Analysis of Factors Affecting the Food Consumption of Cattle Farmers and Household Welfare in Probolinggo Regency Indonesia

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Abstract: *The lifestyle and well-being of the family are reflected in the household's consumption habits. This research aims to examine the elements influencing the welfare and consumption of beef cattle producers in Probolinggo Regency. In this research, 88 beef cattle breeders made up the sample. Purposeful sampling is the method of sampling. Methods of quantitative descriptive analysis are being used in this study. Using the SEM (Structural Equation Modeling) program PLS.0.7, factors influencing beef cattle ranchers' food intake and family well-being were examined. The results show that the number of family members and enterprise income significantly positively affect food consumption. The side job negatively and substantially impacts food intake. Spending on things other than food has a terrible effect on welfare. The impact of operation time on well-being was both favorable and substantial. The cost of seedlings and feed, as well as food intake, has a negative and significant impact on well-being.*

I. INTRODUCTION

The demand for food is a top concern for national development. The improvement of farmers' well-being is one goals of agricultural growth. Indonesia is an agricultural nation where the majority of people are farmers. Therefore, it is important to take into account the well-being of farmers. A nation's population health serves as a barometer for how well it has developed. Consumption of livestock products is an indicator of welfare which is thought to be due to increased levels of income, changes in lifestyle, especially in consumption tastes [1].

People's well-being improves when income increases and income is used for non-food consumption and vice versa. Food intake includes basic activities to meet individual and household needs. The home's food intake pattern is described by the amount and quality of enough food in the house. Household consumption behavior is a reference point for measuring public welfare indicators such as health, nutrition, and poverty. A high proportion of food consumption in total household expenditure can be used as an indicator of poverty [2].

Food consumption habits may be a good indicator of someone's income or buying power. Higher-quality, more expensive food will be consumed as income rises. Consumption habits will shift as money rises, leading to an increase in nutrient-dense foods [3]. Consumption habits for food evolve. Each region's consumption habits vary depending on the local environment, resources, culture, preferences, and money. Changes in wealth, dietary knowledge, and lifestyle choices affect people's food consumption habits. Changes in consumption

habits will determine the amount of food that has to be distributed and how it is distributed, enabling food prices to fall to reasonable levels [4].

Farmers are one of the actors in the agribusiness business unit, which is a comprehensive basis for environmental conditions in Indonesia. The livestock industry needs to be developed with modern agribusiness principles that aim to manage business units from upstream to downstream by increasing the linkages between components and subsystems that make up an integrated agribusiness business unit.

Providing sufficient food for households is a problem faced by Indonesia, especially beef cattle farmers in Probolinggo Regency. The level of food consumption and the welfare of beef cattle farmers will change. This situation changes income levels and food consumption patterns and affects the level of interest.

II.   RESEARCH METHODS

Methods of Research

This research uses survey and quantitative descriptive methods to test and justify hypotheses. The location of this study is in Probolinggo Regency, considering that Probolinggo Regency is one of the beef cattle storage areas in East Java, ranked third after Sumenep and Tuban [5]. In this study, the population was the purposeful sampling of beef cattle farmers in 6 (six) districts as the districts with the highest number of beef cattle [6]. A sample of 88 respondents was taken (intentionally) based on a specific purpose (i.e., beef cattle ownership). The selection of models was intentional for research purposes. This study performed primary and secondary data for analysis [7].

Data Analysis Techniques

This study examines farmers' food consumption and household well-being levels using descriptive analysis techniques related to real, local symptoms. Researchers use the Structural Equation Modeling (SEM) quantitative data analysis tool PLS.0.7 to analyze the factors affecting the consumption level of farmers.

III.   RESULTS AND DISCUSSION

 Probolinggo Regency is located at coordinates east longitude 1120°50' - 1130°13', south latitude 70°40' - 80°10', with an area of ±1,696.16 square kilometers. Geographically, Probolinggo Regency is located on the slopes of mountain ranges extending from west to east, namely Mount Bromo, Mount Ramongan, and Mount Algopro. The presence of these mountains had both positive and negative effects on the Probolinggo's rule. The livelihood of the majority of the population of Probolinggo District is that of farmers. The rural economic structure is centered on agriculture. One of mainstay sub-sectors contributing to the rate of community economic growth is the livestock subsector [5]. The following findings were attained as a consequence of a study on beef cattle ranchers in Probolinggo Regency. First, from the 88 respondents spread out, it was seen that the age distribution of respondents ranging from 40-59 years was the highest number, namely 65 people or 73%, followed by the age range group of 60-79 years, with as many as 17 people (19%), and then the age group of 20-39 years, with six people (7%). The age range of 20 to 65 is productive in trying; this is an opportunity for beef cattle farmers to increase the productivity of their beef cattle business. Of the education levels of 88 respondents, the most were those with elementary school education, namely 43 people (48%), followed by those with junior high school education, as many as 30 people (34%), and then those with high school education, as many as 15 people (18%).

