INTERRELATIONS BETWEEN TOT SKILLS, HRD SKILLS AND WORK PERFORMANCE OF COCOA EXTENSION AGENT IN MALAYSIA

NORIZATULSHIMA IBRAHIM

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By

NORIZATULSHIMA IBRAHIM

Thesis Submitted to the School of Graduates 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 University Putra Malaysia in fulfilment of the requirement for the Degree of Master of Science

INTERRELATIONS BETWEEN TOT SKILLS, HRD SKILLS AND WORK PERFORMANCE OF COCOA EXTENSION AGENTS IN MALAYSIA

By

NORIZATULSHIMA IBRAHIM

February 2020

Chairman : Salim bin Hassan, PhD
Faculty : Agriculture

This study aims to focus on the performance of extension agents in the transfer of technology where their performance outcome would be indicated through the productivity of the cocoa bean production. Since the extension agents plays a significant role in improving farmers knowledge and skills (Iceberg Theory by Spancer & Spancer, 1993), the competency of the extension agents (EA) from west and east Malaysia was the main focus in this study. There is a dire need to improve EAs' competencies so that they are able to assist farmers in applying new technologies and development introduced by the Malaysian Cocoa Board (MCB). The objective of the study mainly to determine the level skills of EA related to Transfer of Technology (ToT) skills and Human Resource Development (HRD) skills and Work Performance (WP) as perceived by productive cocoa grower in West and East Malaysia. The second objectives are, to determine the interrelations between HRD skills and ToT skills with WP of EA in West and East Malaysia; and thirdly is to determine which skills contribute the most to WP of EA in West and East Malaysia. This study had employed quantitative methods where a well-structured questionnaire was distributed to 668 productive cocoa farmers, where they had attended two MCB's training programs exposed by EA and have cultivated cocoa almost 5 to 7 years old. The respondents were chosen through multi-stage sampling method (cluster and stratified random sampling). The variables of ToT were technical skills, technology delivery skills and technology evaluation skills. Whereas the variables of HRD consists of leadership skills, decision making, support skill and social skills. Based on descriptive analysis, West and East Malaysia, the level of ToT, HRD and WP respectively high. The Pearson's correlation coefficients showed a positive and strong interrelation in ToT, HRD with WP in the West Malaysia. The East Malaysia however, showed positive and moderate correlation for ToT, HRD with WP. Multiple regression analysis revealed that social skill, leadership skill, technical skill and decision making support skill from the West Malaysia have significant ($p<0.05$) with WP. Social skill is the factor that contributes the most to WP of EA in West Malaysia. For the East Malaysia, only three skills, i.e. decision making support skill, technical skill and leadership skill were found to be significant with WP. On the other hand, decision making support skill is the

highest contributing factor to WP of EA in the East Malaysia. An overall of 63.0% (Adjusted $\mathbf{R}^2$=0.630) of the variation in EAs' WP in the West Malaysia is explained by four skills. Meanwhile, for the East Malaysia, about 51.1% (Adjusted $\mathbf{R}^2$=0.511) of variation in work performance is explained by three skills. Findings of this study had contributed to the Iceberg theory on knowledge and skills in MCB agriculture programme planning. This study has strengthened the model by improving the extension agents' knowledge and skills in transfer of technology and human resource development by area. The study recommends agriculture agencies need to provide suitable courses or training according to the skills required by EA to improve their WP and indirectly increase agriculture productivity. To provide a focused and appropriate course, the agency can create a mentor-mentee program. Besides, evaluate and update the performance of EA from time to time and focusing by area. This is because of every area have difference problem issues and unbalance workload with misleading focus.

