujukan kerana model ini selalu dijadikan rujukan untuk menentukan prestasi kerja individu. Kajian ini fokus kepada bahagian nampak pada Iceberg Model iaitu kemahiran dan pengetahuan.

Kaedah rawak berstrata digunakan dalam kajian ini dengan 148 responden iaitu petani koko yang produktif. Responden menilai prestasi kerja agen pengembangan melalui soalan struktur dalam soal selidik. Strata yang digunakan dalam kajian ini adalah pejabat wilayah iaitu Kota Samarahan dan Betong. Soal selidik yang telah dikutip dianalisa menggunakan analisis korelasi untuk mengetahui hubungan dan regresi analisis untuk mengenalpasti kemahiran mana yang paling menyumbang dalam prestasi kerja.

Keputusan menunjukkan tahap agen pengembangan dalam semua kemahiran adalah tinggi berdasarkan persepsi petani koko. Berdasarkan keputusan, kesemua kemahiran PT dan PSM dengan prestasi kerja mempunyai hubungan positif. Regresi analisi yang dijalankan menunjukkan kemahiran membantu dalam membuat keputusan, kemahiran sosial dan kemahiran teknologi mempunyai nilai signifikan < 0.05. *Adjusted* R^2 yang dilaporkan adalah 0.772.

Kemahiran membantu membuat keputusan, kemahiran sosial dan kemahiran teknologi menyumbang secara signifikan kepada prestasi kerja agen pengembangan LKM Sarawak. Kemahiran membantu dalam membuat keputusan, kemahiran sosial dan kemhairan teknologi teknologi menerangkan 77% varians bagi prestasi kerja agen pengembangan LKM Sarawak. Kemahiran PT dan PSM amat penting untuk dipantau oleh organisasi untuk meningkatkan prestasi kerja individu. Berdasarkan keputusan kajian ini, kompetensi agen pengembangan LKM Sarawak harus diperbaiki dan dipertingkatkan seperti yang dinilai oleh petani koko. Kajian ini boleh dipertingkatan lagi dengan menggunakan metodologi kualitatif dari sudut pandangan agen pengembangan sendiri atau dari sudut pandangan pihak pengurusan. LKM dan agensi pertanian lain perlu menilai pengetahuan dan kemahiran agen pengembangan dari semasa ke semasa untuk prestasi kerja yang cemerlang secara berterusan.

Kata Kunci: kompetensi, pemindahan teknologi, pembangunan sumberdaya manusia, agen pengembangan, koko, Sarawak

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Name of Member of Supervisory Committee: Associate Professor Dr Mohd Yusoff Abd Samad

Signature: _____
Name of Member of Supervisory Committee: Dr Ramle Kasin

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

DOA	Department of Agriculture
MCB	Malaysian Cocoa Board
MPOB	Malaysian Palm Oil Board
FAO	Food and Agriculture Organization
ToT	Transfer of technology
HRD	Human resource development
CPB	Cocoa pod borer
ICCO	International Cocoa Organization
SPSS	Statistical Package for Social Science
NISDLE	National Impact Study of Leadership Development in Extension
MoU	Memorandum of understanding

CHAPTER 1

INTRODUCTION

1.1 Cocoa in Malaysia

Agriculture sector is one of the most important sectors in Malaysia as agriculture sector contributes vastly to the nation's income. Malaysia is one of the largest producers for oil palm and rubber commodity (Malaysian Rubber Board, 2015; Department of Statistic Malaysia, 2014). In 2016, the growth rate of agriculture sector stood at 8.1 percent or RM89.5 billion contributed to the Gross Domestic Product (GDP) where oil palm contributed 43.1 percent, other agricultures (19.5%), livestock (11.6%), fishery (11.5%), forestry & logging (7.2%) and rubber (7.1%) (DOSM, 2017). Apart from helping nation economics' growth for a long term, agriculture is also important in helping to decrease poverty and to ensure food security and sustainability.

