PREPRINT

PERTANIKA JOURNALS

SCIENCE & TECHNOLOGY

Journal homepage: http://www.pertanika.upm.edu.my/

Work Performance of Extension Agents: Skills of Transfer of Technology and Human Resource Development in Cocoa Industry

Murni Azureen Mohd Pakri[1]*, Salim Hassan[1], Oluwatoyin Olagunju[2] , Mohd Yusoff Abd Samad[1] and Ramle Kasin[3]

[1]Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia,43400 UPM, Serdang, Selangor, Malaysia
[2]Department of Agricultural Economics and Extension, Faculty of Agriculture, Adekunle Ajasin University, Akungba-Akoko, Nigeria
[3]Head Office of Malaysian Cocoa Board, Tingkat 5, 6 & 7, Wisma SEDCO, Lorong Plaza Wawasan, 88999, Kota Kinabalu, Sabah, Malaysia

ABSTRACT

Transfer of technology (ToT) and human resource development (HRD) are essential components to acknowledge extension agents' performance. Understanding the foundations and implications of ToT and HRD is vital for improving agriculture extension agents in research and extension programmes. This study was designed to determine extension agents' ToT and HRD skills to explain the work performance of Malaysian Cocoa Board (MCB) extension agents in East Malaysia. A total of 315 productive cocoa farmers exposed to the extension activities for a minimum of five years and had attended two basic training from the agency were selected to answer the questionnaire within a month. The researcher applied Krejie and Morgan formula to determine the sample size based on the population using stratified random sampling. The data were analysed using descriptive statistics, multiple regression and Pearson correlation analysis. Results showed a positive and moderate relationship between ToT and HRD towards work performance. However, from the six variables tested, only three variables were significant towards work performance, namely technical skill (p=0.000), leadership skill (p=0.015)

ARTICLE INFO

Article history:
Received: 5 July 2021
Accepted: 15 September 2021
Published: 24 November 2021

DOI: https://doi.org/10.47836/pjst.30.1.05

E-mail addresses:
azureenpakri@gmail.com (Murni Azureen Mohd Pakri)
salimhassan@upm.edu.my (Salim Hassan)
toyinolagunju01@gmail.com (Oluwatoyin Olagunju)
myusoffas@upm.edu.my (Mohd Yusoff Abd Samad)
ramle@koko.gov.my (Ramle Kasin)
*Corresponding author

ISSN: 0128-7680
e-ISSN: 2231-8526

and decision-making skill (p=0.000). Therefore, the extension agents' skills must be strengthened, their working knowledge updated, and new concepts for developing agriculture that can fulfil complicated demand patterns, reduce poverty and pressure and increase productivity must be developed. This study also strengthens the iceberg model by adding six characteristics of skills in extension agents. The outcomes would contribute to the policymakers and MCB's management in elevating the extension agents' performance through training and developing ToT and HRD.

Keywords: Extension agent; human resource development; training and development; transfer of technology; work performance

INTRODUCTION

Cocoa bean production has been declining since 1990, while the downstream processing sector shows an upward trend (Malaysian Cocoa Board, 2018). Currently, the major cocoa plantation is owned by smallholders. Therefore, the plan for a large-scale plantation remains unseen because of the loss of interest among the farmers. Other challenges for a large-scale plantation include the competition for land use from oil palm cultivation, labour constraints, low world cocoa prices and the cocoa pod borer's infestation (Lee, 2013). In addition, there is an imbalance between upstream and downstream in the cocoa sector (Figure 1). As a result, the cocoa bean production is still low, and the gap between the current (0.7 tons/ha/year) and targeted production (1.5 tons/ha/year) is more than 50% (Malaysia Cocoa Board, 2018). In this case, the role of extension agents needs to be improved to apply new technologies introduced by the Malaysian Cocoa Board (MCB).

