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Women Farmer Participation Level In Household Income And The Influence On Family Consumption

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Abstract – This study aims to explain (1) internal characteristics that influence the level of participation of women farmer groups in household income and family consumption, (2) external characteristics that influence the level of women farmer group participation in household income and family consumption, (3) the participation level of women farmer groups on household income and family consumption, and also (4) to create a model that will show the participation level of WFG in the household income and family consumption The population of the research was 98 women farmers in 5 Women Farmer Groups (WFG) found under the supervision of the Agriculture, Aquaculture, and Forestry Extension Agency (BP3K) in Cibungbulang Subdistrict, Bogor Regency. Samples were selected by census method from all the constituents of the WFGs. The WFGs were chosen from all available farmer groups under the supervision of the Agriculture, Aquaculture, and Forestry Extension Agency (BP3K) in Cibungbulang based on their extensive activities and the success in producing home industry items from the available agricultural produce. Data were collected using the survey method. Both primary and secondary data were collected. The research showed that a majority of the WFG members were middle-aged, possessed an elementary education or none at all, the income generated from or outside the farmer group activities was a low average at below IDR 100,000, their length of marriage was between 18 - 35 years, their length of membership was relatively short motivated by the need to increase capital or increase income. The majority of the WFG members could access information twice a month, allocating more than 5 hours per day, had extension sessions less than three times in six months, and the marketing of agribusiness produce was through via the group, middleman, and at small kiosks. The women farmers engaged in two agriculture activities, preharvest and harvest /postharvest. In addition, they had other side jobs. The volume of rice consumed as a staple food is low at < 240 kg per annum; however, consumption of other food sources such as vegetables, high-protein vegetables, and meat protein was high. The proposed model was deemed fit based on an index count and can be recommended.

Keywords – women farmer participation, household income, family consumption style

I. INTRODUCTION

The National Development Program strives to increase human resource quality comprehensively and sustainably. The national development program will not succeed without the active participation of every community component, men and women alike. Data from BPS [1] cites that in 2020, Indonesia's female population was 133,54 million (49.42%) and the male population 136,66 million (50.58%), indicating a balanced population.

Reflecting on this, initiatives and efforts must be made to strengthen and empower women to encourage active participation as decision-makers in all sectors. This is in line with Syahyuti [2] who stated that participation is a process where all components can give shape and be involved in all and any development initiative. The decision-making process of women farmers was illustrated by Yani and Pepi [3] in their study about the decision-making style of women farmers in Mekarbakti Village, Pangalengan sub-district, which is done equally between husband and wife. This equality in making family decisions is proof of the interaction between husband and wife in running their agribusiness and promotes the responsibility of both sides in

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running the agribusiness. The findings of Nurmayasari and Ilyas [4] showed that the participation of KWT members provides significant support in maintaining their households through activities in agriculture, fisheries, and animal husbandry.

Women's empowerment can be done through the economic sector, utilizing women's skills in managing household income and consumption. According to Kurniasih *et al.*[5], women's empowerment is women's ability to make strategic choices in their lives. In Indonesia, the Women Farmer Groups (WFG) is a forum that flourishes based on the members' consensus to achieve a common goal. During agriculture extension sessions, this forum acts as a classroom per the new extension model, to teach new knowledge and skills, build a positive outlook, hone the women's ability to recognize and utilize natural resources, increase productivity and improve the management of agriculture-based efforts which ultimately leads to the increase of family income. These groups also provide a more practical way for the members to barter their produce.

The WFG in Cibungbulang sub-district, Bogor Regency was chosen as the object of the research, not only for its numerous housewife members but also for their activities creating home industry items from agricultural produce. The economic activity of a nation is greatly influenced by its consumption style which is significant to its economic stability. The consumption rate is proportional to the rate of economic change and the change in the national income/gross income. Family consumption is one of the economic activities undergone by a family to fulfill its needs for goods and services. Consumed commodities will bring a sense of satisfaction. This is why consumption is an indicator of family welfare. Social welfare is the goal and aspiration of a nation.