Keywords: Cocoa, extension agents; technology; farmers

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

SALING KAITAN DI ANTARA KEMAHIRAN PT, KEMAHIRAN PSM DAN PRESTASI KERJA EJEN PENGEMBANGAN KOKO DI MALAYSIA

NORIZATULSHIMA IBRAHIM

Oleh

Februari 2020

Pengerusi : Salim bin Hassan, PhD
Fakulti : Pertanian

Kajian ini bertujuan untuk menumpukan kepada prestasi ejen pengembangan dalam pemindahan teknologi di mana prestasi mereka ditunjukkan dalam pengeluaran produktiviti koko. Oleh kerana ejen pengembangan (EP) memainkan peranan utama dalam meningkatkan pengetahuan dan kemahiran petani (Theory *Iceberg* oleh Spancer & Spancer, 1993), dalam kajian ini kecekapan EP ini menjadi salah satu masalah utama dalam pengeluaran koko, di Barat dan Timur Malaysia. Terdapat kekurangan yang perlu ditingkatkan melalui kecekapan mereka supaya para pengusaha koko boleh menggunakan teknologi baru yang diperkenalkan oleh Lembaga Koko Malaysia (MCB) untuk setiap kawasan dengan lebih efisyen. Objektif kajian ini adalah untuk menentukan tahap kemahiran Pengembangan Teknologi (PT), kemahiran Pembangunan Sumber Manusia (PSM) dan Prestasi Kerja (PK) EP di Malaysia Barat dan Malaysia Timur. Objektif kedua adalah untuk menentukan saling kaitan antara kemahiran PT dan kemahiran PSM dengan PK EP di Malaysia Barat dan Malaysia Timur; dan objektif ketiga adalah untuk menentukan kemahiran yang menyumbang kepada PK EP di kedua-dua kawasan. Kajian ini menggunakan kaedah kuantitatif di mana borang soal selidik yang tersusun telah diagihkan kepada 668 penanam koko yang produktif yang mana mereka telah menyertai paling kurang dua kursus pengembangan di LKM yang dijalankan oleh EP dan mereka juga harus memiliki pokok koko berusia 5 hingga 7 tahun di Malaysia Barat dan Malaysia Timur. Responden dipilih menggunakan teknik pensampelan pelbagai peringkat (klaster dan pensampelan rawak berstrata). Kemahiran PT adalah kemahiran teknikal, kemahiran penyampaian teknologi dan kemahiran penilaian teknologi. Manakala kemahiran bagi PSM terdiri daripada kemahiran kepimpinan, kemahiran sokongan membuat keputusan, dan kemahiran sosial. Berdasarkan analisis deskriptif, Barat dan Timur Malaysia, masing-masing memiliki tahap PT, PSM dan PK yang tinggi. Pekali Korelasi Pearson menunjukkan positif dan mempunyai hubungan yang kuat untuk PT, PSM dengan KP di Malaysia Barat. Bagi Malaysia Timur menunjukkan korelasi positif dan saling kaitan yang sederhana untuk PT, PSM dengan PK. Analisis Regrasi Berganda menunjukkan kemahiran sosial, kemahiran kepimpinan, kemahiran teknikal dan kemahiran sokongan membuat keputusan dari Malaysia Barat mempunyai signifikan (p

<0.05) pada PK. Kemahiran sosial adalah faktor yang paling menyumbang kepada PK ejen pengembangan di Malaysia Barat. Bagi Malaysia Timur, hanya tiga kemahiran yang terlibat, iaitu kemahiran sokongan membuat keputusan, kemahiran teknikal dan kemahiran kepimpinan didapati signifikan dengan PK. Manakala kemahiran sokongan membuat keputusan adalah penyumbang tertinggi kepada PK ejen pengembangan di Malaysia Timur. Secara keseluruhannya, 63.0% (*Adj*. $\mathbf{R}^2$ = 0.630) dari variasi dalam PK ejen pengembangan di Malaysia Barat dijelaskan oleh empat kemahiran. Sementara bagi Malaysia Timur, kira-kira 51.1% (*Adj*. $\mathbf{R}^2$ = 0.511) variasi dalam prestasi kerja dijelaskan oleh tiga kemahiran. Penemuan kajian ini menyumbang kepada Teori Iceberg mengenai kemahiran dan ilmu pengetahuan dalam merancang program pertanian. Kajian ini telah menyumbang kepada model tersebut dengan menambahbaik kemahiran dan ilmu pengetahuan EP LKM dalam PT dan PSM mengikut kawasan. Kajian ini mensarankan agensi pertanian untuk menyediakan kursus atau latihan mengikut kemahiran yang diperlukan oleh EP dan secara tidak langsung dapat meningkatkan produktiviti hasil pertanian. Untuk menyediakan kursus yang bersesuaian dan berfokus, agensi boleh mewujudkan program *mentor-mentee*. Selain itu, penilaian dan kemaskini PK EP perlu dilakukan dari masa ke semasa dan fokus mengikut kawasan. Ini kerana setiap kawasan memiliki perbezaan isu dan ketidakseimbangan kerja.

Kata kunci: Hasil koko; kecekapan; ejen pengembangan; pemindahan teknologi; pembangunan sumber manusia.

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I certify that a Thesis Examination Committee has met on 14 February 2020 to conduct the final examination of Norizatulshima Bt Ibrahim on her thesis entitled "Interrelation Between ToT Skills, HRD Skills and Work Performance of Cocoa Extension Agents In Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

Members of the Thesis Examination Committee were as follows:

Mohd Mansor Bin Ismail, PhD
Professor
Faculty of Agriculture
Universiti Putra Malaysia
(Chairman)

Ismi Arif Bin Ismail, PhD
Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Internal Examiner)

Md. Abd Hair Bin Awang, PhD
Associate Professor
Pusat Pengajian Sosial, Pembangunan dan Persekitaran
Fakulti Sains Sosial dan Kemanusiaan
Universiti Kebangsaan Malaysia
(External Examiner)

_____
ZURIATI AHMAD ZUKARNAIN, PhD
Professor Ts. and Deputy Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 03 September 2020

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Salim Hassan, PhD
Senior Lecturer
Faculty of Agriculture
Universiti Putra Malaysia
(Chairman)

Zulkefly Sulaiman, PhD
Associate Professor
Faculty of Agriculture
Universiti Putra Malaysia
(Member)

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ZALILAH MOHD SHARIFF, PhD
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School of Graduate Studies
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Date: 10 September 2020

Declaration Form

Declaration by graduate student

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Declaration by Members of Supervisory Committee

This is to confirm that:

- The research conducted and the writing of this thesis was under our supervision,
- Supervision responsibilities as slated in Rule 41 in Rules 2003 (Revision 20122013) were adhered to.