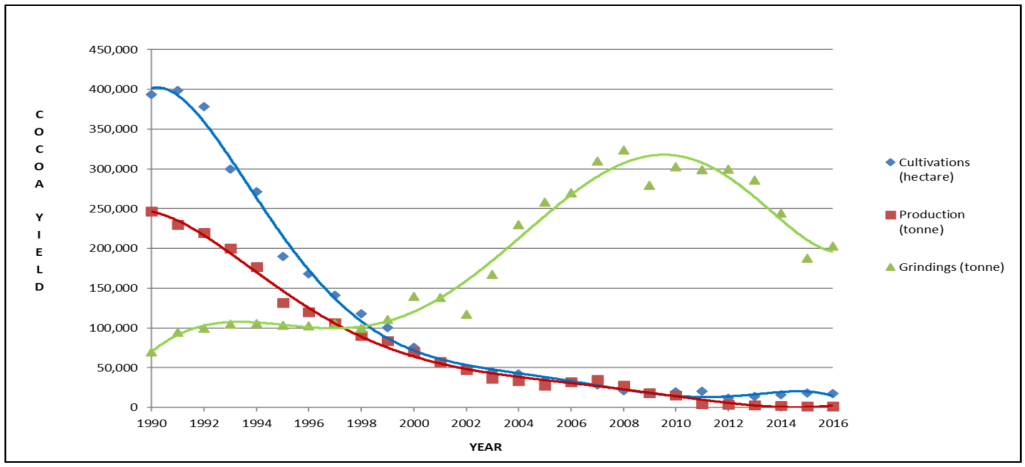

Figure 1. Malaysia: Cultivation, Production and Grinding from 1990-2016 (Malaysian Cocoa Board, 2017)

The work performance of extension agents will reflect the work performance of farmers to increase productivity. As today's organisation endures a parcel of challenges, individuals' work performance should be addressed and emphasised in an organisation's plan to empower them to succeed within the latest work environment or situation. The transfer of technology (ToT) and human resource development (HRD) skills are essential components to acknowledge the performance of extension agents. Conversely, Saleh and Man (2017) mentioned that the low performances by extension agents in the ToT and HRD skills have been attributed to inadequate skills and inadequacies in professional competencies needed to perform the work assigned to them skillfully. In order to transfer the technologies to farmers, extension agents need to have good interaction and relationships with them so that the process of transferring technology is booming. With the development of agriculture, especially cocoa, extension agents' role in supporting cocoa farmers in cocoa technology is vital as the technology itself is already there. Therefore, this study looks at the role of extension agents in predicting the successful adoption of technology among productive cocoa farmers reflected by the productivity of cocoa bean production.

Emerging concepts from present theories will help to explain the theories in the research framework. For example, a quantitative study by Motolani et al. (2017) on the performance of extension agents in MCB, West Malaysia, used the same six variables to determine the work performance in ToT and HRD skills. However, this study was conducted only in West Malaysia. Thus, this current study will cover Sabah to Sarawak as the East area dominates Malaysia's cocoa production. The study will highlight the importance of developing HRD while delivering the technology. Spencer and Spencer (1993) highlighted that by knowledge qualification and skills are vital and thoroughly explained the competence structure. The iceberg model will sufficiently explain the relationship between knowledge, skill and work performance of extension agents in the MCB.

Model

This research focused on the knowledge and skills of extension agents' work performance. Predicting future job performance or behaviour of a specific criterion or standard is an important quality of competency. For this, Spencer and Spencer (1993) used the iceberg model, which consists of two parts: hidden (containing motives, characteristics and self-concepts) and visible (including motives, traits, self-concepts, knowledge and skills) (Figure 2).

The first part of this study focused on the extension agents' knowledge and skills in ToT and HRD. Knowledge is the information of specific areas, while the capacity to accomplish a specific task is the skill–the iceberg model suits both the extension agents and farmers. In the visible part, knowledge and skills could be learned and practised. First, however, the hidden characteristics need to be brought up. The elements include the motives, traits and

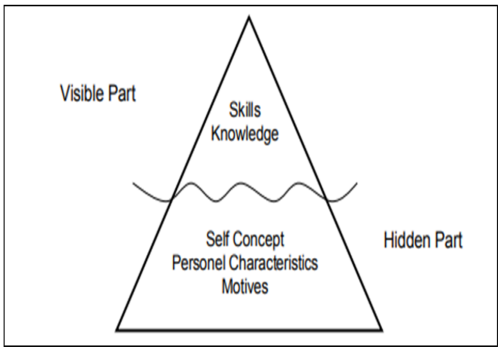

Figure 2. The Iceberg Model of Competence by Spencer and Spencer (1993)

self-concepts in the soul of humanity itself. This hidden part leads to the behaviour of reaching the goals and creates the path for higher productivity of extension agents, especially farmers.

The MCB has established an extension programme to provide farmers with technology in knowledge, and resources to address these issues. This programme was joined by extension agents responsible for sharing the MCB's technologies with the farmers. The extension agents served as an intermediary between government agencies and farmers to distribute information and convince farmers to adopt relevant technologies (Tiraieyari et al., 2014). This engagement will highlight the extension agents' competencies, which are critical for transferring technology to farmers. Therefore, the objectives of this research were:

1. To determine the level of transfer of technology and human resource development component with work performance.
2. To determine the relationship between the transfer of technology and human resource development with work performance.
3. To identify the most crucial factor contributing to work performance.

