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## **The Perception of Rural Smallholders on the Role of ToTE Officers as Agricultural Extension Agents in Enhancing Cocoa Productivity in the East Coast Region of Sabah**

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**Abstract:** The effectiveness of agricultural productivity improvement programs depends on the acceptance of smallholder farmers as the beneficiaries of these programs. However, differences in values, social norms, and traditional farming practices between smallholders and the guidance provided by ToTE officers as agricultural extension agents may hinder the efforts of the Malaysian Cocoa Board to sustain cocoa productivity. Furthermore, cocoa remains the second most important commodity in Sabah's agricultural economy. Therefore, this study aims to investigate the perceptions of rural smallholders regarding the role of ToTE officers as agricultural extension agents in sustaining cocoa productivity. The research strategy employs a realist ontological approach and a positivist epistemological approach to statistically justify smallholder perceptions of ToTE officers. A quantitative case study design using a survey questionnaire was conducted with 195 smallholders, selected through a census sampling method in the districts of the East Coast Zone of Sabah. The findings show that most rural smallholders agree that ToTE officers play a significant role as change agents (mean 4.43). Additionally, the role of ToTE officers as problem solvers and process facilitators showed mean values of 4.40 each. Lastly, the role of ToTE officers as resource connectors demonstrated a mean value of 4.39. It is hoped that the findings of this study will provide guidance to policymakers, particularly the Rural Development Policy (RDP), to advance the agricultural sector and cocoa smallholders in alignment with Pillar 1: Economy, Pillar 7: Prosperous Life, and Pillar 10: Development, in accordance with the roles highlighted by community change agents.

**Keywords:** Agricultural extension; rural development Policy; Sabah; cocoa; rural smallholder

### **Introduction**

The agricultural sector plays a crucial role in the nation's economic growth, particularly in rural community development. In Sabah, the agricultural sector, especially involving the three main commodities such as palm oil, rubber, and cocoa, remains a primary source of income for many communities. In line with the Rural Development Policy (RDP), the involvement of smallholder cocoa farmers in rural areas is expected to increase household income, reduce the poverty gap, and ultimately eradicate rural poverty. This is also in line

with the objectives of the 12th Malaysia Plan (2021-2025), which aims to strengthen the cocoa industry through the opening of 40,000 hectares of new cocoa plantations.

The establishment of new plantations through the New Planting Program (TB23) is expected to enhance the income of smallholder cocoa farmers by producing high-quality cocoa, such as grades SMC 1, SMC 2, and SMC 3. This aligns with the purchase prices offered by the Malaysian Cocoa Board (LKM) for rural smallholder cocoa farmers. LKM, with the role of officers from the Division of Technology Transfer and Extension (ToTE), continues to strive to increase the participation of smallholder cocoa farmers through the Cocoa Smallholder Rehabilitation Program (Rolling Plan), the Cocoa Productivity Enhancement Program (PPP), and the Cocoa Seedling Nursery Development Program (PNK) (LKM, 2022). However, poverty issues still persist among smallholder cocoa farmers in the East Coast Zone of Sabah (ECS) due to low productivity in cocoa production. The quality and quantity of cocoa produced by the community are significantly lagging behind other countries. As a result, Malaysia ranks only sixth in global cocoa production and still fails to meet both domestic and international demand (Ministry of Plantation Industries and Commodities, 2024).

In the East Coast Zone of Sabah, major cocoa-producing districts such as Tawau, Merotai, Rangu, and Apas are experiencing a decline in productivity due to the age factor of smallholder farmers, most of whom are between 50 and 70 years old (Noviatin et al., 2024; Sulaiman et al., 2022; ToTE Tawau Centre, 2022; Kasin, 2012). In other areas such as Kunak, Semporna, and Lahad Datu, smaller farms (less than 0.1 hectares) are also facing challenges in systematically managing the cocoa bean drying process. Age and daily commitment constraints make the productivity problem even more difficult to overcome (Noviatin et al., 2024; Noviatin et al., 2023). This situation affects both the quality and quantity of cocoa beans produced. Based on these issues, a study on the recovery of productivity, quality, and quantity of cocoa through the role of agricultural agencies, namely ToTE officers, should be given more in-depth focus. Research involving the development of rural smallholder cocoa farmers practising small-scale farming (less than five hectares) is essential as it contributes significantly to the nation's agricultural economy.

