

IS SOCIODEMOGRAPHIC PROFILE OF PROJECT-COOPERATOR ESSENTIAL ON THE SUCCESS OF CACAO PLANTATION ESTABLISHMENT?

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Abstract: The Philippine government was recently reviving its cacao industry. Among the strategies employed was the massive establishment of new cacao plantations. Relative to this, Central Mindanao University was actively involved in the establishment of cacao plantations in its neighboring communities in Bukidnon, Philippines through a project grant from the Philippine Council for Agriculture, Aquatic and Natural Resources, Research and Development (PCAARRD) on August 2016 to July 2019. The project provided assistance to 39 farmers (project-cooperators) who were willing to plant cacao. Sociodemographic profiles of project-cooperators were obtained for possible influence on cacao production. Hence, this study evaluated the influence of sociodemographic profile of project-cooperators on the success of cacao plantation establishment. Prior to the provision of agricultural inputs, our team imparted seminars and trainings on cacao production to project-cooperators. Subsequently, the 39 project-cooperators established new cacao plantations. After the project's completion in July 2019, we then evaluated the effects of gender, age, marital status, educational attainment, land tenure and main source of income of farmer-cooperators on the success of cacao plantation establishment. Among the sociodemographic factors considered, only land tenure status of project-cooperators was found as essential factor driving the success of cacao plantation establishment. Project-cooperators categorized as land owners established a satisfactory cacao plantation performance compared to the cacao plantations established by project-cooperators who were just tenants and/or employees. The results could serve as guide to project implementers on the selection of project-cooperators for the success of cacao plantation establishment.

Keywords: *cacao project, farmers' character, land tenure, project implementation, selection, socio-demographic profile*

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INTRODUCTION

Production of cocoa beans in the Philippines peaked in the 1990s at 35,000 tons and has since declined due to unproductive aging trees, depressed producer prices and unfavorable climatic conditions (Department of Trade and Industry [DTI], 2017).

Cacao is a very promising crop in the country. It is a tree crop highly suitable in various cropping systems. In 2008, the crop was regarded as high-valued crop (HVC) by the Department of Agriculture. Besides, local farmers have increased their interest in the cultivation of cacao due to the huge demand in the local and international markets,

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and with persistently favorable prices. With these, several agencies worked-out for the revival of said industry. Moreover, the Philippine Council for Aquatic, Agriculture and Natural Resources Research and Development (PCAARRD) has identified cacao as one of the priority crops under its Industry Strategic Science and Technology Plans (ISPs). Hence, the Philippine government is working on the revival phase of its cacao industry.

Although the production volume of cacao from 2014-2018 was at an increasing trend (Figure 1), this volume is still inferior compared to the targeted 100,000 MT of dried beans by 2022 (Department of Agriculture [DA], 2017). One of the strategies to alleviate cacao productivity in the country is the establishment of new cacao plantations. This strategy can easily be attained through the active participation of local farmers. Hence, various institutions (national and international) encouraged and provided aid to interested farmers to plant cacao trees. In the Philippines, several agencies provided assistance to farmers. Among these agencies are the State Universities and Colleges (SUCs). Relative to this, Central Mindanao University is one of the Philippine SUCs providing extension programs besides assistance to local farmers. Research and extension are among the core functions of Central Mindanao University (cmu.edu.ph).

In this endeavor, farmers of Lantapan, Maramag, Malaybalay City and Valencia City of Bukidnon province were among the beneficiaries or project-cooperators of Central Mindanao University (CMU) through a project entitled “Science and Technology Community-Based Farm (STCBF) for a Sustainable Cacao Production in Bukidnon” funded by PCAARRD. But then, the performance of cacao

plantations established by farmers could possibly vary depending on how the project-cooperators manage them. Inevitably, sociodemographic profile of farmers might influence the success of cacao plantation establishment in the province of Bukidnon, Philippines.