This study's goal was to understand better the link between ToT and HRD in terms of job performance. This research will aid extension agents in gaining a better understanding of the topic and serve as a guide or source of information to help them improve their knowledge and skills in transferring the technology to farmers. As a result, extension agents will be able to identify important aspects pertaining to their work performance through a better grasp of ToT and HRD.

This study also strengthens the iceberg model of competencies by adding six characteristics for the skills in extension agents. Therefore, this study aimed to provide knowledge about the skills of extension agents in the MCB to identify the factors influencing the extension agents' work performance. Moreover, the result of this study will serve as an input for the MCB to improve extension services in training cocoa farmers. Also, the knowledge and skills can help improve cocoa farmers' skills to increase their productivity by using proper technology techniques and skills in their farms.

Literature Review

As today's organisations endured a parcel of challenges, individuals' work performance ought to be addressed and should be in every organisation's plan for them to succeed in any work environment or situation. Work performance is behavioural, measurable, multifaceted and incidental and is additionally a sum of recurrent events which workers have done in a normal range in the association (Chu & Lai, 2011). In this currrent study, work performance's definition will gauge the extension agents' capabilities on how they conduct the ToT and HRD to farmers and how committed they are to their jobs.

Cocoa plantation needs to be restarted to produce good quality cocoa beans continuously. The ToT is one equipment that needs to be considered necessary to improve cocoa bean production. The function of agricultural extension agents is vital to help in the ToT and HRD (Motolani et al., 2017). Agricultural extension is a continuous process of providing farmers with helpful information and aiding them in obtaining the knowledge, skills and attitudes necessary to effectively employ information and technology to boost productivity (Sail, 2010).

Extension services' effectiveness was also heavily reliant on qualified extension agents who understood their tasks and were competent in them. They were responsible for transferring information to farmers during the entire extension process. Extension services were established worldwide according to various ideas, and in certain nations, extension programmes were used to transfer government directives to rural areas. As a result, the responsibility of extension officers in transferring technology and technical competence to farmers to raise their production is critical to the success of extension services (Rahim, 2008).

Transfer of technology, also known as ToT, transfers the technology to the recipients. ToT is used loosely in public discourse, even though it is tightly defined in academic literature. The ToT encompasses a broad scope of activities that lead to the adoption and practice change, including services from extension agents and the diffusion of knowledge to the clients (Ministry of Primary Industries, 2013). According to Altalb et al. (2015), technology encompasses not only the invention of machines and equipment or the introduction of new objects but also skills, talents, knowledge, systems and procedures. All of these are required for them to function and provide outcomes. Technology should also encompass the knowledge and skill required to carry out procedures, goods and services, along with organisation and operational measures.

Meanwhile, human resource development or HRD encourage and ensure the procurement of competencies required by the individuals. Individuals are the employees, supervisors, pioneers, or people in common to perform certain activities or tasks expected to achieve desired outcomes. Thus, human resource development is a form of systematically planned activity, training and development, career planning and performance

appraisals for organisational development (Salleh & Sulaiman, 2016). This aspect plays a significant role in deciding the efficiency and effectiveness of workers' performance in the organisation. Furthermore, human resource development assumes importance in fast-changing organisational environments and demands new techniques by responding to environmental changes.

Hypotheses Development

This study tested the following hypotheses:
H1: Technical skill is significantly related to work performance.
H2: Technology delivery skill is significantly related to work performance.
H3: Technology evaluation skill is significantly related to work performance.
H4: Leadership skill is significantly related to work performance.
H5: Decision-making skill is significantly related to work performance.
H6: Social skill is significantly related to work performance.

MATERIALS AND METHODS

Research Design

This study was a descriptive correlation that combined descriptive and correlative studies. In this study, work performance was a dependent variable (Figure 3). At the same time, technology transfer, which was made up of three components: technology skill, technology delivery skill and technology evaluation skill, was treated as an independent variable. Additionally, leadership abilities, decision-making skills and social skills were the three components of human resource development.