Signature: _____
Name of Chairman
of Supervisory
Committee : Dr. Salim Hassan

Signature: _____
Name of Member
of Supervisory
Committee : Associate Professor Zulkefly Sulaiman

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LIST OF ABBREVIATIONS

CPB	Cocoa Pod Borer
CSPD	Cocoa Smallholder Development Programme
DOA	Department of Agriculture
EA	Extension Agents'
GDP	Gross Domestic Product
HRD	Human Resource and Development
MARDI	Malaysian Agricultural Research and Development Institute
MCB	Malaysia Cocoa Board
MPI	Ministry of Primary Industries
MPIC	Ministry of Plantation Industries and Commodities
ToT	Transfer of Technology
NKEA	National Key Economic Area
R&D	Research and development
RROI	Rate of Return on Investment
SPSS	Statistical Package for Social Science

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Agriculture has been considered as one of the sectors that contribute greatly to Malaysian economy. Agriculture sector contributions of 8.1% to the GDP to the National Domestic Product (GDP) in 2017 (*Statistics on Agriculture 2016*) and at least one third of the country's population depens on the sector for its livehood, with almost 14% employed on farms and plantation (Abdullah *et al.*, 2014). Oil palm is the biggest contributor to national economy as an exporter of oil palm to the world and followed by rubber, timber and cocoa sector. Like most of agriculture sector, cocoa commodity also had absorb labor at the same time create jobs for farmers, contribute to a positive foreign exchange, and encourages the growth of agribusiness and agro-industries in the area.

In the Indonesia, cocoa commodity employment reached 965,000 labourer farmers and contributed income to their countries (GDP) through non-oil exports amounted to 665 million US dollar in 2005, with the value of positioning cocoa third largest foreign exchange earner after the rubber and palm oil commodities (Raharto, 2016). Raharto (2016) also said, Indonesian cocoa production of new 590 thousand tonnes per year under the Ivory Coast, which reached 1.3 million tons and Ghana 650 thousand tons per year. In West and Central Africa, the rapid expansion in cocoa cultivation was spurred by the surge in international cocoa prices to unprecedented heights in the 1970's, which saw prices increasing almost six-fold from USD675/MT in 1970 to about USD3,800/MT in 1977. Following a strong performance in the 1970s, international cocoa prices began to tumble in the 1980s and fell by more than 50% in five years to USD1,736/MT in 1982.

But in the early 1990s, it was the widespread infestation of the Cocoa Pod Borer Disease (CPB) in the early 1990s that sealed the course of the cocoa world industry's history (Binam *et al*., 2008, Ramle, 2012). Price instability, labour shortage and logistics are others threat to a declining of world cocoa production (Khazanah Research Institute, 2018). Cocoa farmers in the world suffer from low volume and inconsistent quality of cocoa beans. To control the price volatility is impossible. But to achieving the target of improve the quality of beans and increase the production, is possible over the agricultural support services.

1.2 The Cocoa Industry in Malaysia

Theobroma cacao L. is the scientific name of cocoa. It is a family member of Sterculiaceae. According to Cuatrecasas (1964); Burkill (1966); Morris (1882), the Sterculiaceae is indigenous to the tropical regions of Central and South America. Cultivated cocoa has spread to the Caribbean Islands since the early times of Mexico and Central America. During the sixteenth century, cocoa had spread to parts of South

America and continued to spread to other regions of the tropics in the seventeenth century, including the Philippines, Indonesia, and Malaysia; in the seventeenth century including Sri Lanka and India; and also in the eighteenth century in the West African countries (Burkill, 1966; Wood, 1985).

Cocoa is the fourth largest commodity crop after oil palm, rubber and timber. Malaysia is the world's largest cocoa blender nation after the Netherlands, Cote d'Ivoire, Indonesia, Germany, the United States, and Ghana. Cocoa had introduced for commercial cultivation into Malaysia in the 1950s and became the third major commodity crop in Malaysia after oil palm and rubber in the 1970s (*Statistics on Commodities 2006*). After in 1975, in the 3rd Malaysian Plan, cocoa cultivation has been considered to be the crop for agricultural extension and has a competitive edge in many aspects. To ensure the competitive advantages are sustainable, focus on on technology and management for high productivity and efficiency is vital. In 1990, the cocoa area that includes estate and smallholder were estimated to be 393,465 ha with a total and annual production of respectively; 247,000 MT and 0.628 MT/Ha (Table 1.1) (MCB, 1992; Yusof *et al.*, 2000; MCB, 2018b). In the 2000s, although the area cultivated (75,766 Ha) and the production of cocoa bean (70,262 MT) had declined, annual productivity (0.927 MT/Ha) by area began to increase. The government's put an efforts to increase productivity through the introduction of selected cocoa planting materials that ensures high yield from the onset of cocoa planting programs were very apparent.

In 2002, the Malaysian cocoa industry had reached its peak of averaged annual cocoa productivity which is 0.980 MT/Ha. However, the average annual cocoa productivity had dropped to from 0.9 to 0.7 MT/Ha in 2004. During the 2000s, Malaysia's cocoa industry had collapsed due to the combination of both economic and environmental factors, namely, the severe spread of the Cocoa Pod Borer (CPB) infestation, poor world cocoa prices, and the lure of more attractive returns from other ventures, particularly, oil palm cultivation. This situation was also reflected by the shift of major cocoa plantation into oil palm plantation. the changes had pushed the smallholder sector into the dominant player in cocoa cultivation.