First, it is necessary to examine the connection between the variables to see if the study model the researcher has outlined is feasible. The research process for the PLS analysis is shown in the figure below.
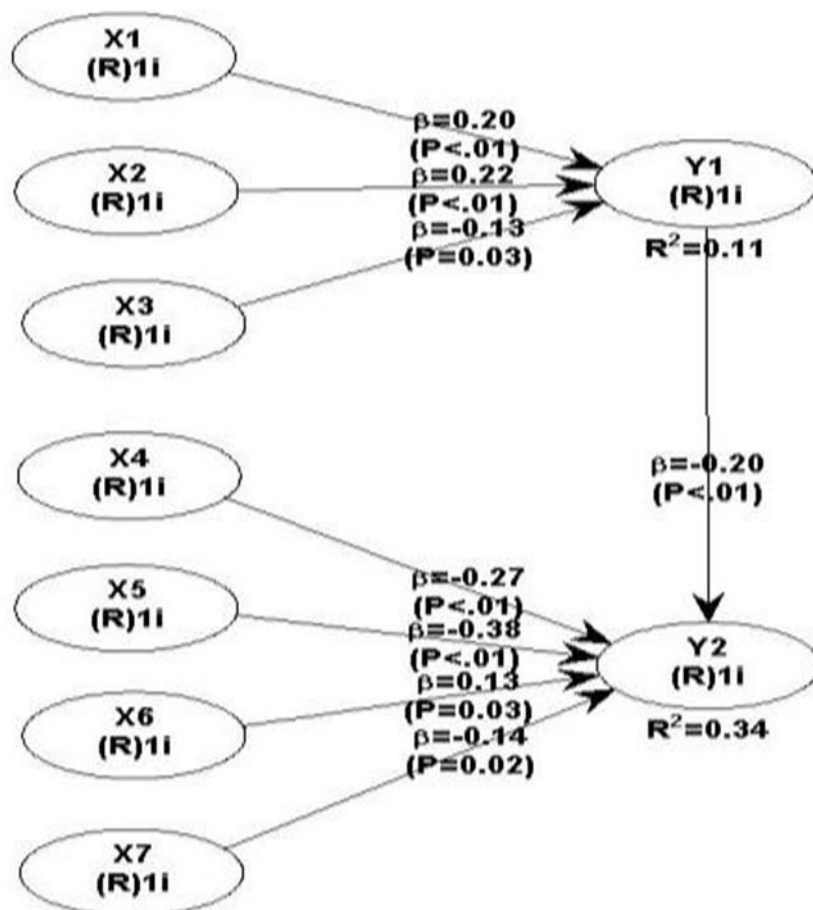
Figure.1 Path Diagram

Goodness of Fit Model

The degree to which endogenous variables can adequately describe the variety of exogenous variables is assessed using the goodness of fit model. The Fit's Quality The table below summarizes the model's findings.

Table 1. Goodness of Fit Model

Endogenous	R Square	Q Square
Food Consumption	0.113	0.112
Welfare Level	0.345	0.275

Source: Research processed data, 2020

Food consumption as an R-Square variable is worth 0.113, or 11.3%. In other words, this metric may show how the number of family members, company revenue, and side occupations contribute differently to the variable of overall food consumption of 11.3%. By using the variables of the number of family members, business revenue, and side employment, this value may be used to describe the variety of factors relating to total food intake. Comparatively, the contribution of other factors not included in this research accounts for the remaining 88.7%. If so, the value of the Q-square variable for food consumption is 0.112. The result indicates that family size, company revenue, and side occupations cannot predict overall food consumption [8].