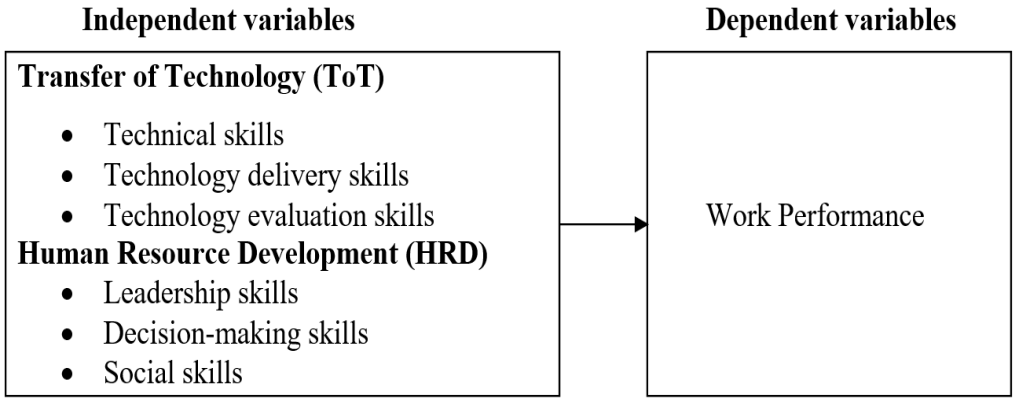

Figure 3. Independent and dependent variables

Population and Samples

The study's target group was all productive cocoa farmers in East Malaysia exposed to extension activities conducted by the Malaysian Cocoa Board's (MCB's) extension agents for at least five years and has received at least two MCB training. A geographically stratified sample methodology was used in this research. Sabah and Sarawak are the two regions that makeup East Malaysia. The total number of productive cocoa farmers in these two regions is 1360, with 1095 farmers in Sabah and 265 farmers in Sarawak. The list of productive cocoa farmers in each area was obtained from MCB. Based on Krejcie and Morgan's table, a sample size of 297 is needed for a population of 1360 (Krejcie & Morgan, 1970). The questionnaires were then distributed, and we managed to collect more than the sample size needed based on the Krejcie and Morgan's table of 297. Therefore, a final total number of 315 productive cocoa farmers were selected based on the distributed questionnaires.

Instrument and Measurement

This study utilises an established questionnaire as the instrument to gather data from the respondents. The original questionnaire was initially developed by Motolani et al. (2017). There were four sections to the questionnaire. The first section of the questionnaire was intended to gather information on the respondents' demographic profiles. The extension agents' technical and human resource development skills were measured in three dimensions in the second and third sections. The last part of the questionnaire measured the work performance of extension agents. Six Likert scale points were used to measure respondents' perception of the statement given, consisting of ToT, HRD and work performance on the cocoa technology used. The items in the questionnaire were created in response to the study's research questions and objectives. The pre-test analysis was conducted; reliability, where alpha is more than 0.7, was tested in the final questionnaire development stage (Table 1).

Table 1
Reliability test

Items	No. sub items	Cronbach's Alpha Pre-test	Cronbach's Alpha Final test
Technical skill	9	0.934	**0.886**
Technology delivery skill	9	0.967	**0.881**
Technology evaluation skill	9	0.859	**0.899**
Leadership skill	8	0.899	**0.894**
Decision-making skill	7	0.825	**0.864**
Social skill	7	0.785	**0.861**
Work performance	8	0.950	**0.863**

Data Analysis

For data analysis, SPSS statistics version 23.0 was used:

1. Mean, frequency and percentage statistics were used to perform a descriptive analysis of the respondents' profiles.
2. The range level as in Table 2 (low, moderate and high) was used to describe the ToT, HRD and work performance levels based on mean, frequency and percentage values.
3. The associations between ToT and HRD with work performance were examined using Pearson's correlation coefficients.
4. A multiple regression analysis was carried out to determine the most important elements influencing ToT, HRD and work performance.

Table 2

Level of mean score

Likert Scale Level	
1 - 2.669	**Low**
2.67 – 4.339	**Moderate**
4.34 – 6	**High**

RESULTS AND DISCUSSION

Table 3 shows the demographic characteristics of the respondents. The descriptive analysis used in the study was based on the frequency and percentage of respondents' distribution.

Table 3

Respondents' and farm profiles

Profile	Frequency	Percent (%)
Race		
Malay	55	17.5
Chinese	8	2.5
Orang Asli	4	1.3
Kadazan	126	40
Murut	16	5.1
Bajau	1	0.3
Iban	69	21.9
Bidayuh	9	2.9
Sungai	10	3.2
Idahan	2	0.6
Others	15	4.8

Profile	Frequency	Percent (%)
Gender		
Male	269	85.4
Female	46	14.6
Age		
≤30	15	4.8
31-40	44	14
41-50	66	21
51-60	104	33
≥ 61	86	27.3
Occupation		
Full time	163	51.7
Part time	152	48.3