Cocoa is one of the commodity crop that contributes to the agriculture income. Cocoa has been planted in Malaysia, particularly Malacca, since 1778. According to Malaysian Cocoa Board website, Serdang Agriculture Station and Silam Agriculture Research Centre, Sabah were the locations where cocoa planting in Malaysia were pioneered by starting to plot areas. About 80% of the area is covered in East Malaysia and the remaining 20% is covered in West Malaysia. However, cultivated areas have declined from 75,200 hectares in 2000 to 16,871 hectares in 2017 (MCB, 2018) whereby about 50,000 hectares have been lost over the period due to several factors. Cocoa pod borer infestation was the main causes as all the plants infested by cocoa pod borer were put down to prevent serious infestation (Azhar & Lee, 2004).

The government and responsible organisations have been organising programs and initiative to overcome the decrease in production of cocoa beans. Under 10thMalaysian Plan (2011 to 2015), the government allocated RM 57.2 million for cocoa new planting grant that benefited 7,849 planters for about 7,567 hectares (Keong, 2017). He added that under 11th Malaysian Plan (2016 to 2020), 1,600 planters benefited from the allocation of fund by government which are RM 12.8 million to plant 1,600 hectares of cocoa. Based on the statistic from Malaysian cocoa monitor in 2000, the production of the cocoa beans was at 70,262 tonnes and have been on a decline until 2005 with the production of cocoa beans at 27,924 tonnes. The areas of cocoa plantations have been experiencing a drop in crop production due to switching crops activity from cocoa to

palm oil and rubber. The production of cocoa beans increased a fraction in 2006 and 2007 at 31,894 tonnes and 35,149, respectively. From 2008 till 2016, the production of cocoa beans decreased greatly. This resulted in an imbalance situation between upstream and downstream sector.

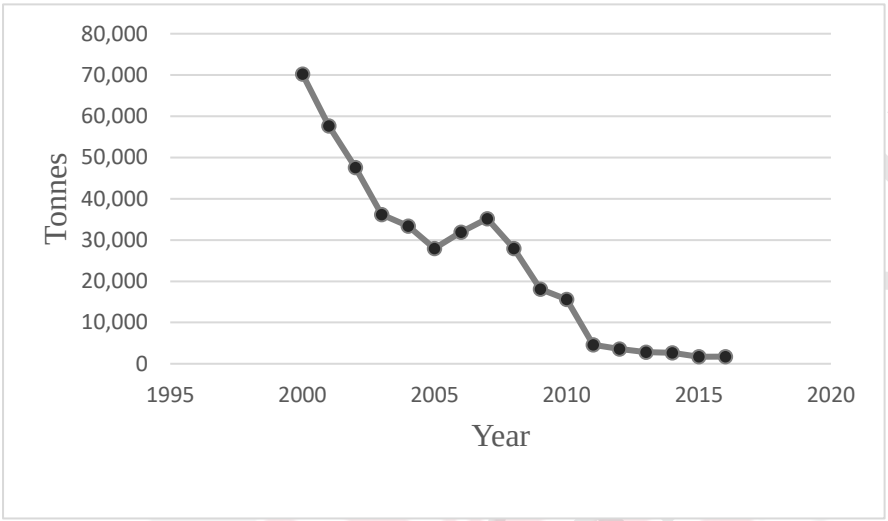

Figure 1: Production of Cocoa Beans in Malaysia (MCB, 2017)

1.1.1 Production Cocoa in Sarawak

In Malaysia, there are two sectors that are involved in cocoa plantation, which are estate holding and smallholder. Table 1 shows the cocoa cultivated area by sector and region. Smallholder is the main sector in Malaysia of almost 80% of the cultivated area is from smallholder. In Sarawak, all the cultivated areas are from smallholder sector. Since 2009, the cocoa cultivated area in Sarawak is bigger compared to Peninsular and Sabah estates.