According to Sukirno [6], all individuals and families have a need scale that is subject to their income. A person's level of income will influence their consumption level. A higher-income means more goods consumed. Should consumption be increased without the increase in income, savings will be spent and the rate of savings will go down. Based on the aforementioned, the aim of this research is to explain (1) the internal characteristics that will influence the participation level of WFGs in household income and family consumption, (2) the external characteristics that will influence the participation level of WFGs in the household income and family consumption, (3) the level of WFG participation in the family income and family consumption, and also (4) to create a model for that will show the participation level of WFGs in the household income and family consumption.

II. Research Method

The research was conducted on WFGs in areas under the supervision of the Agriculture, Aquaculture, and Forestry Extension Agency (BP3K) in the Cibungbulang sub-district, Bogor Regency. The choice of these WFGs in that area was based on their numerous activities and their ability to create home industry products from agricultural produce. The layout of the research is in the form of explanatory research. The population for the study was the 98 women farmers in 5 WFGs found in the areas under the Agriculture, Aquaculture, and Forestry Extension Agency (BP3K) in Cibungbulang sub-district, Bogor Regency. Samples were chosen using a census of all the members of the 5 WFGs.

The method used in collecting data was the survey method. Both primary and secondary data were collected. The instrument of research was tested during a trial run at one of the WFGs with 20 respondents that presented similar characteristics as the sample groups. The variables of interest in this research were the internal and external characteristics of the women farmers. The internal characteristics consisted of several indicators: age, education level, income level, length of marriage, number of dependent family members, length of membership in WFG, and motivation. The external characteristics of the women farmers consisted of access to information, time allocated for agribusiness, quality of extension sessions, and marketing activities. Variables that were influenced in this research are the level of women's participation toward the household income that is measurable using these indicators: agribusiness activities and side jobs. Other influenced variables were the level of women's participation in family consumption style, namely the consumption of staples and other food sources. The selection of these variables referred to the works of Nurmalia and Richard [7] where it is stated that the characteristics of the women producing salted fish in the coastal areas of Muara Angke, North Jakarta, can be measured using several indicators, namely age, level of education, number of dependants in family, motivation, and availability to give information.

III. Results And Discussion

Internal Characteristics of the Women farmers

Internal characteristics of the women farmers included age, education level, income level from WFG activities, income level of respondents outside the WFG activities, length of marriage, length of membership in WFG, and motivation.

Table 1. Internal Characteristics of the Women Farmers

Variable	Category	Range	n	Percentage (%)
Age	Young Adult	< 36 years	30	30.6
	Middle age Adult	36 – 50	45	45.9
	Late adult	> 50	23	23.5
	Total		**98**	**100.0**
Education Level	Low	No education – elementary school/equivalent	73	74.5
	Middle	Junior High/equivalent	15	15.3
	High	Highschool/equivalent or undergraduate	10	10.2
	Total		**98**	**100.0**
Income Level from WFG Activities	Low	N/A	62	63.3
	Average	100,000 – 1,000,000	29	29.6
	High	> 1,000,000	7	7.1
	Total		**98**	**100.0**
Income Level of Respondents outside the WFG Activities	Low	N/A	54	55.1
	Average	100,000 – 1,000,000	34	34.7
	High	> 1,000,000	10	10.2
	Total		**98**	**100.0**
Length of Marriage	Low	1-17	37	37.8
	Average	18-35	45	45.9
	High	36-52	16	16.3
	Total		**98**	**100.0**
Length of Membership in WFG	Low	1-5	53	54.1
	Average	6-9	14	14.3
	High	10-13	31	31.6
	Total		**98**	**100.0**
Motivation	Low	Followers	26	26.5
	Average	Adding capital	11	11.2
	High	Adding capital and family income	61	62.3
	Total		**98**	**100.0**

Age

Table 1 shows that most of the respondents (45.9%) are middle-aged adults. In this age group, women farmers will be strongly motivated to support the success of the family agribusiness to increase the family income. This fact was supported by Toha and Asmoro [8] who stated that reaching the middle age group, men and women will have reached their height in terms of social interaction and influence in society, and at the same time, society expects less social responsibility from them. This result was similar to the findings of Damisa and Yohanna [9] who found that a middle-aged farmer is an important variable in influencing women in farm management decision-making.