Table 3 *(Continued)*

Profile	Frequency	Percent (%)
Farm Profile		
Year of Cocoa Planting		
2010-2006	262	83.2
2005-2001	17	5.4
At/Before 2000	36	11.4
Clone/Farm		
< 3 clones	183	58.1
3-5 clones	118	37.5
≥ 5 clones	14	4.4
Hectarage		
< 1	29	9.2
1-3.	277	87.9
3.1-5	7	2.2
5.1-7	2	0.6
Source of Cocoa Information		
MCB Officers	292	41.4
Family	106	15
Friends	154	21.8
Brochure	57	8.1
Radio	13	1.8
TV	37	5.2
Newspaper	14	2
Internet	26	3.7
Others	6	0.9

Transfer of Technology (ToT)

Table 4 shows the distribution of technical skills, technology delivery skills and technology evaluation skills. Again the distribution was categorised in low, medium and high levels, as in Table 4.

91.7% showed high-level technical skills for technical skills, followed by 7.9% in the medium and 0.3% in the low level. It means that most farmers mentioned that the extension agents had knowledge and skills about the technology. Therefore, technical skills were vital as the main component of the extension agents' work. The results align with a study by Al-Rimawi et al. (2016) concluded that technical skills and attitudes increased the chance of success in extension work.

Table 4

Transfer of technology skills

(A) Technical skill	Frequency	Percent
Low	1	0.3
Medium	25	7.9
High	289	91.7
Total	315	100
Mean = 5.318	SD = 0.827	
(B) Technology delivery skill	Frequency	Percent
Low	2	0.6
Medium	32	10.2
High	281	89.2
Total	315	100
Mean = 5.323	SD = 0.854	
(C) Technology evaluation skill	Frequency	Percent
Low	1	0.3
Medium	35	11.1
High	279	88.6
Total	315	100
Mean = 5.191	SD = 0.852	

In Table 4B, 89.2% showed a high level for technology delivery skills, followed by the medium at 10.2% and low at 0.6%. Technology delivery skills function as the way the technology is being transferred to the farmers. Therefore, extension agents were needed to master the process of delivering the technology. Somehow, the technology will be not understood without the right delivery technique, and they will refuse the technology itself.

The level of technology evaluation skill had the same trend as technical skill and technology delivery skill (Table 4C). About 88.6% showed a high level of technology evaluation skill, 11.1% at medium and 0.3% at low. Evaluation is needed to confirm the technology that has been used, and farmers needed the extension agents who were able to evaluate their work. Thus, extension agents must suggest a suitable technology according to the problem encountered by farmers in the field. The performance in any activity requires specific knowledge competencies to identify or solve problems (Melak & Negatu, 2012). Also, agriculture extension has a role to play in agricultural development. According to

Anaeto et al. (2016), the role of extension agents can be well-defined as norms, values and interaction patterns associated with a specific group of people.

Human Resource Development (HRD)

Leadership skills, decision-making skills and social skills are the three sub-variables of HRD, as stated in Table 5.

Table 5

Human resource development skills

(A) Leadership skill	Frequency	Percent
Low	1	0.3
Medium	34	10.8
High	280	88.9
Total	315	100
Mean = 5.281	SD = 0.891	
(B) Decision-Making skill	Frequency	Percent
Low	1	0.3
Medium	29	9.2
High	285	90.5
Total	315	100
Mean = 5.238	SD = 0.816	
(C) Social skill	Frequency	Percent
Low	3	1.0
Medium	55	17.5
High	257	81.5
Total	315	100
Mean = 5.05	SD = 1.047	

In the leadership skills, 88.9% showed a high level, while only 10.8% for medium and 0.3% for low (Table 5A). Leadership was important for extension agents to develop leadership skills among farmers. Farmers need to increase their knowledge and skills in leadership, especially those who need to develop their ability to administer and manage the farm. If these were not implemented, the clients would continue to rely on extension agents, and the goal of getting them to work will not be accomplished.

The results in Table 5B show that the decision-making skill level was high (90.5%), 9.2% for medium and 0.3% for low level. Decision-making was necessary for the farmer to

decide without waiting for the extension agents' instructions. Extension agents are needed to assist and train farmers to make decisions precisely according to the problems faced. This skill was also crucial for farmers to understand their situation in detail and make an effort to generate the right decision.

For social skills, 81.6% showed a high level, 17.5% at medium level and 1.0%at low level (Table 5C). Social skill was vital as it was a way of interaction between extension agents and farmers. Without good interaction or social skills, the process of transferring technology will be affected. Extension work will be more accessible when social networking disseminates the technology from extension agents to farmers.

Work Performance

The extension agents' work performance level was high at 91.1%, while medium and low were 8.6% and 0.3%, respectively (Table 6). These numbers indicated that the extension agents performed well in their extension work. Therefore, the extension agents' performance is reflected in the performance of farmers and increased productivity.