Table 1: Cocoa cultivated area by region and sector

Year	Cocoa Cultivated area by region and sector (ha)					
	Peninsular		Sabah		Sarawak	
	Estate	Small-holder	Estate	Small-holder	Estate	Small-holder
2009	280	3,382	1411	4850	-	7415
2010	224	3696	990	5819	-	8688
2011	139	3827	605	6079	-	9557
2012	139	2366	48	3817	-	4816
2013	224	2701	28	4747	-	5551
2014	232	3276	28	5947	-	6020
2015	232	3447	17	6847	-	6949
2016	232	3061	17	6657	-	6772

Figure 2 shows the production of cocoa beans in Sarawak. The trend was similar to the production of cocoa beans in Malaysia. This problem is very distressing as the demand of the cocoa beans increases daily. In Sarawak itself, production of cocoa beans decreased from 3,710 tonnes in 2000 to 272 tonnes in 2016. This research focussed in Sarawak because the smallholder is reported to be the dominant farmers compared to Sabah and Peninsular Malaysia.

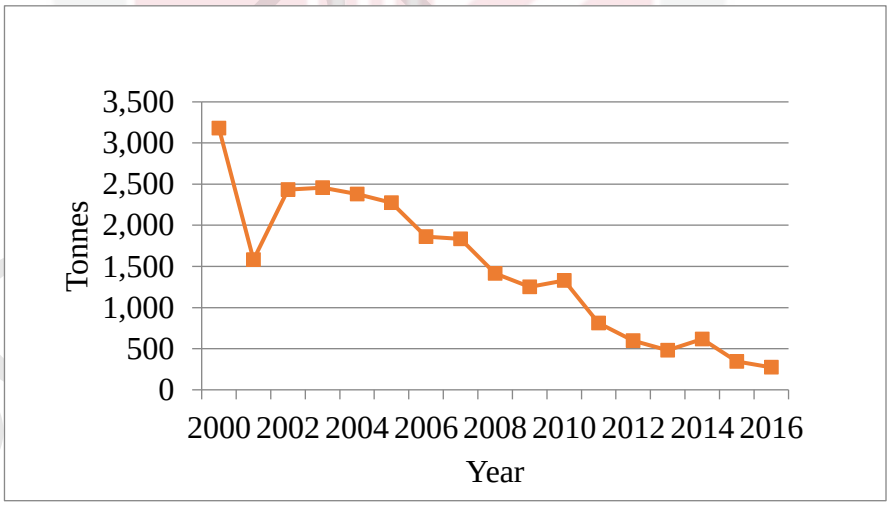

Figure 2: Cocoa Beans Production of Sarawak (MCB, 2017)

Government and organisation had put a lot of effort in increasing local production of cocoa beans by increasing the confidence of cocoa farmers to be involved in larger scale of cocoa cultivation There are many technologies and programs introduced to the farmers to help them

improve the production of cocoa beans such as selected cocoa planting materials introduction, technology for control of cocoa pod borer (CPB), rehabilitation programmes for smallholders, productivity improvement program, and cocoa seedlings production program (Azhar & Lee, 2004; Lee, n.d.; Lee & Ramle, 2015). According to Lee (n.d.), the cocoa cultivation with proper materials is a very good investment as it could achieve up to 8 t/ha. Thus, technology transfer has to be effective in ensuring technologies were delivered to the farmers and adopted by the farmers. There are many available knowledge and information related to cocoa farming in Malaysia that are accessible by smallholder. The knowledge and information on cocoa farming activities could help smallholders to be efficient in increasing the production of cocoa beans and improving the quality of their life. They need to access all the technology and relevance knowledge on cocoa farming activities (Fadzim et al., 2016). Thus, focusing on the development knowledge, skill and information of smallholders is the main objective in increasing local production of cocoa beans.