Since cocoa productivity still fails to meet demand, this issue continues to attract attention in current research. However, studies on the role of change agents, such as ToTE officers, as intermediaries for the rural agricultural sustainability agenda remain limited. Efforts to sustain the cocoa industry, which was introduced in 1880, are not without challenges, as it competes with the country's main commodities such as palm oil (Jelsma et al., 2019; Ibrahim et al., 2018). This justifies the need for research on the importance of examining the role of change agents in community development, particularly in promoting innovative and sustainable agriculture. In line with the perspectives of Noviatin et al., (2024), Jasmin et al., (2021), Rahim et al., (2021) and Rahim & Asnarulkhadi, (2010), change agents play a vital role as catalysts for change, problem solvers, resource linkers, and process facilitators that can influence the behaviour of smallholder cocoa farmers in improving the quality and quantity of their yields.

## Literature Review

### 1. The Role of Change Agents Theory (Havelock, 1973)

The role of change agents in this study refers to community development practitioners/community workers who bring about changes or innovations in behaviour to improve the quality of life for rural smallholder cocoa farmers (Asnarulkhadi, 2021; IACD, 2021; Bennett, 1976; Havelock, 1973). In community studies, change agents can consist of various parties such as agencies, organisations, community developers, community workers, leaders, mentors, facilitators, as well as implementers of government initiative programs aimed at driving change in the social life of the community (Rahim et al., 2021; Asnarulkhadi, 2021; Havelock & Havelock, 1973). To ensure effective change, change agents need to build and strengthen relationships with the community to foster trust among community members (Dey et al., 2020; Bauer & Freitag, 2018; Jasmin et al., 2013). This is because change in communities often requires long periods of time and does not always show the desired behaviours or practices by change agents in a short time frame (Yusuf, 2019; Tiraeyari et al., 2014).

Generally, change agents are trained individuals in human resource competence and technical competence (Jasmin, 2013; Rahim, 2010). Their purpose is to plan changes/innovations, disseminate knowledge, alter attitudes, and form new practices based on recommendations from authorities to the community being developed so that the community can make decisions independently in all aspects of life (Cho et al., 2018; Tiraieyari et al., 2014; Rahim, 2010). According to Rahim et al. (2021), based on Havelock’s (1973) theory of change agents, four roles of change agents were identified, namely as catalysts for change, problem solvers, resource linkers, and process facilitators to bring about change within communities.

The discourse on change theory in community development is rooted in the work of three main scholars: Kurt Lewin (1951) with the Three-Stage Change Model, Ronald Lippitt (1958) with the Seven-Stage Change Model, and Ronald Havelock (1973) with the Change Agent Roles Theory. Based on the context of this study, which examines the role of community workers in bringing agricultural innovations to farming communities, the selection of change theory is based solely on Havelock (1973) to study the role of change agents within communities. Havelock (1973) was one of the theorists who discussed the phenomenon of change within societal systems. According to Havelock (1973), community change is a process of planned change. Change is necessary to achieve new goals in life when the current situation is unsatisfactory (Myers, 2017; Leathers et al., 2016; Adeoye et al., 2013). The introduction of new ideas within the community is considered innovation (Yamoah et al., 2021).

Havelock (1973), through his theory, explained that there are six social change processes that a change agent will undergo in community development. These social change processes include building relationships within the community, identifying problems, utilising existing resources, selecting appropriate solutions, community acceptance of innovation, and stabilising towards progressive change. According to Rogers and Shoemaker (1971), types of change include attitude change, opinion change, behaviour change, and social change. In terms of behavioural change, change does not occur without involvement from both parties—the agricultural agency as the change agent and the target group, which is the community to be developed. The change agent acts as a benefactor, planner, implementer, and executor. Meanwhile, the farming community to be developed serves as the beneficiary of agricultural development. The aim of the change is to build the potential of the community, improve their quality of life, adopt new technologies, increase productivity and income, and strengthen local economic and social institutions. This is essential so that the community can make decisions independently and possess self-leadership qualities (Rahim & Asnarulkhadi, 2010).