Level of Education

According to Haile [10], education is an important variable; it increases the farmers' ability to acquire, process, and use agricultural-related practices. Looking into the level of formal education of the respondents in Table 1, the majority (74.3%) only have an elementary education, either completed or not, classifying them within the low education bracket. This condition suggests that the women farmers require additional or nonformal education. Women farmers with only an elementary education will exhibit differences in thought processes and mindset compared to women farmers with a secondary education, especially in terms

of managing their agribusiness and how they respond to innovations related to the development of the agribusiness produce and increasing the family income. This is in line with Soekartawi [11] who stated that education is the background for the learning process that will embed an understanding and behavior toward more modern and beneficial practices. Mongi [12] corroborated the above opinion, mentioning that the level of individual education will influence the ease of mentoring and technical extension to develop agribusiness activities. According to Mittra *et al.* [13], women with a higher education level are likely to have better empowerment.

Income Level

Total income defined by this study is all income received by the respondents through their agribusiness activities or any other activities in one month. The respondents' income level from the WFG activities was low (63.3%). The low income was caused by the numerous activities the women farmers had outside the WFG and the fact that most of their motivations were to follow their friends. The activities managed by the WFG, among others, were making cassava chips, banana chips, dried rice cakes, and other traditional snacks. The potential of the WFG members was good, but they lacked the focus to truly develop the business. A strong drive and access to markets and a network of business partners are needed to ensure that the home industry products by the WFG grow significantly.

Table 1 presents data that most respondents (55.1%) have a low income from any activity outside the WFG activities. The low income the respondents receive from activities outside the forum is because the women farmers only engage in the activities during leisure time and as a side job. The other jobs that the women farmers may do are selling/peddling steamed rice with coconut milk, selling gas or sandals, waiting on a kiosk selling groceries, working as a seamstress, cook, laundry maid, factory worker, or other small jobs. According to Desiana and Aprianingsih [14], the most important empowerment strategies of the farmer's groups in the relevant literature were identified as farmers' group learning and innovation and ICT.

Length of Marriage

The length of marriage of the WFG members was average (45.9%). The respondents had been married for 18 – 35 years. Generally speaking, the longer a couple has been married, the stronger the intimacy and quality of the relationship between them, contributing to the lasting of the marriage. The quality of the relationship between husband and wife is believed to influence the decision-making in the family, especially in how the women are involved in earning an income by working outside the house to support the family. In other ways, Badstue *et al.* [15] found that married women in acknowledged male-headed households (MHHs) may experience a number of the preconditions for exercising agency, their capacity to translate these preconditions effectively into actual livelihood innovations is, in many cases, constrained due to the limited ability to make decisions and act upon them.

Length of Membership in WFG

Table 1 presents data that the length of membership of the respondents in the WFG was mostly in the low range (54.1%). They had been part of the WFG for a relatively short time, 1-5 years. The short time was not a barrier for the group to thrive. There was a sense of belonging and dependency among members and the involvement of members in actively supporting and driving the group forward. As cited by Denim [16], efforts to stimulate the effectiveness of the group can be made if all members can perform group activities together. This can be achieved in two ways: (1) by creating conditions that foster dependency between all members, and (2) by implementing a group decision-making method.

Motivation

Most respondents had a strong motivation (62.3%) to join a WFG. The majority of respondents' motivation was to increase capital and/or increase income. The drive to increase their income comes naturally for the women farmers because they are mostly homemakers, so they are motivated to help their husbands in securing their family incomes, or as the breadwinners of their families. These conditions show that women have a large contribution to securing family income. According to Mulyaningtyas and Junaidi [17], to achieve the target of fulfilling their household incomes, the role of woman farmer groups is important.