1.1.2 Grinding Sector in Malaysia

Grinding sector in Malaysia was established in 1973 and has been increasing greatly (Lee, 2013). Malaysia grinding sector have been expanded since 1980 whereby 6,000 tonnes cocoa beans were grinded, reaching 100,000 tonnes in 1992 and 300,000 tonnes in 2007 (MCB, 2017). Currently, Malaysia is the largest cocoa grinder in South Asia and fifth largest cocoa grinder in world (Wood, 2017; Lee, 2013).

The increasing demand on grinding sector of cocoa beans has resulted in Malaysia importing the cocoa beans because local production of cocoa beans cannot meet up the demand (Che Omar et al., 2018). The importation of cocoa beans in Malaysia have been increasing to about 69% from 106,701 tonne in 2000 to 345,489 tonnes in 2018 (MCB, 2018). Malaysia imported cocoa beans from different countries such as Ghana, Ivory Coast, Ecuador and Papua New Guinea because these countries are the biggest cocoa beans producer. Based on Figure 3, the imbalance between the grinding and production of cocoa beans need to be addressed accordingly.

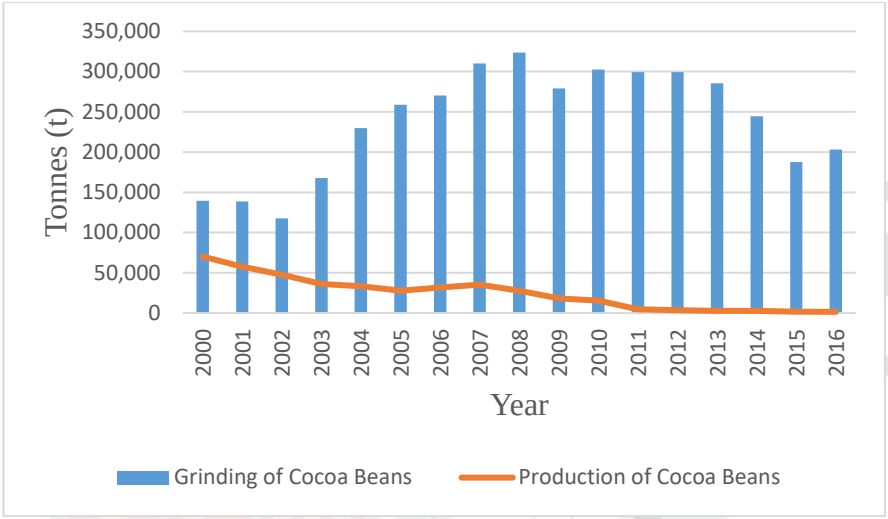

Figure 3: Grinding and Production Sectors of Cocoa Beans in Malaysia. (MCB, 2017)

1.2 Malaysian Cocoa Board

In Malaysia, there are many institutions and organisations that are involved in agriculture and helping to increase nation's income. There are institutions that only focus on one commodity and crop while there are institutions that focus on different commodities and crops. Malaysian Agriculture Research and Development (MARDI) is an example of institution that have researched on various commodities and crops such as paddy, palm oil, rubber, cocoa and others. Examples of institutions that only focus on research and development for one commodity are Malaysian Palm Oil Board (MPOB) for palm oil, Malaysian Rubber Board (MRB) for rubber and Malaysian Cocoa Board (MCB) for cocoa. Malaysian Cocoa Board (MCB) is discussed deeper as this research focuses on extension system in MCB.

Malaysian Cocoa Board (MCB) was established in 1988 under Act 343 and started to operate in 1989. MCB is the institution that manages the cocoa plantation in Malaysia. There are two objectives in MCB which 1) to develop the cocoa industry in Malaysia to be well integrated and competitive in the global market and 2) to increase productivity and efficiency in cocoa bean production and increasing downstream activities. (Retrieved from http://www.koko.gov.my). MCB has been largely involved in research and development, market development and techno-economy, regulatory and quality control, targets groups development, extension and transfer of technology and technical and advisory services.