In 2006 and 2008, the cocoa area includes estate and smallholder has also declined into 31,740 Ha and 21,411 Ha with the production of 31,937 MT and 27,955 MT; respectively. Although the area cultivated and production of cocoa bean had declined, the annual productivity by area was recorded highest with 1.006 and 1.306 MT/Ha, respectively. The fluctuation trend (Figure 1.1) (MCB, 1992; 2018c) has noted a small increase in cocoa productive areas planted from 2012 (11,748 Ha) until 2017 (17,554 Ha), where approximately 5,806 ha growth was recorded over that period (Table 1.1 and Figure 1.1). In contrary, the average annual cocoa bean production had shrunk by 80.9% (0.251MT/Ha) from 2012 with 0.779 to 0.059 MT/Ha in 2017. Throughout this duration, there were immense agricultural support services efforts to support smallholder particularly in the rural areas and outlying areas of the country. This is truly an important effort as cocoa is recognized as a smallholders' crop and would improve the livelihood and reduce their poverty level by uplifting their income.

Table 1.1: Cocoa Planting Area, Dry and Annual Cocoa Bean Production in Malaysia

Year	Planting Area and Dry Cocoa Bean Production		
	Area (Ha)	Production (MT)	Average Productivity (MT/Ha)
1990	393,465	247,000	0.628
1992	378,540	220,000	0.581
1994	271,339	177,172	0.653
1996	168,219	120,071	0.714
1998	117,679	90,183	0.766
2000	75,766	70,262	0.927
2002	48,631	47,661	0.980
2004	42,207	33,423	0.792
2006	31,740	31,937	1.006
2008	21,411	27,955	1.306
2010	20,083	15,654	0.779
2012	11,748	3,645	0.310
2014	16,102	2,665	0.166
2016	17,421	1,757	0.101
2017 e	17,554	1,029	0.059

Note: Data include Estate &Smallholder Annual Production

[Sources: Malaysian Cocoa Board (1992; 2018b)]

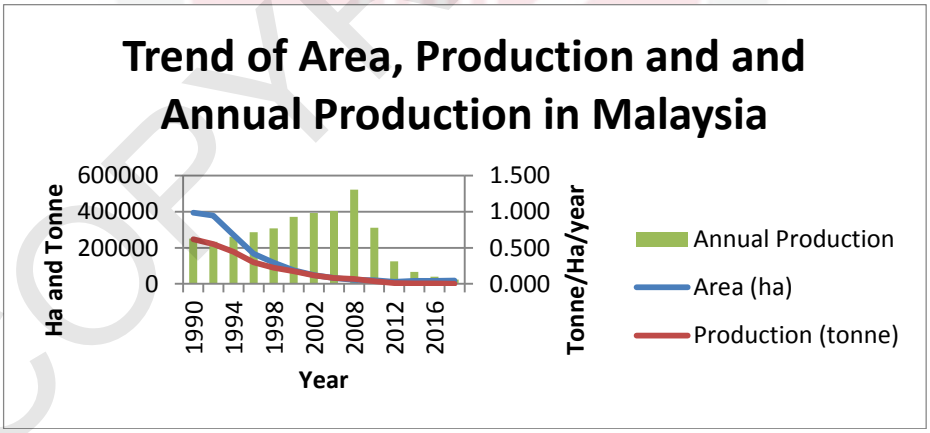

Figure 1.1: Trend of cocoa planting area, dry cocoa bean production and Annual Production in Malaysia

[Sources: Malaysian Cocoa Board (1992; 2018c)]

From the previous discussion, the deteriorating trend of cocoa production and planting area in Malaysia gave the overall impression of a slight outlook for productive cocoa cultivation. The low world cocoa prices, cocoa pod borer infections and labor constraints, as the reasons for cocoa farmers moving out of cocoa cultivation.

In Malaysia, cocoa is produced mostly by smallholder (cocoa farmers) working on small farms of between 2 and 5 hectares. However, there is always have profit in view and a return on investment (ROI) if the productivity of cocoa bean is 1.5 Metric tonne per hectare or greater. In the economic aspect, the ROI rate can be very attractive where the provisional on the levels of prices and productivity up to several hundred percents or higher. Without hiring labor, it was found that a cocoa farmer can care for up to 8 hectares of the cocoa farm. Therefore, if they are able to cultivate cocoa with a farm size of between 6 and 8 Ha and gain the productivity of 1.5 metric tonnes per hectare, they can obtain high level of income for a family. The productive cocoa farmers sector contributes 86.6% of the cultivated areas in Malaysia. From that, 80.5% and 19.5% were cultivated in East Malaysia (Sabah and Sarawak) and West Malaysia (Peninsular Malaysia), respectively.

However, productivity is usually low for the cocoa farmer as a result of production inefficiencies. The Malaysian Cocoa Board (MCB) had realized that the main obstacles preventing cocoa farmer from acquiring the necessary entrepreneurial skills and escaping the poverty trap are because of their lack of formal training in understanding of the crop condition, limited knowledge of improved production techniques and lack appropriate of available technology. Under thoses circumstances, Ramle (2012) stated that in the effort of MCB to increase smallholder‟s yield from 0.5 tons to 1.5 tons per hectare of cocoa bean production, Cocoa Smallholder Development Programme (CSPD) was introduced in 1996. The activities in extension programme include visits, meetings, the supply of planting materials, give incentives, training on quality management and planting technology.