External Characteristics of Women farmers and Extension Quality

External characteristics of the woman farmer include access to information and time allocated for agribusiness. Extension quality includes the intensity of extension activity and marketing activities.

Table 2. External Characteristics of the Woman Farmer and Extension Quality

Variable	Category	Range	n	Percentage (%)
External Characteristics				
Access to Information	Low	< 2 times/month	82	83.7
	Average	2- 3 times/month	12	12.2
	High	> 3 times/month	4	4.1
		Total	**98**	**100.0**
Time Allocated for Agribusiness	Low	< 3 hours/day	34	34.7
	Average	3-5 hours/day	7	7.1
	High	> 5 hours/day	57	58.2
		Total	**98**	**100.0**
Extension Quality				
Intensity of Extension Activity	Low	< 3 times/6 months	90	91.8
	Average	3-5 times/6 months	2	2.1
	High	> 5 times/6 months	6	6.1
		Total	**98**	**100.0**
Marketing Activities	Low	Via middlemen/personal consumption	24	24.5
	Average	Via WFG and middlemen or personal sales/drop off at kiosks	42	42.9
	High	Only through WFG	32	32.6
		Total	**98**	**100.0**

External Characteristics

Access to Information

Most of the respondents had low access to information (83.7%). The women farmers obtained information on managing their agribusinesses and developing their products into other forms only from watching television (TV). Information obtained from television sufficed to incite the women's understanding and motivate them to try new things, transforming their products into new products that will generate income for their families. However, their ability to access this source of information was not frequent enough, in the course of a month, they had access to the television less than twice. The respondents did not have access to other means of information such as radio, newspaper, magazines, or posters. This is unfortunate, seeing that innovative people are usually those with easy access to different sources of information from universities/formal education institutions, research facilities, related agencies, mass media, other farmers, and other commercial institutions, while the less innovative groups will only have and use information from local farmers and some information from the media. According to Anwarudin and Dayat [18], woman farm groups should learn about agricultural technology because the information will kindle the farmers' interest in agricultural content.

Time Allocated for Agribusiness

The time allocated by respondents for their agribusiness is considered high (58.2%). The women farmers are housewives responsible for household chores and other jobs related to agribusiness as a main job or side job. The agribusiness aspects cover stages of land cultivation, planting, plant care, harvest, and post-production in the form of agriculture processing to transform raw produce into a new, better-valued product. The time spent in agribusiness activities starts after the women farmers complete their household chores until dusk. The activity of adding value to raw produce is done at individual homes, to be collected at the group leader's home through the WFGs, or directly sold at kiosks. In the conceptual framework by Pierotti *et al.* [19] the constraints to which hours of the day are worked on women's farms are linked to fewer overall available hours and lower productivity for all kinds of laborers.

Extension Quality

Intensity of Extension Activity

The intensity of extension sessions available to the WFG in this research is considered low (91.8%) (Table 10). The extension sessions on agribusiness and processing agribusiness produce were done only a few times (1-2 times) over a course of 6 months. This is far less than the time available for the male farmer groups. This is unfortunate, because, as stated by Soekartawi [11], education is the factor that shapes an individual's character. Through education, a person will receive new experiences, build character, and develop skills. The education process could be through formal and informal paths. Non-formal education mainly comes from extension sessions. Another opinion of Soyemi [20] is that knowledge is a range of information gained from interaction and information combined with experience, and it is organized and interpreted by the human mind to make decisions and take action.

Marketing Activities

Table 2 presents data that the respondent distribution based on marketing activities is considered average (42.9%). The activity of turning raw materials into added-value products resulted in a variety of local snacks. The snacks were collected at the WFG leader's house, then distributed through the WFG or middlemen who came by to pick up the products or sold directly to the market. According to Widiana and Amartani [21], women farmer groups produce unique products and they have advantages over similar products from the other groups; therefore, it will make a good marketing strategy.

The Participation Level of Women Farmers in Household Income and Family Consumption

The participation level of women farmers in household income and family consumption is explained in Table 3.