Figure 4 shows full organisation chart of MCB. There are two main departments which are 1) Research and Development and 2) Operation.

Operation department consists of Administration Service Division, Market Development & Economy Division and Regulatory & Quality Control Division. In Research and Development Department, there are several divisions which are the Upstream Technology Division, Downstream Technology Division, Biotechnology Division and Technology Transfer & Extension Division (MCB, 2017). Cocoa industry in Malaysia has been managed by MCB, including the upstream and downstream industry. Upstream industry is largely involved in the production of the cocoa beans while the downstream industry mainly focuses on processing the cocoa beans until the by-products are produced such as cocoa powder and cocoa cake.

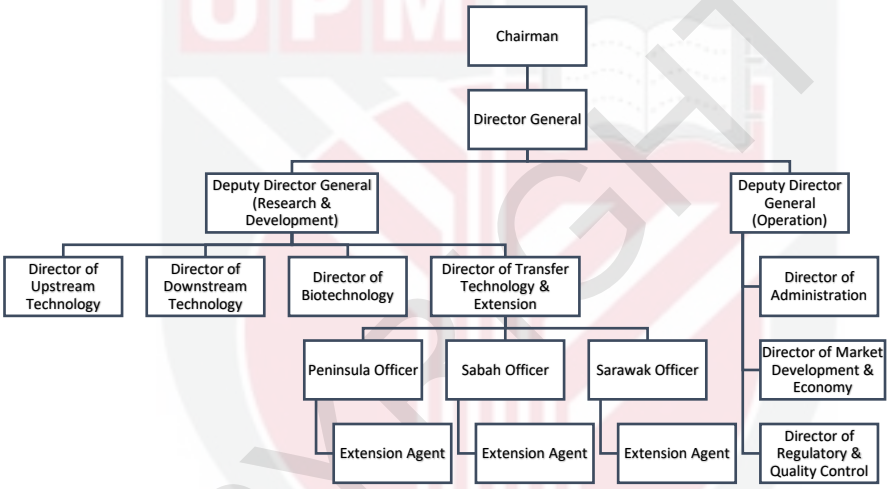

Figure 4: Organisations Chart of Malaysia Cocoa Board

Upstream industry includes the steps leading to the production of cocoa beans which is the cultivation of the cocoa. It ranges from choosing the right clone, how to plant the cocoa, the distance of tree, fertilization, pest and disease management and harvesting that involve research and development. Upstream Technology Division and Biotechnology Division of MCB are responsible in inventing the latest technology related to the cocoa planting activity, based on the problems faced by the farmers, to be applied by the cocoa farmers. Technology Transfer and Extension division focuses on the process of distributing the technology invented by the research and development department to the farmers. Extension agents of MCB must possess not only hard skill such as technical skill, delivering

skill and evaluating skill but also soft skill such as leadership skill, help in making decision skill and social skill.

There are a few technologies that have been transferred to the smallholder under Technology Transfer and Extension Division. The technologies provided by MCB are technology of planting cocoa clone, pruning technology, fertilization technology, weed management technology, pest and disease management technology and processing, drying and storing technology. MCB has organized two basic courses for cocoa farmers on understanding the basic skills and knowledge on available technology provided (MCB, 2017). The knowledge and skill of the technology for cocoa farmers was delivered by the extension agent of MCB.

1.2.1 Role of MCB Extension Agents in Disseminating Technology

Extension agents are the implementer to the objectives, vision and mission outlined by the management as they are responsible in delivering technology and ensuring sustainability production of cocoa beans. Opinions, suggestions and problems from the cocoa farmers are important as they are the pillars in improving productivity cocoa beans. The problems faced by farmers will be channeled to the responsible person according to the flow of organisation. From there, they will try to solve or reduce the problems faced by the farmers.