Several authors have studied farmers’ sociodemographic profile’s influence on the adoption of agricultural technology (Mbavai, Shitu, Abdoulaye, Oyinbo, & Kamara, 2019; Bwambale, 2015; Shadi-Talab, 1977; Bayisenge et al., 2014; Ekwe & Onunka, 2006). Improved agricultural productivity is highly dependent on farmer’s sociodemographic profile (Koirala, Mishra, & Mohanty, 2014; Bagal, Sharma, Peshin, & Panotra, 2018; Adedayo et al., 2019; Mahgoub, Mirghani, & Ali, 2017). Gender (Briones, 2017; Bayisenge et al., 2019; Ngeywo, Basweti & Shitandi, 2015), age (Ngeywo et al., 2015; Dar, 2019; Susilowati, 2015), marital status (Ngeywo et al., 2015; Mahgoub et al., 2017), educational attainment (Afari, 2001; Mahgoub et al., 2017), land tenure (Bwambale, 2015; Koirala et al., 2014; Koirala et al., 2016; Yurike1, Yonariza, Febriamansyah & Karimi, 2018; Adedayo et al., 2019), and main source of income (Bagal et al., 2018; Ekwe & Onunka, 2006) are some of the sociodemographic profiles of farmers with different effects on agricultural productivity.

In the Philippines, there is no available information on the effects of cacao farmer’s sociodemographic profile on the performance of cacao plantation. It is in this context that we evaluated the influence of sociodemographic profiles of project-cooperators on the success of cacao plantation establishment in Bukidnon, Philippines.

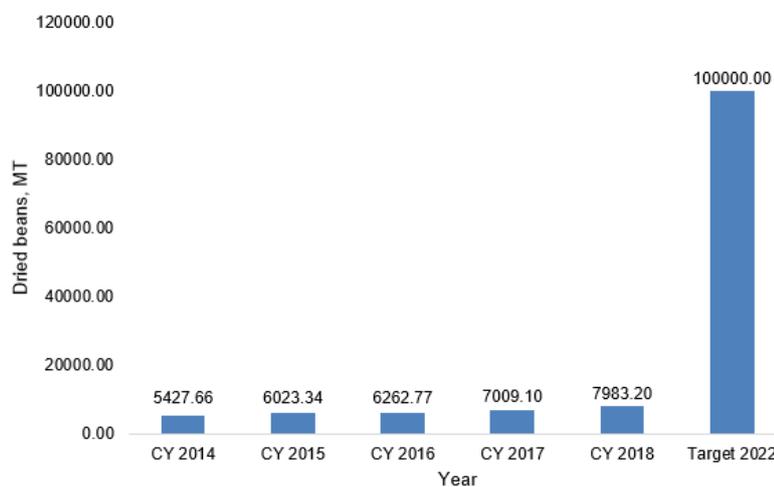


Figure 1. Volume of cocoa dried bean production in the Philippines from 2014-2018
Source: DA, 2017

RESEARCH METHODS

Location and Time of Study

The research was carried out at the municipalities (Lantapan and Maramag) and cities (Malaybalay and Valencia) of Bukidnon, Philippines (Figure 2) from August 2016 to July 2019.

Selection of Project-Cooperators

Local government unit (LGU) representatives from the collaborating municipality/city selected the project-cooperators. Each municipality/city was represented by farmers or the project-cooperators. A total of 39 project-cooperators were involved in this project and distributed as follows: nine from Lantapan, 10 from Maramag, 15 from Malaybalay City, and five project-cooperators came from Valencia City.

The number of project-cooperators per municipality/city was dependent on the willingness of the farmer to plant cacao, availability of their lands (0.25 hectares), and their track records from respective municipality/city. A memorandum of agreement (MOA) was then drafted and agreed by the project-cooperators, LGU, and CMU.