Table 3. External Characteristics of the Women farmers

Variable	Category	Range	n	Percentage (%)
Level of Participation of Women Farmers in Income from Agribusiness Activities	Low	Pre-harvest/harvest/post-harvest (respondents only involved in one agribusiness activity)	23	23.5
	Average	Pre-harvest and harvest/post-harvest (respondents were only involved in two agribusiness activities)	26	26.5
	High	Pre-harvest, harvest, and post-harvest (respondents involved in three agribusiness activities)	49	50.0
		Total	**98**	**100.0**
Level of Participation of Women Farmers in Income from Side Activities	Low	Have no side activities	28	28.6
	Average	Have one side activity	63	64.3
	High	Have two side activities	7	7.1
		Total	**98**	**100.0**
Level of Staple Food Consumption (Rice)	Low	< 240 kg/year	70	71.4
	Average	240-360 kg/year	19	19.4
	High	≥ 360 kg/year	9	9.2
		Total	**98**	**100.0**
Consumption Level of Other Staple Foods	Low	Plant-based protein /animal protein/vegetable (respondents only consume 1 other staple food)	1	1.0

Variable	Category	Range	n	Percentage (%)
	Average	Plant-based protein /animal protein/vegetable (respondents consume 2 other staple foods)	25	28.4
	High	Plant-based protein /animal protein/vegetable (respondents consume 3 other staple foods)	72	73.5
	Total		**98**	**100.0**

Level of Participation of Women Farmers towards Income from Agribusiness Activities

The level of participation among women farmers in contributing income through agribusiness is in the high range. The majority of women are involved in preharvest, harvest, and post-harvest. The preharvest activities consist of soil cultivation, planting, and plant care. The harvest stage is the activity to determine the time and methods for harvesting. The post-harvest activities include defoliation, drying, storage, husking, and development into added-value products. Hartatie *et al.* [22] stated several obstacles to the role of women in increasing income such as the quality of human resources, weaknesses in distribution, marketing, and business management skills.

The Level of Participation of Women Farmers in Income from Side Activities

Table 3 presented data that the distribution of woman farmer participation in income from side activities is considered average (64.3%). Respondents admitted that besides the agribusiness, they also engaged in other side jobs to contribute to the family income; the side jobs were selling food and groceries, being laundresses, cooks, mortgagees, teachers, seamstresses, private employees, and other informal jobs.

Level of Staple Food Consumption (Rice)

The data above show that the respondents' consumption of staple food is low (70%). The women farmers in the research location can be categorized as poor. This refers to Sayogyo [23] who used the consumption of rice per capita as an equivalent to the consumption level as an indicator of poverty. Sayogyo differentiates the rice-equivalent level in the village and the city. In rural areas, a person who consumes an equivalent of 240 kg of rice per person per year is categorized as very poor, while in cities the equivalent is 360 kg of rice per person per year.

Consumption Level of Other Staple Foods

Mulyani and Alpha [24] stated that household income has a positive influence on the consumption of staple foods within the family. This means that family income will significantly affect the consumption of staple food. The higher the income, the larger the percentage of the income used for staple food consumption. However, in this study, even though the participation level of women farmers in family income through agribusiness or other side jobs was high, the income received was low.

The level of staple food consumption of the respondents was low, while the consumption level of other staple foods was high (73.5%). This showed that the respondents' rice consumption was categorized as low at less than 320 kg/year; however, they consumed plant-based proteins such as tempe and tofu regularly. For vegetables, they had easy access to the plants in the garden or market. The source of animal-based protein was usually meat and eggs. The meat was consumed once a year during 'Eid, whereas the eggs consumed came from family-owned chickens and kiosks. The awareness of the families to maintain health by consuming nutritious foods resulted in the families eating three staple foods in addition to rice. Families also combined other food sources such as meats, plant-based protein, and vegetables. According to Suyastiri [25], household consumption is the food-based need of the family members to stabilize the family's food security. Food security relates to the quality and quantity of the food consumed. In this manner, food quality aims to secure the nutritive needs of the family based on food diversification, seeing that no single food source contains all the nutrients required for health.