There are three main roles of extension agents in helping the farmers to improve their productivity. There are three major roles. The first role is technology transfer, knowledge and information to the farmers. The second role is to understand all technology that have been invented by MCB researcher whereas the third role is monitoring and evaluating technology adopted by the farmers. In line with Aremu et al. (2015), the role of extension is as follows; they create awareness of innovations, persuade with the importance of new technology, intermediary between researcher and farmers, help in problem solving, effectively stabilize new behaviour who have adopted innovation, act as catalyst, as resource linker and strengthening and supporting farmer organization. For extension agent to play their role, the relationship between researcher, extension agent and farmer must be interdependent because it will prevent any hindrance of process technology transfer (Sewnet, Elemo & Derso, 2016). In MCB, the researchers are actively involved in the process of technology transfer. The researchers directly transfer the knowledge on the latest technology to farmers as well the extension agents. The extension agents receive training on the related technology and they have to monitor and evaluate the technology adopted by the farmers.

This relationship between researchers, extension agents and farmers can maximize the adoption of technology invented because researchers always understand the needs of the farmers due to the strong linkages between them. Ineffective extension system leads to a low productivity of the farmers and low development in rural lifestyle of the farmers (FAO, 2014) as extension system is the system that helps farmers in rural area to improve. Researchers contrive suitable solution based on the problem of the farmers and extension agents are responsible to deliver back the technology to the farmers for adoption and better productivity.

According to Mwangi and Kariuki (2015), technology adoption increases when planning and implementing technology meet the needs of the farmers and fit for their plantation. Organisations that are committed in creating and strengthening the relationship of research-extension, information can be effectively distributed and ability of research transfer to extension system and extension system provide feedback to the researcher teams which they can be promote is the way on how cocoa production can be increased through the chain of production (Spielman, 2012).

Murni, Salim and Ramle (2019) stated that extension agents need to possess transfer of technology (ToT) skills as these skills are the foundation in technology distribution. The skills of ToT mentioned are technical skill, delivering skill and evaluating skill. Isah et al. (2019) also mentioned that these ToT skills really influenced performance of the extension agents in executing their duty. However, he added that extension agents also need human resource development (HRD) skills. The HRD skills mentioned by Isah et al. (2019) are leadership skill, help in decision making skill and social skill. ToT skills require extension agents to dominate technical of the technology and have to deliver to the farmers for implementing and evaluating the technology as the process of monitoring. HRD skills are vastly needed by extension agents as HRD skills will help in stimulating competency of extension agents. HRD skills boost the process of technology transfer. Organization that has employees with inefficient HRD skills affects the entire performance of organization and employees (Mengal & Habib, 2016). Thus, extension agents must acquire ToT skills and HRD skills so that they can disseminate technology successfully.

1.3 Problem Statement

Malaysia used to be one of the largest producers of cocoa beans in world. The imbalance situation that developed in Malaysia between upstream and downstream sector where the demand of the cocoa beans has been increasing but the production of cocoa beans has been decreasing by the years led to its downfall. There are several factors that cause low

productivity of cocoa beans in Malaysia such as pest and disease problem, poor world cocoa price, climate change, labour constraints and competition land use between oil palm and rubber (Lee, 2013). Many programmes have been introduced by MCB to improve the current production of cocoa beans from 0.5 tonnes/ha/year to 1.5 tonnes/ha/year (MCB, 2017).

Extension programmes were introduced by MCB to educate cocoa farmers on the importance of using technology to increase the productivity of cocoa beans. Extension agents are responsible in ensuring cocoa farmers receiving the technology. The process of disseminating available knowledge and technology is really important because ICCO (2018) reported that one of the reasons why growth of cocoa beans production was hindered was due to the fact that cocoa farmers lack of knowledge and information of cocoa plantation activity. Extension agents of MCB in Sarawak have been transferring the technology and knowledge to the cocoa farmers. However, the production of cocoa beans in Sarawak still does not record any improvement.