1.2.1 Cocoa Cultivated Area by Region in Malaysia

Sarawak is the state with Malaysia's largest cocoa plantation with the area of 6,819 hectares (40.4%), Sabah, 6,819 hectares (40.1%) and West Malaysia, 3,293 hectares (19.5%) (MCB, 2018d). In West Malaysia, the states with the largest productive cocoa farmers are Kelantan, Pahang, and Perak. The rapid development of the cocoa industry in the early 1980 has sparked an awareness towards aligning and integrating various industry activities under one organization. Accordingly, Malaysia Cocoa Board (MCB) was officially established in 1989 for that purpose. Emphasis is given to the improvement and efficiency of cocoa beans production and increase downstream activities. The extension of cocoa plants in Malaysia began in the plantation sector mainly in Sabah and Peninsular Malaysia. Sabah’s cocoa industry, in particular, was dominated by the estate sector, which accounted for more than 70% of the state’s total cultivated area. As the plantation sector shifted from cocoa to oil palm cultivation during the 1990s, the smallholder sector became a major player in the cocoa plantation of today. On the contrary, in Sarawak, cocoa farming remained largely the domain of smallholders who accounted for more than 90% of the cultivated area. During the peak (1980s), Sabah led

in terms of cultivated area, accounting for almost half at 205,260 hectares, followed by Peninsular Malaysia, 33.5% (138,773 hectares) and Sarawak, 16.9% (70,12345 hectares).

Table 1.2 shows the total area of cocoa cultivation in West Malaysia and East Malaysia for the period of 1990 to 2017 and the decline in the total area of cocoa cultivation in both provinces from 137,931 Ha to 3,734 Ha in 27 years. The total area of cocoa cultivation in East Malaysia had also decreased from 255,534 Ha to 13,820 Ha. The 14% reduction from Malaysia's total cocoa plantations was recorded throughout the period.

Table 1.2: Cocoa cultivated area by region in Malaysia

Year	Cocoa Cultivated Area (Ha)				
	West Malaysia		East Malaysia		Malaysia
	Ha	%	Ha	%	Ha
1990	137,931	35	255,534	65	393,465
1992	156,488	41	222,052	59	378,540
1994	92,312	34	179,027	66	271,339
1996	42,275	25	125,944	75	168,219
1998	26,131	22	91,548	78	117,679
2000	15,142	20	60,624	80	75,766
2002	9,841	20	38,790	80	48,631
2004	8,905	21	33,302	79	42,207
2006	8,897	28	22,844	72	31,741
2008	6,566	31	14,845	69	21,411
2010	4,287	21	15,796	79	20,083
2012	2,812	24	8,936	76	11,748
2014	3,822	24	12,280	76	16,102
2016	3,734	21	13,687	79	17,421
2017	3,734	21	13,820	79	17,554

Source: Malaysian Cocoa Board Statistics (2018b)

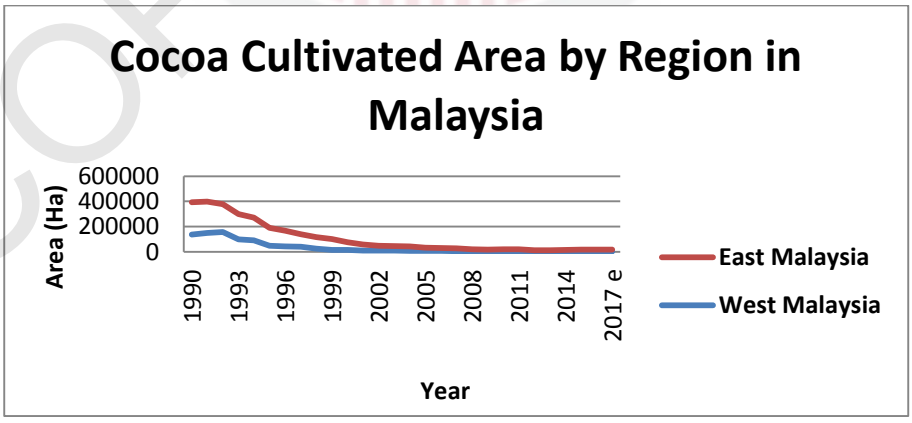

Figure 1.2: The Cocoa Cultivated Area by Region in Malaysia

Source: Malaysian Cocoa Board Statistics (2018b)

1.2.2 Dried Cocoa Bean Production by Region in Malaysia

In 1990, after Ivory Coast, Ghana, and Brazil, Malaysia was the fourth largest cocoa producing countries in the world with 413,200 MT production of the cocoa bean. During the peak (the 1990s), West Malaysia had led in the production of dried cocoa bean, which had been accounted for a total of 247,000 MT followed by East Malaysia with 166,200 MT. However, after the 1990s onwards, the decline in the dried cocoa bean production has begun. As shown in Figure 1.3 (MCB, 2018c), there is a clear gap between West and East Malaysia until 2017. The decline is due to unstable supply and the high price of cocoa beans from the international market and to a small extent due to the inadequate supply from the local. Arshad and Abragimov (2015) said that while the production of the local beans is dwindling, the grindings sector continues to survive by outsourcing their supplies from the international market.