<p style="text-align: center;"><b>Catalyst</b></p> <p>An individual who significantly causes something to happen for the benefit of the target community members.</p>	<p style="text-align: center;"><b>Problem Solver</b></p> <p>An individual who is helpful, dependable, and has a proven track record in solving community problems.</p>
<p style="text-align: center;"><b>Resource Linker</b></p> <p>An individual who is capable of identifying and linking both internal and external resources to achieve the objectives of the target community members and the organisation.</p>	<p style="text-align: center;"><b>Proces Helper</b></p> <p>An individual who demonstrates methods or ways of doing something, guides step by step, and provides the opportunity for the target community members to implement it.</p>

Figure 1. The Role of Change Agents  
Source: Rahim (2010)

Figure 1 illustrates the four roles of change agents in community development. In order to influence society, change agents must play various roles with different functions to establish a network of relationships with clients or the community. Change agents must act as experts in social engineering (Charatsari & Lioutas, 2020; Bennett, 1976). The four roles that a community change agent must play are as a catalyst for change, problem solver, resource linker, and process helper (Rahim et al., 2022; Havelock, 1976). Each role has specific characteristics that should be adapted to the stage and form of change (Rahim et al., 2022; Havelock, 1976).

In line with the views of Rogers and Shoemaker (1971), change agents need to be optimistic, highly motivated, and build trust with clients or the community, as the social change process is not an easy one without a positive attitude. The social system of society, with its values, norms, customs, and beliefs, presents challenges for change agents (Yusuf, 2019; Cho et al., 2018).

In summary, within the context of community development studies, community developers, community workers, community development practitioners, extension workers, and facilitators are recognised as change agents. Havelock (1973), through his theory, argues that the role of change agents is essential to accelerate the change processes, allowing innovations in community life to occur more swiftly. A change agent is someone who acts as a professional officer, intermediary, pioneer, motivator, leader, implementer, and guide towards a better future (Asnarulkhadi, 2021; Tiraieyari et al., 2014; Jasmin et al., 2013).

In this study, the role of the change agent is operationalised through the function of ToTE officers in the development of smallholder cocoa farming in rural areas as catalysts for change, problem solvers, resource linkers, and process helpers. The role of the change agent in this study refers to the perception of rural smallholder cocoa farmers towards the functions of community workers, namely ToTE officers appointed by the Malaysian Cocoa Board (LKM), who carry out the development work for smallholder cocoa farmers in rural areas.

## 2. The Role of Change Agents in the Development of Rural Smallholder Cocoa Farmers

Several studies on the cocoa commodity have been framed by the role of change agents, extension workers, or development agents. For instance, a study by Tanjungsari, Hariadi, and Sulastri (2016) found that 120 rural smallholder cocoa farmers strongly agreed that the role of extension agents as problem-solvers would effectively address cocoa productivity issues in Gunungkidul, Indonesia. The role of change agents as problem-solvers is crucial during the cocoa harvest process. As problem-solvers, rural smallholder cocoa farmers in Indonesia expect change agents to guide and motivate them to adopt new farming methods and implement recommended innovations to overcome productivity challenges.

Rural smallholder cocoa farmers in Indonesia have shown that they require change agents who act as digital communicators or agricultural consultants to bring about changes in cocoa agricultural communication technology. This was evidenced in a study by Amanah and Seminar (2022), which examined farm-field schools through a Community of Practice approach. The study found that the majority of female farmers in Indonesia were more receptive to agricultural communication technology innovations compared to male farmers. Indonesian female farmers tended to use smartphones to share market prices, types of agricultural products for sale, and their farm productivity figures with the wider community. This is because female farmers are more involved in the direct marketing of harvested cocoa beans, in contrast to male farmers, who are predominantly engaged in agronomic practices on their farms and are less exposed to digital marketing technologies.