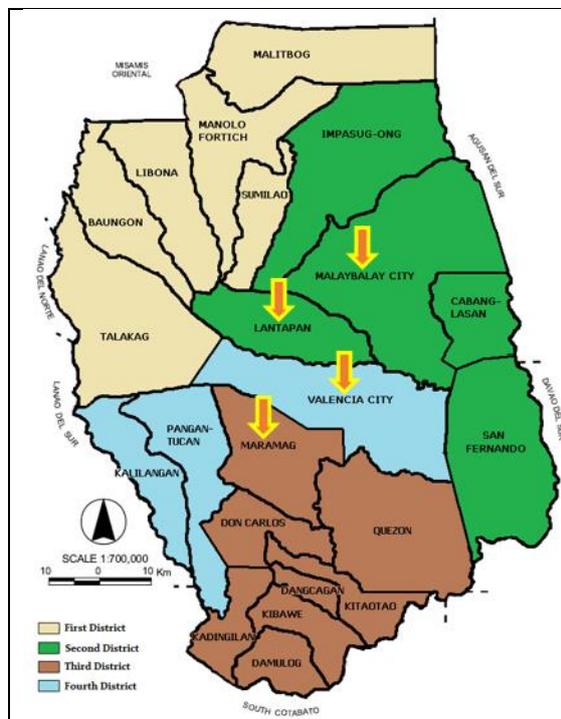


Figure 2. Map showing the legislative districts of Bukidnon (https://en.wikipedia.org/wiki/Legislative_districts_of_Bukidnon) and the municipalities/cities where the project was established

Sociodemographic Profiling

Through a focus group discussion aided with a survey questionnaire, sociodemographic profile (gender, age, marital status, educational attainment, land tenure status, and main source of income) of project-cooperators were gathered. We also discussed to them their roles and responsibilities on the project. All of the farmers we interviewed had a positive response regarding the proposed project. They were interested in the project as long as trainings and seminars are provided to them.

Capacity Building

Our team provided various seminars and trainings from 2016-2019, which were relevant to cacao production. These activities were very essential providing them vital knowledge and skills in cacao plantation establishment although some of them have had attended similar trainings and seminars from other institutions.

Establishment of Cacao Plantation

After the series of seminars and trainings imparted to the project-cooperators, CMU provided agricultural inputs (planting materials and fertilizers) for them to establish new cacao plantations. We also provided them technical assistance (Figures 3 & 4) during the establishment phase of cacao plantation.



Figure 3. One of the male project-cooperators from Valencia City, Bukidnon performed cacao planting after the demonstration conducted by the project team



Figure 4. Providing technical assistance (preharvest field maintenance) to one of the project-cooperators in Malaybalay City, Bukidnon

Monitoring and Evaluation

We monitored and evaluated (Figures 5 & 6) the performance of their cacao plantations regularly. We rated the performance of each cacao plantation established using 1-7 (1- poor; 3- satisfactory; 5- very good; and 7- outstanding) performance rating scale. However, for the purpose of this study, we consider only the performance of cacao plantation during the completion of project as influenced by the project-cooperators' sociodemographic profile. Assessment of performance rating scale of cacao plantation was mainly based on 1) growth of cacao with reference to cacao plants at CMU's high-yielding varieties (HYV) of cacao clonal garden for a particular stage of growth, 2) plant mortality, 3) pests and diseases damaged, and 4) degree of field sanitation.



Figure 5. One of the monitoring and evaluation visits conducted by the project team in one of the project sites at Lantapan, Bukidnon



Figure 6. One of the monitoring and evaluation visits conducted by the project team in one of the project sites at Malaybalay City, Bukidnon

Data Gathered and Statistical Analysis

Sociodemographic profiles (gender, age, marital status, educational attainment, land tenure status and main source of income) of project-cooperators were assessed and categorized into composite manner regardless of municipality/city. We used t-test in analyzing the data. Hence, each component of sociodemographic profile was categorized into two groups. Gender was categorized into male and female. For age, we used two age brackets, such as >60 and ≤60 years old, respectively. Marital status was classified as married and others (single, widow/er, and separated). Educational attainment was also grouped into Elementary/high school and College/post-graduate levels, respectively. For land tenure status, we characterized project-cooperators as land owners and others (tenants, employees, etc.). For the primary source of income of project cooperators, we grouped them as income relies solely on farming and others (with other sources of income).