The work performance of extension agent is really important for successful technology transfer to the cocoa farmers. Several previous researches have proved that performance of extension agent in facilitating the transfer the technology and knowledge to the farmers can increase the productivity of farm (Xuedong, 2006; Suvedi & Kaplowitz, 2016, Danso-Abbeam, Ehiakpor & Aidoo, 2018; Dhehibi et al., 2020). Extension agents of MCB Sarawak need to have strong work performance in educating and helping farmers in cocoa plantation. Work performance of extension agents of MCB Sarawak can be evaluated from ToT skills and HRD skills. ToT skills and HRD skills needed by extension agents are technology skill, delivering technology skill, evaluating skills, leadership skill, help in making decision skill and social skill (Rahim 2010; Mohd Mustafa et al., 2017; Azureen, Salim & Ramle, 2019).

The research on work performance of extension agent have been conducted by many researchers in Malaysia and also in other country. However, there is still lack of research on work performance of extension agents in ToT skills and HRD skills. Research of work performance extension agents of MCB in Semenanjung and Sabah have been conducted, but there is no research on extension agents of MCB in Sarawak. Since Sarawak's main sector are smallholders, work performance extension agent of MCB in Sarawak should also be evaluated. The research in Sarawak can contribute to the comparison between performance of extension agent in Semenanjung Malaysia, Sabah and Sarawak. Questions such as "Why performance of extension agent in any region higher compare to other region?" can be answered. The research in Sarawak also contributes to MCB on how to improve the productivity of cocoa in Malaysia. The research in Sarawak will look at the

extensive performance of extension agent in MCB Malaysia. The result can be used to develop policy for extension system in Malaysian Cocoa Board thus, improving production of cocoa beans in Malaysia.

1.4 Objectives

1.4.1 General Objective

The general objective for this research was to evaluate work performance of MCB extension agents in ToT skills and HRD skills.

1.4.2 Specific Objectives

i. The first specific objective was to determine the level skill of extension agents in ToT, HRD and work performance in Sarawak as perceived by productive cocoa farmers.

ii. The second specific objective was to evaluate relationship between ToT skills and HRD skills with work performance of extension agents of MCB.

iii. The third specific objective was to identify the which skill contribute significantly to the performance of extension agents of MCB.

1.5 Hypothesis

- Ho_1: There is no significant contribution of technology skill towards work performance
  Ha_1: There is significant contribution of technology skill towards work performance. (Tiraieyari, et al., 2010; Shahrina et al., 2013; Azureen et al., 2019)

- Ho_2: There is no significant contribution of delivering technology skill towards work performance.
  Ha_2: There is significant contribution of delivering technology skill towards work performance. (Rahim, 2010; Azureen et al., 2019)

- Ho_3: There is no significant contribution of evaluating technology skill towards work performance.
  Ha_3: There is significant contribution of evaluating technology skill towards work performance. (Tiraieyari et al., 2010)

- Ho_4: There is no significant contribution of leadership skill towards work performance.
  Ha_4: There is significant contribution of leadership skill towards work performance. (Norizatulshima, 2019; Olagunju et al., 2020)

- Ho_5: There is no significant contribution of help in making decision skill towards work performance.
  Ha_5: There is significant contribution of help in making decision skill towards work performance. (Isah et al., 2019; Ghimire et al., 2015)

- Ho_6: There is no significant contribution of social skill towards work performance. (Isah et al., 2019; Zat'kova & Polacek, 2015)
  Ha_6: There is significant contribution of social skill towards work performance. (Isah et al., 2019; Zat'kova & Polacek, 2015)

1.6 Limitation of Study

The data on this research were based on the perception of the farmers towards MCB extension agents. Therefore, this research may not be fair towards the extension agents as the evaluations were only made by cocoa farmers. However, the evaluations made by the cocoa farmers were reliable because cocoa farmers are the one that receive the technology transfer from the extension agents. Thus, they know the performance of extension agents during process of technology transfer.