A study on the role of change agents in cocoa farming innovation in Desa Mopusi, Bolaang Mongondow, Indonesia, was conducted by Gugule and Mesra (2022). The development activities carried out by the change agents involved providing training and guidance on selecting high-quality cocoa seeds, as well as the sowing and transplanting processes. The study found that farmers' knowledge about cocoa farming still needed improvement through regular guidance. Farmers' attitudes towards grafting were moderate, as they had doubts about its effectiveness. The findings concluded that the community needed change agents who could act as process helpers.

Several studies have documented the role of change agents in the development of rural smallholder cocoa farmers. For example, Miyittah, Kosivi, Tulashie, Addi, and Tawiah (2022), Oke et al. (2020), Ilesanmi and Afolabi (2020), and Adebayo, Babu, Sanusi, and Sofola (2015) have examined the effectiveness of integrated pest and disease management (IPDM) practices for cocoa by agricultural extension agents in Ivory Coast and Ghana. The study found that the effectiveness of IPDM for cocoa was influenced by training from extension agents, farmer-to-farmer information exchange, and regular self-observations of cocoa trees. The demographic of farmers in Ivory Coast and Ghana largely consists of low-income farmers. The study's findings suggested that change agents, acting as resource linkers, should be placed in farming communities to

ensure that information about financial assistance, such as loans for agricultural inputs, is consistently accessible to farmers.

A study by Oke et al. (2020), Ilesanmi and Afolabi (2020), and Adebayo et al. (2015) assessed farmers' participation in cocoa productivity enhancement programmes in Ivory Coast, Nigeria, and Cameroon. The study revealed that farmers' participation was influenced by their socio-economic characteristics. Moreover, the acceptance of cocoa farming technology by farmers was influenced by the leadership qualities of group leaders in promoting cocoa agricultural innovation. The findings highlight that the role of change agents as catalysts for change is essential to effectively communicate ideas, innovations, and changes in cocoa farming to farmers.

Building upon the previous reviews of the role of change agents from the perspectives of rural smallholder cocoa farmers, there is a noticeable gap in studies analysing the role of change agents as catalysts for change, problem-solvers, resource linkers, and process helpers in the context of community development, particularly the development of rural smallholder cocoa farming. However, studies such as those by Charatsari & Lioutas (2020), Awoyemi & Aderinoye-Abdulwahab (2019), Famuyiwa et al. (2018), Ibrahim et al. (2018), Maoba (2016), Takemura et al. (2014), Shah et al. (2013), Tiraieyari et al. (2014), and Tiraieyari (2009) clearly discuss the role of change agents as intermediaries in the planned community development processes. Therefore, this study examines the impact of the role of change agents through the roles of catalyst for change, problem solver, resource linker, and process helper on the sustainability of cocoa productivity.

## Methodology

The philosophy of this research is based on the ontological paradigm of realism and the epistemological paradigm of positivism (Blaikie, 2000) to determine the role of ToTE officers as change agents in efforts to improve cocoa productivity. The reality and social experience of rural smallholder cocoa farmers are objective in nature and are measured using descriptive statistical methods. In line with the defined research paradigm, this study employs a quantitative research design with a survey approach on 195 rural smallholder cocoa farmers, selected through census sampling. This means that all smallholder cocoa farmers in the Eastern Sabah Zone (ETS) districts participated in the survey.

The districts involved as the study locations are Pulau Sebatik (6 sub-districts), Tawau (2 sub-districts), Semporna, Lahad Datu, Kunak, and Sandakan. The Eastern Sabah Zone (ETS) was selected as the data collection site because the area is currently in the process of cocoa crop recovery. Additionally, the characteristics of the ETS zone align with the justification for sampling in this study, as the majority of the study participants own cocoa farms of less than 5 hectares. The definition of less than 5 hectares corresponds with the characteristics of rural smallholders required for this study. The survey was conducted by distributing questionnaires in person to the respondents.

The research instrument consisted of two main sections: Section A: Socio-Demographic Profile, and Section B: Perception of ToTE Officers as Agricultural Extension Agents. The Cronbach's Alpha value for the items in Section B was high and satisfactory overall. Descriptive statistical analysis techniques were used to describe the distribution patterns of frequency, percentages (%), and mean values of the items under study.