Model of Participation Level of Woman Farmer Groups in Household Income and Family Consumption

Household income is defined as earnings obtained through agribusiness activities and income from other activities, while the food consumption style is the average arrangement of foodstuffs both in variety and quantity consumed by individuals per day for a certain duration of time.

To determine the influence of the internal and external characteristics of the women farmers to increase income and family consumption, a SEM Model using the LISREL program was utilized. The SEM model enables the researcher to simultaneously examine three aspects: a validity check and an instrument reliability check, a model check of the relationship between latent variables, and the creation of a model that can be used as a forecast (Wibowo, 2004). The data analysis using LISREL given as a diagram with the t-value shown is presented in Figure 1.

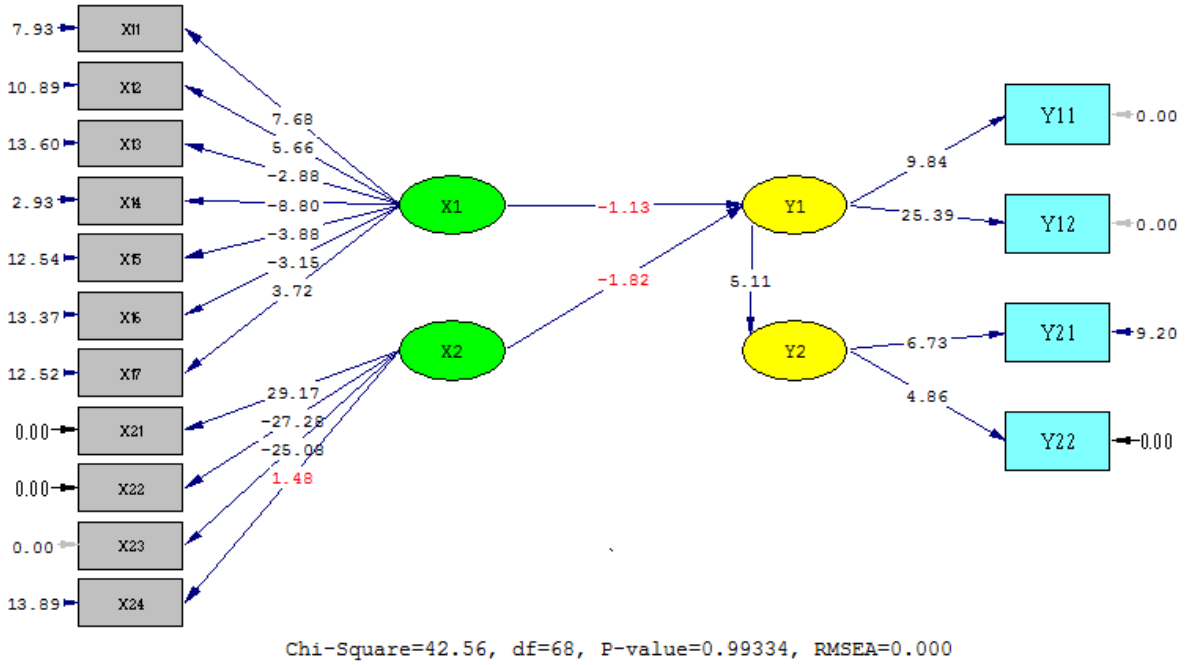

Figure 1. Path Diagram with t-value

As seen in Figure 1, the latent variables X1 (internal characteristics of women farmers) have seven sub-factors (manifest variables), namely: age (X_{11}), education level (X_{12}), income level (X_{13}), length of marriage (X_{14}), number of family dependants (X_{15}), length of membership (X_{16}), and motivation (X_{17}), whereas the external characteristics of the women farmers consist of access to information (X_{18}), time allocation (X_{19}), extension quality (X_{20}), and marketing activities (X_{21}).