RESULTS AND DISCUSSION

Influence of Project-Cooperator's Gender on Performance of Cacao Plantation

“Gender equality is one of 17 Global Goals that make up the 2030 Agenda for Sustainable Development” (<https://www.sdgfund.org/goal-5-gender-equality>). In relation, we identified the roles of men and women and assessed their performances in cacao plantation establishment. In this manner, gender bias in assigning tasks be prevented and so that efficiency in performing intercultural management practices never be hindered in the future.

In our study, *t*-test revealed that the performance of established cacao plantations by male and female project-cooperators did not vary

significantly (Figure 7). This finding indicates that gender has no significant effect with regard to the cacao plantation establishment. It is revealing that male and female project-cooperators can effectively manage the maintenance of cacao plantation. The result is similar with the findings of Ngeywo et al. (2015) that gender does not affect coffee production in Kisii County, Kenya. Likewise, Valleser, Aradilla and Paulican (2020) reported that a woman-worker could effectively manage and perform almost all of the activities on the establishment of a coconut-based multi-storey model in Bukidnon, Philippines which supports the outcome of this study concerning gender's influence in cacao plantation performance.

Influence of Project-Cooperator's Age Category on Performance of Cacao Plantation

One of the challenges of Philippine agriculture is the aging farmers. This affects the efficiency of the labor force in the agricultural sector. Modernizing Philippine agriculture need to attract the youth into farming, as the average age of farmers in the country is from 56 to 60 years old (Dar, 2019). In Indonesia, Susilowati (2015) suggested to formulate incentive policy for young farmers in order to attract the youth to work in agriculture and retain young farmers to stay in the sector.

In the Philippines, the retirement age is 60 years old. Based on the authors' knowledge, retirees who reside in the rural areas such as Bukidnon mostly engaged into farming. Inevitably, their efficiency in managing the farm would be inferior compared to those farmers with ages below 60 years old. However, result of this study shows that there was no significant difference between the performances of cacao plantations managed by >60 years old and ≤60 years old groups of project-cooperators (Figure 8). This finding shows that age of project-cooperators does not influence the performance of cacao plantation. Influence of age could be crop and location dependent. Our result is comparable to the reports of Mahgoub et al. (2015) of which age of farmers does not affect the technical efficiency of corn production in Sudan. Also, Ngeywo et al. (2015) reported that age has no effect on coffee production in Kisii County, Kenya. In contrast, older farmers are less productive in rice farming in Northern Guinea Savanna Nigeria (Ayoola et al., 2011).

Age of project-cooperator should not be discriminated when it comes to government supports through project partnerships. Those >60 year-old project-cooperators may have had more experiences

in farming which still made them competitive to ≤60 year-old group in maintaining the cacao plantation.

Influence of Project-Cooperator's Marital Status on Performance of Cacao Plantation

Regardless of gender, marital status of project-cooperators has no significant influence on the performance of cacao plantation (Figure 9). Cacao production therefore is a good business to venture as production practices cannot be hindered by marital status.

Similar to age category, influence of marital status could be crop and location dependent. Mahgoub et al. (2015) reported that marital status of farmers does not affect the technical efficiency of corn production in Sudan. Likewise, Ngeywo et al. (2015) reported that marital status has no effect on coffee production in Kisii County, Kenya. However, in rice farming in Northern Guinea Savanna Nigeria, married women within reproductive age were more likely to be constrained by their multiple roles and cultural practices that prevented them from direct field production activities (Ayoola et al., 2011).

Influence of Project-Cooperator's Educational Attainment on Performance of Cacao Plantation

Education empowers humanity in their professions. It is useful in managing crops including cacao. Inevitably, those who attended tertiary and/or postgraduate levels would perform better than the less educated (i.e. those who attended primary and/or secondary levels only) project-cooperators in terms of cacao plantation establishment. However, result indicates that performance of cacao plantations of project-cooperators who attended primary and/or secondary education and those with college/postgraduate degrees was comparable (Figure 10).