Table 1.3: Dried Cocoa Bean Production by Region in Malaysia

Year	Dried cocoa bean production				
	West Malaysia		East Malaysia		Malaysia
	tonnes	%	tonnes	%	Tonnes
1990	247,000	60	166,200	40	413,200
1992	220,000	59	151,000	41	371,000
1994	177,172	58	129,289	42	306,461
1996	120,071	56	93,535	44	213,606
1998	90,183	57	68,836	43	159,019
2000	70,262	60	47,726	40	117,988
2002	47,661	59	32,855	41	80,516
2004	33,423	60	21,928	40	55,351
2006	31,937	66	16,678	34	48,615
2008	27,955	80	6,888	20	34,843
2010	15,654	76	5,000	24	20,654
2012	3,645	62	2,243	38	5,888
2014	2,665	60	1,755	40	4,420
2016	1,757	60	1,160	40	2,917
2017	1,029	62	622	38	1,651

Source: Malaysian Cocoa Board Statistics (2018c)

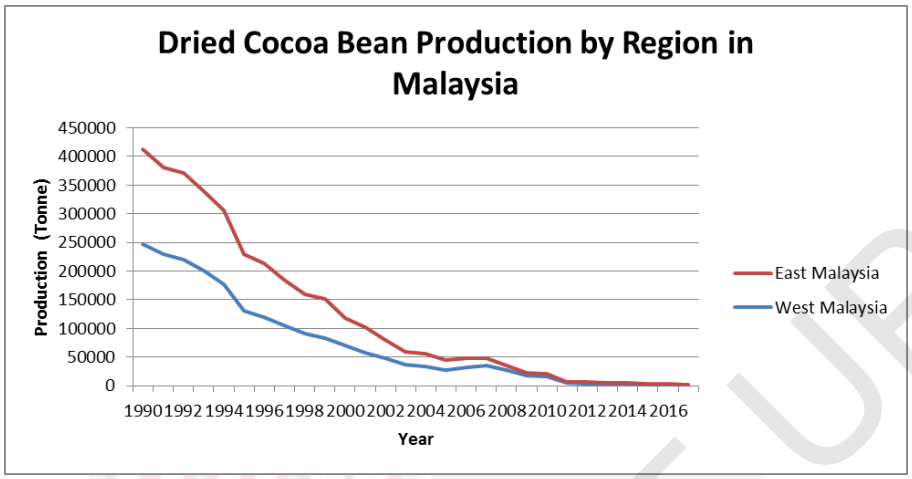

Figure 1.3: Dried Cocoa Bean Production by Region in Malaysia

1.2.3 Average Cocoa Productivity by Region in Malaysia

According to Corley's (1967) potential yield theory, the productivity of cocoa beans per year may reach 11.0 MT / Ha. Yet, Lee and Chong, (1987); Yusof *et al.*, (2000) mention that cocoa bean yields can be achieved between 2.0 to 6.8 MT/Ha with a well-run cocoa practices. However, under the MCB are targeting the level of productivity of cocoa beans at the national level of 1.5 MT/Ha/ Year. In the meantime, the average cocoa productivity in West Malaysia in 2017 was a 0.109 MT/ Ha and the productivity of East Malaysia was 0.045 MT/ Ha (Table 1.4) (MCB, 2018c). This figure shows that the average of cocoa productivity in the West and East Malaysia is far from the targeted national cocoa beans productivity. Figure 1.4 also shows a clear pattern of the decreasing cocoa productivity from 2007 until 2017 for both regions. From the data provided, Malaysia cocoa farmers suffer from low volume and inconsistent quality of cocoa beans. Nevertheless to achieving the target of improving cocoa annual production, is possible over the agricultural support services.

Table 1.4: Annual Cocoa Productivity by Region in Malaysia

Year	Annual Cocoa Productivity (MT/Ha)		
	West Malaysia	East Malaysia	Malaysia
2007	3.594	0.522	1.236
2008	3.208	0.423	1.306
2009	3.272	0.364	1.006
2010	2.485	0.335	0.779
2011	0.474	0.168	0.221
2012	0.499	0.262	0.310
2013	0.260	0.191	0.203
2014	0.238	0.142	0.166
2015	0.176	0.072	0.095
2016	0.160	0.085	0.101
2017	**0.109**	**0.045**	**0.059**

Source: Malaysian Cocoa Board Statistics (2018c)

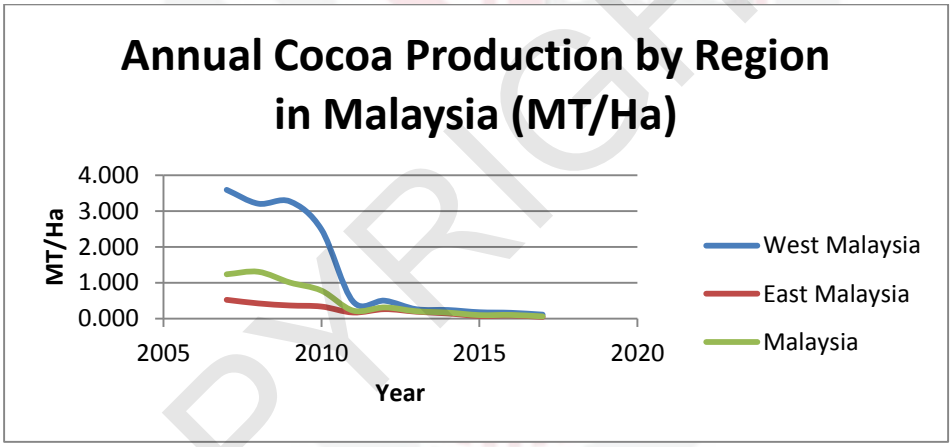

Figure 1.4: Annual Cocoa Productivity of Smallholder by Region in Malaysia

Source: Malaysian Cocoa Board Statistics (2018c)