The latent variable Y_1 (participation level of the women farmers in household income) has two sub-factors (manifest variables), namely: agribusiness activities (Y_{11}), and side jobs (Y_{12}), while Y_2 (Family consumption style) has two sub-factors, staple food consumption (Y_{21}) and other foodstuff consumption (Y_{22}).

As seen in Figure 1 and Table 4, all the sub-factors of the X indicators (internal and external characteristics of women farmers) are significant, except the marketing variable. This phenomenon can be explained by the fact that in the marketing activity, the respondents not only worked together with the WFGs but were also assisted by middlemen. Besides, the WFGs had yet to establish marketing relations with outside persons or institutions and did not have a permanent marketing network to accommodate all the respondents' products. To date, all the WFG products are distributed through small kiosks or sold directly by the WFGs.

The sub-factors of Y_1 (participation of women farmers in family income) consisting of agribusiness activities (Y_{11}) and side jobs (Y_{12}) are significant, while the sub-factors of Y_2 (participation of women farmers in family consumption style) consisting of the consumption of staple food (Y_{21}) and other foodstuffs (Y_{22}) are also significant. However, the latent variables of

X_1 and X_2 did not directly influence Y_1. It is suspected that the manifest variables of X_1 and X_2 did not have the value to determine the variable of Y. It can be said that variable Y_1 had a significant influence on Y_2. This means that an increase in women's participation in the family income will also increase family consumption. The phenomenon could be explained by understanding that when a woman's income increases through either WFG agribusiness or other activities, the woman could use it to fulfill her family's needs. They may be for staple foods or other foodstuffs. The rice consumption may be low, but the women combined it with other food sources such as plant-based proteins, meat proteins, eggs, tempe and tofu, vegetables, and fruits. Field research discovered that respondents consumed meat only once a year during 'Éid. However, the need for animal-based protein was fulfilled through the consumption of eggs and fish as easy-to-buy and cheap alternatives. Some respondents bought tofu and tempe as a source of protein. As for vegetables and fruits, most respondents acquired them from their gardens. The SEM model conformity is given in Table 4.

Table 4. SEM Model Conformity Results

Criteria	Critical point	Test Model Results	Notes
RMR (Root Mean Square Residual)	≤ 0.05 or ≤ 0.1	0.1	Good Fit
Chi-Square = 42.56	$P > 0.05$	0.99	Good Fit
RMSEA (Root Mean Square Error of Approximation)	≤ 0.08	0.00	Good Fit
GFI (Goodness of Fit)	≥ 0.90	0.97	Good Fit
Adjusted Goodness of Fit Index (AGFI)	≥ 0.90	0.94	Good Fit

The above calculations show that the criteria for the model conformity index as recommended by research are valued as fit or, in other words, the model is supported by data.

IV. Conclusion

The above research resulted in these conclusions:

1. The WFG under the Agriculture, Aquaculture and Forestry Extension Agency (BP3K) in Cibungbulang sub-district, Bogor Regency showed these internal characteristics: middle-aged adults, incomplete or complete primary education, income from WFG or outside WFG is average (<Rp 100.000), length of marriage 18 – 35 years, number of dependants 0 – 2 people, length of membership 1 – 5 years, had the motivation to increase capital and increase income.
2. The WFGs under the Agriculture, Aquaculture and Forestry Extension Agency (BP3K) in Cibungbulang sub-district, Bogor Regency showed external characteristics where access to information was twice a month, time allocated for agribusiness was 5 hours per day, they had extension sessions less than three times per six months, marketing of agribusiness products was through WFGs, middlemen, and deposited at kiosks.
3. The WFGs were involved in 2 agribusiness activities: preharvest and harvest/post-harvest. Besides this, the women farmers also engaged in one side job. The consumption rate for rice as a staple was low at < 240 kg, but the consumption of other foodstuffs is considered high because they consumed three other food sources, plant-based protein, meat, and vegetables.
4. The recommended model proposed gave an index of conformity as fit, in other words, the model is supported by data.

Suggestion

A marketplace needs to be made available to the WFGs as a permanent and continuous distribution point for the WFG products to encourage the WFG members to be more innovative and have more variety in their goods.

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