Regardless of educational attainment, project-cooperators were already trained on cacao plantation establishment. The training we imparted to them certainly enabled them to perform appropriate intercultural management practices essential in growing cacao trees. However, in this study, we have not considered the previous trainings (aside from the trainings we imparted to them) attended by project-cooperators. The influence of such factor therefore needs also to be assessed. Yet, result suggests the importance of training to project-cooperators prior to the provision of agricultural inputs. Tambi (2019) reported that agricultural training (professional, workshop, and on the farm) strongly affects and correlates with food crop

production in Cameroon. Moreover, the impacts of agricultural training in Mansehra district resulted to increased crop yield and an upward trend in vegetables and fruit crops production (Ahmad, Jadoon, Ahmad & Khan, 2007).

Influence of Project-Cooperator’s Land Tenure Status on Performance of Cacao Plantation

Land tenure status of project-cooperators highly influenced the performance of cacao plantation (Figure 11). Cacao plantations established and operated by project-cooperators who owned the land performed better than those managed by tenants and/or employees only. This result is similar with the report of Koirala et al. (2014) on rice production in the Philippines wherein farmers who operated their own lands were more productive than those farmers who just lease land (Koirala et al, 2014). According to Tenaw, Islam, and Parviainen (2009), it is natural that without secured property rights such as land tenure, farmers do not feel emotional attachment to the land they cultivate, do not invest in land development and will not use inputs efficiently. Therefore, this affects crop productivity. Dabara, Lawal, Chiwuzie, Omotehinshe and Soladoye (2019) suggested that farmers need to have secured land tenure as this encourages investments in the secured land which consequently improves agricultural productivity.

Project implementers may therefore need to consider the land tenure status of project-cooperators. Likewise, LGUs of Bukidnon, Philippines needs to re-assess their procedures on the selection of project-cooperators for a particular project. In this manner, successful cacao plantation established is guaranteed.

Influence of Project-Cooperator’s Main Source of Income on Performance of Cacao Plantation

Project-cooperators in this study does not entirely rely on the project’s provided inputs. They also invested some amount of money to finance farm expenses not covered by the project. Hence, project-cooperators with other sources of income were of greater advantage. Whereas, those project-cooperators who mainly relied their income from the farm needed to find a way to generate income while cacao trees were still at vegetative growth or non-fruited stage. However, results specify that performance of cacao plantations established by project-cooperators who mainly relied their income from the farm were comparable with the cacao plantations of project-cooperators with other sources of income or did not rely their income mainly from the farm. Land tenure status might have contribution

to this result. Project-cooperators who relied their income through farming were also the owner of the cacao plantation. Hence, they have emotional attachment to the land they cultivate.

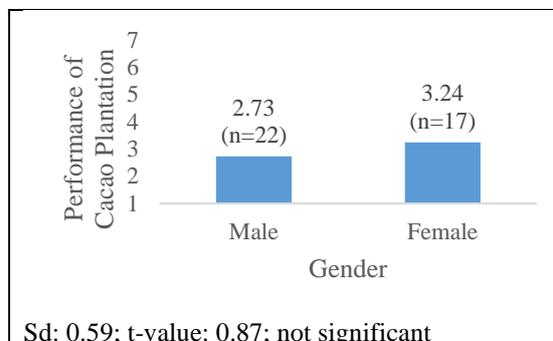


Figure 7. Influence of project-cooperators’ gender on the performance of established cacao plantation

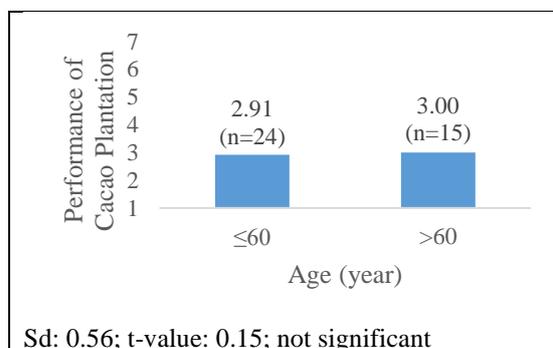


Figure 8. Influence of project-cooperators’ age category on the performance of established cacao plantation