Table 6
Work performance

Work Performance	Frequency	Percent
Low	1	0.3
Medium	27	8.6
High	287	91.1
Total	315	100
Mean = 5.244	SD = 0.879	

Work engagement and workplace self-efficacy were both associated with work performance, according to Alessandri et al. (2015), and workplace self-efficacy was linked to work engagement. However, Okwoche et al. (2015) found that most agricultural extension agents were moderately satisfied at work, followed by a low level of satisfaction and finally a high level of satisfaction. The satisfaction levels experienced by agricultural extension agents were due to lack of training, welfare package and salary.

Relationship Between Transfer of Technology (ToT), Human Resource Development (HRD) and Work Performance

The ToT and HRD, when associated with the respondent's work performance, were found to have a positive and moderate relationship, with each having a value of r = 0.673 and 0.654, respectively (Table 7).

Table 7

Relationship between ToT and HRD with work performance

Variables	X1	X2	Y
X1 Transfer of Technology	1	0.714**	0.673**
X2 Human resource development		1	0.654**
Y Work performance			1

**. Correlation is significant at the 0.01 level (2-tailed)

Every component within the ToT and HRD skills was analysed to determine its relationship to work performance. Table 8 shows the six components having a positive and moderate relationship with work performance.

Table 8

Relationship between ToT and HRD skills with work performance

		X1	X2	X3	X4	X5	X6	Y
X1	Technical Skill	1	0.788**	0.639**	0.640**	0.680**	0.574**	0.652**
X2	Technology Delivery Skill		1	0.695**	0.690**	0.708**	0.625**	0.633**
X3	Technology Delivery Skill			1	0.638**	0.646**	0.586**	0.528**
X4	Leadership Skill				1	0.729**	0.670**	0.634**
X5	Decision-Making Support Skill					1	0.763**	0.701**
X6	Social Skill						1	0.611**
Y	Work Performance							1

** Correlation is significant at the 0.01 level (2-tailed)

This analysis showed that the ToT components, technical skill (r = 0.65), technology delivering skill (r = 0.63) and technology evaluation skills (r = 0.53), affected the extension agents' work performance. Likewise, leadership skills (r = 0.63), decision-making skills (r = 0.70) and social skills (r = 0.61) for HRD also affected their work performance. The

results indicated that the extension agents should have the skills to do the job to efficiently and effectively build the farmers' capability and potential. Motolani et al. (2017) revealed positive and strong connections between agricultural extension agents' technical skills, technology delivery skills, technology evaluation skills, leadership skills, social skills and work performance.

Furthermore, each extension strategy has its characteristics, features and properties (Baig & Aldosari, 2013). As a result, the degree to which clients accept various strategies varies. On the other hand, extension agents must do or have the knowledge and skills of all available technologies. According to Anandajayasekeram et al. (2008), the fundamental difficulty faced by agricultural extension was that the extension team was not adequately equipped with sufficient skills to function optimally. Therefore, the extension agents' skills must be strengthened, their working knowledge updated, and new concepts for developing agriculture that can fulfil complicated demand patterns, reduce poverty and pressure and increase productivity must be developed.

According to Wahab et al. (2012), the relationship between technology transfer features and technology delivery significantly impacts extension agents' and farmers' performance. The ability to acquire and use transferred technologies can boost average performance. As a result, the extension organisation's competitive advantage will be maximised. The crucial role of human resources provided an answer to the evolution of confidence in worker relations to their clients to achieve strategic objectives and performance (Deadrick & Stone, 2014). The practices that work synergistically to enhance employee's skills, commitment and productivity cultivate a strategic edge due to effective and efficient implementation of HRD. Human capital elements, combined with the employee's skills, commitment and productivity, would result in high-performance systems (Gerhart, 2012; Chapman et al., 2016).

Analysis of Coefficient for Work Performance

From the regression analysis, most contributed components on the extension agents' work performance were identified.