Other than that, the limitation in completing the research was communication and interaction between respondent and researcher. Despite the questionnaire prepared in Bahasa Melayu, respondent still have difficulty in understanding the questions in the survey. The communication was also difficult because the researcher could not comprehend the verbal communication with the respondent and vice versa. The limitation was encountered with the help of extension agents that could speak the similar language and dialect as the farmers.

The last limitation that was faced during the research was the coverage area. Only six areas were covered in this research due to several reasons. The areas that the researcher covered are the areas that are easily accessible using car. Some areas were not chosen as it needed four - wheeled car to access that area. However, the six area; Padawan, Sri Aman, Sebuyau, Engkilili, Saratok and Asajaya were enough to represent the population of productive cocoa farmers in Sarawak. Therefore, the problem was solved.

1.7 Significance Contribution of Study

1.7.1 Theory

The finding of this study will contribute to the Iceberg model by Spencer and Spencer as this model has been always used to study performance of individual and organisation, including agriculture field. The results contributed to the visible parts of the Iceberg Model which were knowledge and skill. The skills of ToT and HRD that showed significant contribution to the work performance of extension agents help in strengthening the Iceberg Model which is going to be used for future references.

1.7.2 Practice

ToT and HRD skills are important for agricultural extension system to be effective. Thus, the results of the finding will help the organisations to recommend methods and approaches in improving extension agents' skills in ToT and HRD. The findings of the research also contribute to the practice of agricultural extension system. The contribution to the practice would be helpful for MCB whereby MCB management can plan and implement the module trainings and courses for extension agents. Skills that contribute significant to the work performance of extension agents can be contributed to the specific module and training organised by the organisation as a way to reinforce the skills. Other than that, the basic module and training on the skills that do not contribute significantly to the performance of extension agents can be formed as a way to improve the skills so that process of technology dissemination can be carried out efficiently.

1.7.3 Policy

This study can act as a pioneer guideline for MCB in developing agriculture extension policy for MCB itself. The policy can be focused more to the production of cocoa beans related to agriculture extension system where it can help the process of technology transfer more effectively. The policy of agriculture extension system should involve all six skills. However, the skills that do not contribute to work performance of extension agents should be paid more attention.

1.8 Definition of Terms

The followings are the terms related to this study:

a. Transfer of technology (ToT): Technology transfer is a process of conveying technology and knowledge from one to another for adoption for another party (Bessant & Francis, 2005). Skills that are needed by extension agents in process of disseminating technology effective are technical skill (technology skill), delivering skill and evaluating skill.

b. Human resource development (HRD): HRD focus on empowerment and help client in improving their life by making decision, solving a problem, and being a leader in community organisation with extension agents being an exemplary leader, help farmer in making decision and problem solving and involve with non-formal activities organise by client.

c. Work performance: Evaluation and assessment to determine if individual perform or not in their task. Evaluation performance of extension agents is required, so that the performance of the process of technology transfer will be successful.

d. Technology skill (technical skill): Technical skill refers to knowledge and skill needed by individual to complete the task given (Farley, 2019). Skill that is essential for extension agent in ensuring technology is transferred successfully.

e. Delivering technology skill: Delivering technology skill is related to the process of technology transfer that can improve client skill in their services (Corrina, 2015).

f. Evaluating technology skill: Evaluating technology skill reflects the delivering skill of extension agent. The outcome of the evaluation important because it can be guide for improvement in the future (Cronbach, 2000).

g. Leadership skill: Leadership skill is a skill that can help organisation to be systematic. It refers to any scope of work in any field, as well as employer desire to have employee that possess leadership skills in performing their duties (Moore & Rudd, 2005).

h. Help decision making skill: The ability of extension agent to facilitate farmers in order to solve problems according to the situation (Al-Tarawneh, 2012).

i. Social skill: Skill of people in interacting and communication with one another (Beheshtifar & Norozy, 2013

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