1.3 Problem Statement

1.3.1 Pratice Gap

The Malaysian government is aware of the challenges faced by the cocoa industry. Particularly, relating to issues in productivity and the decreasing cocoa cultivation area in the upstream segment. Through appropriate exploitation of planting technology, sound management, as well as as the commitment to strong signal for positive improvement in productivity are able to be achieved. This can be seen through the Malaysian national average of about 0.9 MT/Ha to 1.5 MT/Ha or greater.

In Malaysia, cocoa is one of the commodity crops planted by estate and smallholder in the East and West Malaysia. However, the annual production of cocoa smallholder in both areas are different in 2017, where they are able to produce 0.045 and 0.109 MT/Ha (MCB, 2018c) respectively. Ramle (2012) had revealed that even though the MCB adopted similar approach in managing and delivering knowledge and technologies to farmers all over Malaysia, the performance of the farmers from different areas differs. This problem leads to the decline of Malaysia cocoa bean production annually since 2007 (1.236 MT/Ha) reaching the lowest average level in 2017 (0.059 MT/Ha) (MCB, 2018b). Although MCB has helped farmers by giving various agri-support services and technology, however, the unsatisfied production result was observed. The gap between targeted productivity and current productivity of cocoa bean for west and east Malaysia were 97% and 93%, respectively. By improving the competency of MCB's extension agents from difference area might improve the cocoa production.

1.3.2 Knowledge Gap

Extension agent competencies were included knowledge, skills, traits, abilities and attitudes that enable them to perform their tasks efficiently and effectively. Competencies in terms of technology transfer and human resource development need to be focussed on assessing the performance of extension agents in carrying out extension program tasks. Transfer of technology competencies can be seen through skills in technology transfer and technology evaluation. Whereas competence in human resource development can be measured by leadership skills, decision making support skill and social skills. The combination of these two competencies can be regarded as a benchmark or indicator for improving extension agent skills in both areas through a competent extension agent. This study intended to make sure MCB's extension agenst qualified with the skills as they are the responsible who transfer the technology to farmers.

1.3.3 Theory Gap

Based on Iceberg Model of Spencer and Spencer (1993), on knowledge and skills (visible part) in MCB agriculture extension programme planning by involving three skills, namely technical skill, technology delivery skill and technology evaluation skill. Whereas leadership skill, decision making support skill and social skill were skills for human resources development competency. All this skills are influence to work performace of MCB's extension agent and the influence of skill was differences by region. These differences are called partial measures of productivity. The variation skills that contribute to work performance of MCB's extension agents in West and East Malaysia will serve as a benchmark to help the agency to improve future work performance of their extension services by area.

1.3.4 Research Gap

This study must be conduct due to lack of study in agriculture extension research. Although similar studies were conducted by Rahim (2010), they were limited studies have been conducted that have placed an emphasis on combining the process of technology transfer and human resource development competencies needed by extension agents for personal and clients" development for improved performance. Besides, Ramle (2012) had mention, even though adopted similar approach in managing and delivering knowledge and technologies to farmers all over Malaysia, the performance of the farmers from different areas are differences. Consequently, there were short of reference to show the study of extension agents work performance by different area and how to defined the difference indirectly. Thus, this study will contribute to research gap.

1.4 Objective of the Study

1.4.1 General Objective

The general purpose of this study was to investigate work performance (WP) of extension agents (EAs) in Transfer of Technology (ToT) skills and Human Resource Development (HRD) skills as perceived by productive cocoa grower in Malaysia.

1.4.2 Specific Objectives

Specific purposes of the study were:

I. To determine the skills level of EAs related to ToT skills and HRD skills and WP as perceived by productive cocoa grower in Malaysia;
II. To determine the relationship between HRD skills and ToT skills with the WP of EAs as perceived by productive cocoa grower in Malaysia;
III. To determine which skills contribute the most towards WP of EAs as perceived by productive cocoa grower in Malaysia.

1.5 Research Hypothesis

The following are the hypothesis related to third specific objectives of the study:

- **H_a1:** There is no significant difference in technical skill contributed to extension agent work performance as perceived by productive cocoa grower in Malaysia;
- **H_a2:** There is no significant difference in technology delivery skill contributed to extension agent work performance as perceived by productive cocoa farmers in Malaysia;
- **H_a3:** There is no significant difference in technology evaluation skill contributed to extension agent work performance as perceived by productive cocoa farmers in Malaysia;
- **H_a4:** There is no significant difference in leadership skill contributed to extension agent work performance as perceived by productive cocoa farmers in Malaysia;
- **H_a5**: There is no significant difference in decision making support skill contributed to extension agent work performance as perceived by productive cocoa farmers in Malaysia;
- **H_a6:** There is no significant difference in social skill contributed to extension agent work performance as perceived by productive cocoa farmers in Malaysia;

1.6 Significant of the Study

1.6.1 Theory

This study had supported the Iceberg Model of Competency on knowledge and skills in MCB agriculture programme planning by involving three variables of transfer ToT and three variables of HRD. Therefore, the finding of this study will serve as an input for the government especially, the MCB as this will assist them in improving their extension services by cocoa farmer areas. The skills and knowledge identified can also become a contributor in enhancing Malaysian cocoa production through identifying the workers' competency and agency must have's to further develop their strategies.