## The Findings

### 1. Socio-Demographic Profile of Rural Smallholder Cocoa Farmers

This study surveyed the perceptions of 195 rural smallholder cocoa farmers in the Eastern Sabah Zone districts regarding the role of ToTE officers as agricultural extension agents. Most of the respondents were male, accounting for 70.3%, while female respondents made up 29.7%. Many of the respondents practiced Islam, comprising 74.4%, and nearly all respondents were married, representing 97.9%. In terms of age, most respondents were between 51 and 60 years old, accounting for 29.2%, and most of them had between 1 to 5 dependents, with a percentage of 53.8%. In terms of ethnic distribution, most participants were Bugis (34.4%), followed by Orang Sungai (29.7%), and Bajau (13.5%). The respondents had a relatively good level of

education, as the majority had formal education up to Primary School (51.3%) and obtained the Malaysian Certificate of Education (SPM) (30.3%).

Table 1. The role of ToTE officers as catalysts

Item	Agreeableness Scale					Mean
	SNA	NA	N	A	SA	
	(1)	(2)	(3)	(4)	(5)	
<b>Perception of Rural Smallholder Cocoa Farmers on the Role of Agricultural Extension Agents as Catalysts</b>						4.43
1 Possesses technical knowledge related to MyGAP to enhance cocoa productivity.	0 (0.0%)	1 (0.5%)	6 (3.1%)	65 (33.3%)	123 (63.1%)	4.59
2 Consistently presents a positive image to the community.	0 (0.0%)	0 (0.0%)	2 (1.0%)	108 (55.4%)	85 (43.6%)	4.43
3 Frequently engages in discussions regarding technology and innovation in cocoa cultivation for productivity improvement.	0 (0.0%)	0 (0.0%)	5 (2.6%)	113 (57.9%)	77 (39.5%)	4.37
4 Demonstrates a positive attitude towards work and the development agency's organization.	0 (0.0%)	0 (0.0%)	8 (4.1%)	112 (57.4%)	75 (38.5%)	4.34

The study found that smallholder cocoa farmers in the East Coast Sabah zone have four main perceptions about the role of ToTE officers as agricultural extension agents in improving cocoa productivity. These roles are as change agents, problem solvers, resource linkers, and process helpers. The findings in Table 1. show that most respondents agree that ToTE officers are highly knowledgeable about MyGAP to improve cocoa productivity (mean 4.59). As change agents, respondents have a very positive view of ToTE officers for always showing a positive image on the cocoa farms (mean 4.43). Interaction is important for sharing cocoa farming innovations, with a mean value of 4.37. The study also found that ToTE officers maintain a positive attitude towards all tasks, with a mean value of 4.34.

Table 2. The role of ToTE officers as problem solver

Item	Agreeableness Scale					Mean
	SNA	NA	N	A	SA	
	(1)	(2)	(3)	(4)	(5)	
<b>Perception of Rural Smallholder Cocoa Farmers on the Role of Agricultural Extension Agents as Problem Solver</b>						4.40
1 Possesses extensive knowledge and experience, not only related to work but also to community life matters.	0 (0.0%)	0 (0.0%)	6 (3.1%)	82 (42%)	107 (54.9%)	4.52
2 Always serves as a point of reference for the community.	0 (0.0%)	0 (0.0%)	6 (3.1%)	100 (51.3%)	89 (45.6%)	4.43
3 Willing and eager to demonstrate agricultural innovations, even when facing high risks.	0 (0.0%)	1 (0.5%)	6 (3.1%)	110 (56.4%)	78 (40.0%)	4.36
4 Willing to solve problems alongside the community, regardless of working hours or days.	0 (0.0%)	1 (0.5%)	5 (2.6%)	122 (62.6%)	67 (34.3%)	4.31

Next, in terms of the role of ToTE officers as problem solvers, the majority of respondents agreed that ToTE officers are capable of solving farm-related issues and general life matters for rural cocoa smallholders (mean 4.52). Furthermore, the study found that ToTE officers consistently serve as a source of reference for the community (mean 4.43). ToTE officers are also always ready to demonstrate agricultural innovations, even when faced with unexpected risks (mean 4.36), and are willing to solve problems alongside the community regardless of working hours (mean 4.31) (Refer to Table 2).