Table 9

Estimated coefficient for work performance model

Performance dimension	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	**Beta**		
Constant	0.752	0.235		3.202	0.002

Table 9 *(Continued)*

Performance dimension	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	**Beta**		
Transfer of Technology					
Technical Skill	0.270	0.069	0.249	3.890	0.000
Technology Delivery Skill	0.074	0.071	0.074	1.051	0.294
Technology Evaluation Skill	-0.047	0.058	-0.046	-0.813	0.417
Human Resource Development					
Leadership Skill	0.146	0.059	0.150	2.455	0.015
Decision-Making Skill	0.321	0.070	0.**319**	4.560	0.000
Social Skill	0.090	0.052	0.104	1.726	0.085

$R = 0.754$, $R^2 = 0.568$, Adjusted $R^2 = 0.559$, Std. Error of the Estimate = 0.445

The highest Beta value explained most of the contributed skills. The components of decision-making skills had the most significant Beta value (0.319) as the extension agents' performance strongest predictor compared to other skills (Table 9). Agricultural extension services have been recognised for improving farmers' knowledge and farming methods and their attitudes toward agricultural advancements. With a rating of 0.270, technical skills had the second-highest Beta value, with leadership skills coming third, having a Beta value of 0.146. Other skills received a small Beta value, allowing them to contribute to work performance computation. It means that decision-making, technical, and leadership skills explained 55.9% (R^2 value adjusted) of the extension agents' work performance.

Three variables that were significantly different ($p < 0.05$) were technical skill ($p = 0.000$), leadership skill ($p = 0.015$) and decision-making skill ($p = 0.000$). Olagunju (2019) also found that decision-making is the most important skill for the extension agents' work performance in Malaysia, with a Beta value of 0.215 ($t = 5.33$, $p = 0.00$). Agricultural extension services are known for improving farmers' knowledge, abilities in farming practice, and attitudes toward agricultural advancements.

The other three variables which showed no significant differences ($p > 0.05$) were technology delivery skills ($p = 0.294$), technology evaluation skills ($p = 0.417$) and social skills ($p = 0.085$) towards work performance. In addition, there were negative numbers in the Beta value of technology evaluation skills. Statistically, if there is a negative coefficient, there will be negative changes in the correlation. However, technology evaluation skill has no significant differences towards work performance. If there is no correlation, there is no association between the changes in independent variables and the shifts in the dependent variables.

CONCLUSION

Extension agents' work performance reflects the performance of the farmers and will enhance productivity if the performance is excellent. As today's organisations have to face many challenges, individuals' performance should be considered at the highest level of the organisation's plan to make sure that they can succeed in the ever-changing business environment. The limitation of this study emanated from the usage of the sample meant to be representative of the whole population. Even though there is a positive relationship between the dependent and independent variables, the work performance variance of 55.9% explained the three significant independent variables. The use of productive cocoa farmers only serves as a limitation in this study as the numbers of cocoa farmers who were not involved in training may not be representative. There is a need for more diverse samples in future research. The implication in this study focused on the training of extension agents in technology transfer and human resource skills to carry out their responsibilities of transferring technology to farmers, particularly in cocoa cultivation, by providing them with in-service training and new technologies. Findings from this study will contribute to the body of knowledge in ToT and HRD, especially in the Malaysian Cocoa Board that is responsible for cocoa production in Malaysia. Finally, the researcher encourages authorities to reinforce research on farmer and extension agents' connections by giving intensive training to extension agents and farmers. This training will expand the skills and techniques of extension agents and increase the size of farmers to participate outstandingly in the programmes by institutions or on-farm research.

ACKNOWLEDGEMENTS

The author gratefully acknowledges the Malaysian Cocoa Board staff's commitment and technical assistance during the data collection and School of Graduate Studies (GRF) and Putra IPS Grant (No Grant: 9610900) for financial support.

REFERENCES

Alessandri, G., Borgogni, L., Schaufeli, W. B., Caprara, G. V., & Consiglio, C. (2015). From positive orientation to job performance: The role of work engagement and self-efficacy beliefs. *Journal of Happiness Studies, 16*(3), 767-788. https://doi.org/10.1007/s10902-014-9543-2

Al-Rimawi, A., Tabieh, M., & Al-Qudah, H. (2016). Assessing growers' perceptions of effective extension methods and information communication technologies for training vegetable growers in Jordan. *International Journal of Economics and Finance*, *8*(8), 229-236. https://doi.org/10.5539/ijef.v8n8p229

Altalb, A. A. T., Filipek, T., & Skowron, P. (2015). The role of agricultural extension in the transfer and adoption of agricultural technologies. *Asian Journal of Agriculture and Food Sciences*, *3*(5), 500-507.

Anaeto, F. C., Asiabaka, C. C., Ani, A. O., Nnadi, F. N., Ugwoke, F. O., Asiabaka, I. P., Anaeto, C. A., & Ihekeronye, N. (2016). The roles of science and technology in national development. *Direct Research Journal of Social Science and Educational Studies, 3*(3), 38-43.

Anandajayasekeram, P. (2008). *Concepts and practices in agricultural extension in developing countries: A source book*. ILRI (aka ILCA and ILRAD).