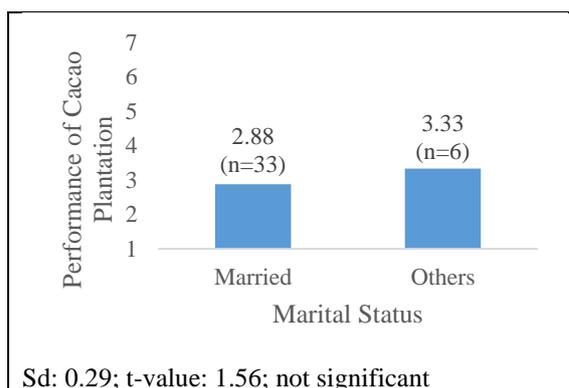


Figure 9. Influence of project-cooperators’ marital status on the performance of established cacao plantation

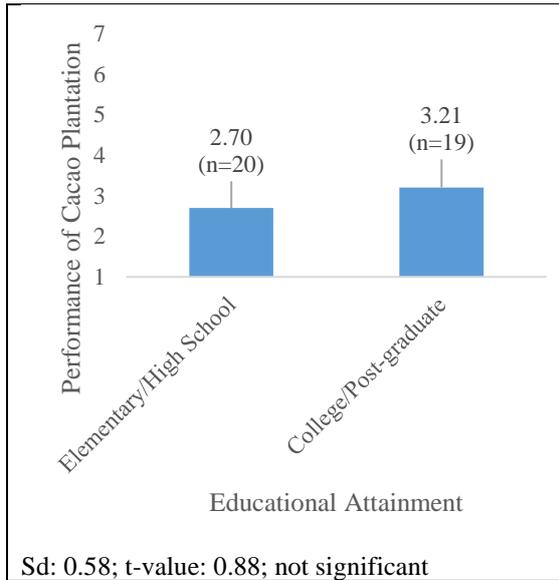


Figure 10. Influence of project-cooperators' educational attainment on the performance of established cacao plantation

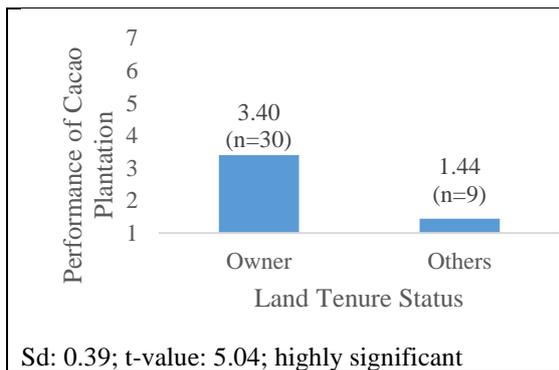


Figure 11. Influence of project-cooperators' land tenure status on the performance of established cacao plantation

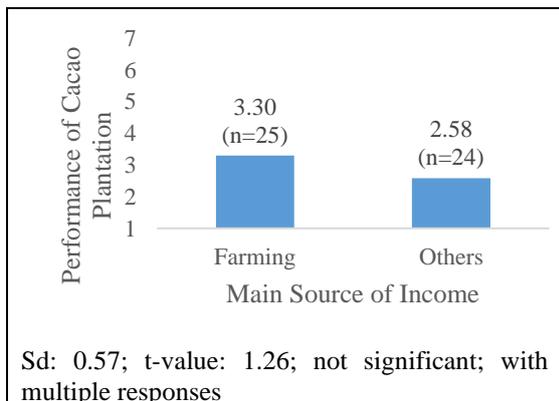


Figure 12. Influence of project-cooperators' main source of income on the performance of established cacao plantation

CONCLUSION

Among the sociodemographic profile components we evaluated, only land tenure status of project-cooperator had significant influence on the performance of cacao plantation establishment. Cacao plantations established by project-cooperators who were land owners performed better than those cacao plantations assumed only by tenants and/or employees. The result of this study is useful in the selection procedure of project-cooperators for a successful establishment of cacao plantations.

RECOMMENDATION

Information on previous seminars and trainings attended by project-cooperators that may influence performance of cacao plantation should also be considered. Likewise, cacao productivity in terms of yield needs to be evaluated as influenced by the sociodemographic profile of project-cooperators.

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