Table 3. The role of ToTE officers as resource linker

Item	Agreeableness Scale					Mean	
	SNA	NA	N	A	SA		
	(1)	(2)	(3)	(4)	(5)		
<b>Perception of Rural Smallholder Cocoa Farmers on the Role of Agricultural Extension Agents as Resource Linker</b>						4.39	
1	Displaying a friendly demeanor during the development process.	0 (0.0%)	0 (0.0%)	0 (0.0%)	71 (36.4%)	124 (63.6%)	4.64
2	Possessing effective and persuasive communication skills in spreading agricultural innovations for the cocoa commodity.	0 (0.0%)	0 (0.0%)	6 (3.1%)	102 (52.3%)	87 (44.6%)	4.42
3	Having an extensive network of contacts in both agricultural and non-agricultural agencies.	2 (1.0%)	6 (3.1%)	7 (3.6%)	104 (53.3%)	76 (39.0%)	4.26
4	Connecting the community with various agricultural and non-agricultural agencies.	4 (2.1%)	3 (1.5%)	6 (3.1%)	110 (56.4%)	72 (36.9%)	4.25

In the context of performing the role of a resource linker, the majority of ToTE officers are able to display a friendly demeanor (mean 4.64). According to the perceptions of the cocoa smallholder community, ToTE officers are skilled in disseminating cocoa agricultural innovations (mean 4.42). In addition, the cocoa smallholder community also views ToTE officers as having an extensive network of contacts (mean 4.26) that can connect the community with various agricultural and non-agricultural agencies (mean 4.25) (Refer to Table 3).

Table 4. The role of ToTE Officers as process helper

		Agreeableness Scale					Mean
		(1)	(2)	(3)	(4)	(5)	
		<b>Perception of Rural Smallholder Cocoa Farmers on the Role of Agricultural Extension Agents as Process Helper</b>					
1	Possesses qualities of a diligent and dedicated mentor.	0 (0.0%)	0 (0.0%)	6 (3.1%)	77 (39.5%)	112 (57.4%)	4.54
2	Confident in the abilities demonstrated by the community.	0 (0.0%)	0 (0.0%)	6 (3.1%)	101 (51.8%)	88 (45.1%)	4.42
3	Constantly encourages the community to achieve the highest level of innovation progress.	0 (0.0%)	0 (0.0%)	7 (3.6%)	111 (56.9%)	77 (39.5%)	4.36
4	Frequently demonstrates methods or ways to accomplish tasks and provides opportunities for the community to implement them.	0 (0.0%)	0 (0.0%)	9 (4.6%)	113 (57.9%)	73 (37.5%)	4.33

The role of ToTE officers as process helpers plays a significant part in advancing the cocoa industry in Sabah. The study found that the majority of the smallholder cocoa community believes that ToTE officers, as process helpers, possess dedicated mentoring qualities (mean 4.54) and have confidence in the community's ability to improve cocoa productivity (mean 4.42). ToTE officers also consistently assist the process by encouraging the community to achieve the highest level of agricultural innovation progress (mean 4.36). This includes helping the community learn methods and providing opportunities to implement any innovation (mean 4.33) (Refer to Table 4).

In conclusion, the study's findings indicate that ToTE officers indeed perform their roles and functions in bringing cocoa agricultural innovations to the East Coast Zone of Sabah. The majority of the smallholder cocoa community believes that ToTE officers are a competent group to drive change (catalysts for change) and assist in the processes (process helpers) needed to increase cocoa productivity in the surrounding districts of the PTS. Finally, the study found that the mean scores were moderately high for the role of ToTE officers

as resource linkers between the community and the Malaysian Cocoa Board (LKM) and other agricultural agencies to explore various potentials for increasing cocoa productivity.

## Discussion

Change agents in this study are measured based on the four main roles in Havelock's (1973) Theory of Change. In essence, the findings of this study support Havelock's (1967) theory that innovation or change, particularly in agricultural activities involving smallholder cocoa farmers, requires all four roles of ToTE officers: catalysts for change, problem solvers, resource linkers, and process helpers. Change agents play a crucial role in agricultural innovation and the development of the smallholder cocoa community in the PTS zone. Change agents are individuals who play a role in building the capacity of the target community, which becomes their client (Rahim & Asnarulkhadi, 2010).