Baig, M. B., & Aldosari, F. (2013). Agricultural extension in Asia: Constraints and options for improvement. *Journal of Animal and Plant Science*, *23*, 619-632.

Chapman, E. F., Sisk, F. A., Schatten, J., & Miles, E. W. (2016). Human resource development and human resource management levers for sustained competitive advantage: Combining isomorphism and differentiation. *Journal of Management & Organization*, *24*(4), 533-550. https://doi.org/10.1017/jmo.2016.37

Chu, L. C., & Lai, C. C. (2011). A research on the influence of leadership style and job characteristics on job performance among accountants of county and city government in Taiwan. *Public Personnel Management, 40*(2), 101-118. https://doi.org/10.1177/009102601104000202

Deadrick, D. L., & Stone, D. L. (2014). Human resource management: Past, present, and future. *Human Resource Management Review*, *3*(24), 193-195. https://doi.org/10.1016/j.hrmr.2014.03.002

Gerhart, B. (2012). Construct validity, causality, and policy recommendations: The case of high performance work practices systems. *Human Resource Management Review*, *2*(22), 157-160. https://doi.org/10.1016/j.hrmr.2011.12.002

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607-610. https://doi.org/10.1177/001316447003000308

Lee, C. H. (2013). *Planting cocoa-challenges and realities*. Received September 2, 2019, from www.ipicex.com/doc1/2012/onral/planting cocoa – challenges and reality in malaysia.pdf

Malaysian Cocoa Board. (2018). *Introduction (Target Groups Development)*. Retrieved September 2, 2019, from https://www.koko.gov.my/lkm/loader.cfm?page=1

Malaysian Cocoa Board. (2017). *Statistics. Cultivation, production and grinding*. Received September 2, 2019, from https://www.koko.gov.my/lkm/loader.cfm?page=10

Melak, D., & Negatu, W. (2012). Agricultural education and technical competency of development agents in Ethiopia. *Journal of Agricultural Extension and Rural Development*, *4*(11), 347-351. https://doi.org/10.5897/JAERD12.037

Ministry for Primary Industries. (2013). *Survey of technology transfer services to farmers and growers in New Zealand p.27*. Retrieved September 2, 2019, from www.mpi.govt.nz

Motolani, M., Hassan, S., Olagunju, O., & Ramle, K. (2017). ToT and HRD competencies and its relationship to extension agents' performance among cocoa smallholders. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, *10*(12), 14-21. https://doi.org/10.9790/2380-1012021421

Okwoche, V. A. O., Eziehe, J. C., & Agabi, V. (2015). Determinants of job satisfaction among extension agents in Benue State Agricultural and Rural Development Authority (BNARDA), Benue State, Nigeria. *European Journal of Physical and Agricultural Sciences*, *3*(2), 38-48.

Olagunju, O. (2019). *Perceptions of cocoa growers in Malaysia on relationship between transfer of technology skills, human resource development skills and extension agents' work performance* (Doctoral dissertation). Universiti Putra Malaysia, Malaysia.

Rahim, M. S. (2008). *Kompetensi dan amalan pendidikan* pengembangan [Concept and practice of extension education]. Buletin Pengembangan, Bil, 1.

Sail, R. M. (2010). Kompetensi pembangunan sumberdaya manusia dan pemindahan teknologi dan kaitannya dengan prestasi kerja agen pendidikan pengembangan [Human resource development and transfer of technology competencies and their relationships to extension agents' job performance]. *Akademika*, *79*(1), 127-137.

Saleh, J. M., & Man, N. B. (2017). Training requirements of agricultural extension officers using Borich needs assessment model. *Journal of Agricultural & Food Information*, *18*(2), 110-122. https://doi.org/10.1080/10496505.2017.1281748

Salleh, K. M., & Sulaiman, N. L. (2016). Competencies among human resource development practitioners according to disciplines and levels in Malaysian organizations. *International Journal of Applied Business and Economic Research*, *14*(9), 521-533.

Spencer, L. M., & Spencer, P. S. M. (1993). *Competence at work models for superior performance*. John Wiley & Sons.

Tiraieyari, N., Hamzah, A., & Samah, B. A. (2014). Extension agents and sustainable cocoa farming: A case study of extension agents in Sabah state, Malaysia. *Modern Applied Science*, *8*(6), 210-218. https://doi.org/10.5539/mas.v8n6p210

Wahab, S. A., Rose, R. C., & Osman, S. I. W. (2012). Defining the concepts of technology and technology transfer: A literature analysis. *International Business Research*, *5*(1), 61-71. https://doi.org/10.5539/ibr.v5n1p61