1.6.2 Practice

In term of practice, the findings from the regression model shown that each area has a different value of WP of EA in terms of skills requirements. The implementation of incorrect or non-focused training to expanding agents will be detrimental to the agencies in terms of finance and time. Therefore, MCB needs to provide specific training to their extension agents to enhance the skills and indirectly implicate them in the work performance.

This study able to assist the agency in recognizing the strengths and weaknesses of their extension agents and become more effective in future planning, implementation, monitoring and evaluation. By determining the competencies (skill and knowledge) and the work performance of extension agents, organization eff ectiveness can be expected to increase. As a result, improved competency of extension agents may enhance cocoa farmers' standard of living, increased cocoa production and, subsequently, improvements in the national economy through extension agents. As mention by Blanckenberg (1984); Owens & Simpson (2002), weaknesses in extension performance are frequently due to extension staff problems. It is important for MCB to examine the policies they implement to improve extension workers' commitment towards their work performance and extension organizations.

1.6.3 Policy

Finally, this study has a significance to MCB policy. Without having the appropriate skills and knowledge, the confidence and effectiveness of the extension agents in conveying information will be affected. This issue will indirectly cause the cocoa productivity to decline as the technology provided by MCB are not fully utilized due to the weakness of the extension agents in relaying proper communication. The new cocoa area would not be expanded when farmers are unprofitable and thus, the agency's objectives are unable to be achieved.

1.7 Definition of Terms

Work Performance: Work performance refers to the outcome produced or behaviour exhibited by extension workers in order to perform certain job activities over a specific period of time (Ali, 2008). According to Williams (1998), performance has been used as a synonym for output, efficiency, motivation individual productivity, organisational effectiveness, production, profitability, cost effectiveness, competitiveness and work quality.

Competency: Competency is defined as knowledge, skills, abilities, traits and behaviours that make a person to perform a task within a specific function or job (Vichita & Jintawee, 2007). Competence is one's ability to demonstrate a system and function-based layout of the behaviour in achieving performance goals (Rohaila *et al*., 2007).

Extension Agent: Extension agents was defined as the change agent that bring about changes of farmers' knowledge, skills and attitudes. The role of extension agents will be more on knowledgeable workers who would give advisory and consultancy services to the farmers (Jasmin *et al*., 2013).

Productive Cocoa Grower: Cocoa farmers who had age of tree around 5 to 7 years old. They also involved at lease 2 training with Malaysia Cocoa Board (Motolani *et al.*, 2017).

Transfer of Technology : Transfer of technology was defined as the process of transferring technology from the places or research groups of its origination to extensive distribution among more people and places. It can happen among universities, from universities to businesses, from large businesses to smaller ones, from governments to businesses, across borders, both formally and informally, and both openly and surreptitiously (Grosse & Robert, 1996).

Human Resource Development: Human resource development was defined as the process of facilitation and ensuring the achievement of competencies required by the people to complete certain activities or tasks intended to achived desired outcomes (Muchira & Kiambati, 2015).

Technical Skill: Technical skills was defined as the abilities and knowledge needed to perform specific responsibilities. It is often related to mechanical, information technology, mathematical, or scientific jobs (Rogers, 1969).

Technology Delivery Skill: Technology delivery was defined as linked to the process of working with client, where the process of delivering technology enables an employee to improve their skills and understand the technology in their professional services (Corrina, 2015).

Technology Evaluation Skill: Evaluation skill was defined as the capabilities of extension agents to gather data and analyse it in order to determine which objectives have been accomplished. Technology evaluating skill can help an organization to identify discrepancies between technology adoption - whether the organization had achieved its objectives after the technology adoption (Bennett, 1975).

Leadership Skill: Leadership was defined as the skills of influencing people by the activities of an organised group in efforts towards goal setting and goal achievement (Hogan *et al*., 1994). Siewiorek *et al.*, (2012) mentioned that leadership skills are persuading people to follow direction.

Decision Making Skill: Decision Making Skill was defined as a process of classifying and choosing an alternative way for one potential possibility among others appropriate to the demand of the situation that happened (Miller & Byrnes, 2001; Rehman & Khan, 2015).

Social Skill: Social skill defined as behaviors that make communication possible with others (Yüksel, 1999). Social skills are learned behaviors that ease an individual into establishing good relationships with others (BacanlÕ, 1999).

1.8 Limitation of the Study

Like any other researches, this study was faced with a number of limitations. Results may be limited and different from those researches for others extension agent's performance with different background or agencies. For this study, the limitation was in the framework and data analysis part. The analysis using t-test not appropriate to be used for comparison of competency between two areas (location). Therefore, the method for analysis was changed using Adj.$\mathbf{R}^2$ in order to interpret indirectly comparison of work performance by location (demography).

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