ToTE officers play an important role in empowering smallholder cocoa farmers in rural areas, particularly in the East Coast Zone of Sabah, where agriculture remains the main economic activity (Noviatin et al, 2021). However, it has been found that the role of ToTE officers in advancing the social status and quality of life of the smallholder cocoa community still requires further attention. For instance, the role as a resource linker shows the lowest mean value of 4.25. This finding confirms that ToTE officers face challenges in connecting smallholder cocoa farmers with various agricultural and non-agricultural agencies. The results of this study are valid because the data were collected after the post-Covid-19 period in 2021 (Noviatin et al, 2024).

As a result, smallholder cocoa farmers in the field perceive that ToTE officers are less involved in activities such as guidance, training, seminars, group meetings, and regular discussions regarding cocoa farming. The Covid-19 restrictions posed barriers for both smallholder cocoa farmers and ToTE officers in carrying out agricultural extension activities that require on-site fieldwork (Noviatin et al, 2024). At the same time, face-to-face meetings between ToTE officers and the community, as well as with other agricultural agencies, were also limited. This finding is also consistent with the results of studies by Miyittah, Kosivi, Tulashie, Addi, and Tawiah (2022), Oke et al. (2020), and Ilesanmi and Afolabi (2020). For example, Miyittah et al. (2022) in their study in Ivory Coast and Ghana revealed that the management of pest and disease control (IPDM) for cocoa became difficult to carry out regularly after Covid-19 due to restrictions on field activities. Therefore, the role of ToTE officers as resource linkers to channel information and provide financial loans for agricultural inputs could not be implemented.

The main findings of the study also revealed that the role of ToTE officers as problem-solvers for the community showed a relatively low mean value compared to other role items. For example, the willingness of ToTE officers to resolve problems with the smallholder cocoa community, regardless of work hours and days, showed a mean value of 4.31. This finding aligns with the study by Noviatin et al., (2024) and Tanjungsari et al. (2016), which indicates that the role of ToTE officers as problem-solvers is not easy because innovations or changes in attitude among farmers cannot be measured in a short time. The process of innovation must be accompanied by real motivation that can drive the desired changes in the smallholder cocoa farmers.

## Conclusion

Change agents, through the role of ToTE officers, play a significant role in the development of communities, especially smallholder farmers in rural areas who still rely on agriculture as their main economic source. In the context of this study, it was found that smallholder cocoa farmers in the East Coast Zone of Sabah have a positive and satisfying perception of the roles and responsibilities demonstrated by ToTE officers as change agents. This indicates that ToTE officers are indeed significant in driving change, solving community problems, assisting in processes, and linking resources to the community. The implications of this study lie in its theoretical contribution, as Havelock's (1976) theory remains relevant for examining the role of change agents from the community's perspective in the context of cocoa farming in Sabah.

In conclusion, the findings of this study address the research objectives outlined. However, this study has limitations as it only focuses on districts in the East Coast Zone of Sabah and does not include districts in



the West Coast Zone of Sabah. Similarly, the study methodology is limited as it only uses a quantitative research design with a survey approach. Therefore, future research is recommended to use similar instruments to explore the development of smallholder cocoa farmers in Peninsular Malaysia and Sarawak. The study's respondents should also be expanded beyond just smallholder cocoa farmers to include communities involved in oil palm and rubber cultivation, which are also major crops in the country. It is hoped that the results of this study will provide guidance to policymakers, such as the Rural Development Policy (DPLB), to advance the agricultural sector and smallholder cocoa farmers in line with Core 1: Economy, Core 7: Prosperous Life, and Core 10: Development.

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**Informed Consent Statement:** The research instrument was reviewed and approved by the Ethics Committee of Universiti Putra Malaysia (JKEUPM), with the code JKEUPM-2022-491.

**Informed Consent:** Respondents were informed that there are no risks associated with their participation in this study.

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