Furthermore, the welfare-related R-Square variable's value is 0.345, or 34.5%. This chart shows that total food intake, business lifespan, seed and feed expenses, and non-food expenditures may include each account for 34.5% of the variance in welfare level factors. Spending on non-food goods, the number of interactions, the price of grains and feed, and the quantity eaten all impact the total welfare level variable, which makes up

34.5% of the variable. Other variables beyond the scope of this research are responsible for the remaining 65.5% of the variable's effect. Thus, the well-being Q-square variable has a value of 0.275. The correlation between non-food spending, business lifespan, seed and feed costs, and total food consumption is relatively strong (moderate).

Hypothesis Testing

Hypothesis testing is used to test whether exogenous variables affect endogenous variables [9]. The test criteria state that an exogenous variable has a positive and significant effect on the endogenous variable if the path coefficient is positive and the p-value ≤ the significance level (alpha = 5%). Table 2 below provides information on the results of hypothesis testing.

Table 2. Exogenous and endogenous variable

Exogenous	Endogenous	Path Coeff	SE	P_Value	Information
Number of family members	Total Food consumption	0.205	0.067	0.001	Significant
Operating income	Total Food consumption	0.217	0.067	<0.001	Significant
Side job	Level of well-being	-0.130	0.068	0.029	Significant
Non-Food Expenditures	Level of well-being	-0.378	0.065	<0.001	Significant
Length of business	Level of well-being	0.129	0.068	0.030	Significant
The cost of seedlings, feed and medicine	Level of well-being	-0.138	0.068	0.023	Significant
Total Food consumption	Level of well-being	-0.200	0.067	0.002	Significant

Source : Research processed data, 2020

The tests shown in the table above may be used to determine that:

1. The effect of the number of household members on total food consumption gives a path coefficient of 0.205 and a P-value of 0.001. The test results indicate a p-value < significance level (alpha = 5%). The number of family members positively and significantly affects total food consumption.
2. The effect of farm income on total food consumption yields a path coefficient of 0.217 with a P-value < 0.001. The test results indicate a p-value < significance level (alpha = 5%). Farm income has a positive and significant impact on total food consumption.
3. The effect of part-time work on total food consumption produces a path coefficient of -0.130 and a P-value of 0.029. The test results show a p-value < significance level (alpha = 5%). The test results showed that there was a significant difference in total food consumption between those who worked part-time and those who did not.
4. The effect of non-food expenditure on welfare yields a path coefficient of -0.378 with a P-value < 0.001. The test results show a p-value < significance level (alpha = 5%). Tests show that non-food spending has a significant negative impact on welfare levels.
5. Hours by benefit level yields a path coefficient of 0.129 and a p-value of 0.030. The test results show a p-value < significance level (alpha = 5%). The test results showed a positive and significant effect on longevity well-being.
6. The effect of seed and forage prices on welfare has a P value of 0.023 and a path coefficient of -0.138. The test results show a p-value < significance level (alpha = 5%). These results indicate negative and

significant effects on seed prices and welfare.
7. A path coefficient of -0.200 and a P-value of 0.002 indicates the effect of total food intake on well-being. The test results show a p-value > significance level (alpha = 5%). These results suggest that overall food intake has a negative and significant effect on a person's affluence.

Path Diagram to Structural Model Conversion

The structural model's path diagram conversion aims to forecast how exogenous factors will affect endogenous variables, as seen in the following Table:

Table 3. Exogenous factors' effects on endogenous variables.

Exogenous	Endogenous	Path Coeff.
Number of family members (X1)	Total food consumption (Y1)	0.205*
Operating income (X2)	Total food consumption (Y1)	0.217*
Side job (X3)	Total food consumption (Y1)	-0.130*
Non-food expenditures (X5)	Level of well-being (Y2)	-0.378*
Length of business (X6)	Level of well-being (Y2)	0.129*
The cost of seedlings and feed (X7)	Level of well-being (Y2)	-0.138*
Total food consumption (Y1)	Level of well-being (Y2)	-0.200*

Source: Processed research data, 2020
Information. *: Significant

The structural model developed is Equation 1 based on the table above:

$$Y1 = 0.205\ X1 + 0.217\ X2 - 0.130 X3$$

It is shown by Equation 1:
1. The number of family members positively and considerably affects overall food intake, according to the 0.205 coefficient of influence for the number of family members on total food consumption. According to this factor, the total amount of food consumed would rise when the number of family members decreases.
2. The impact coefficient of agricultural income on total food consumption is 0.217, indicating that labor income significantly impacts total food consumption. The higher the firm's income, the more food consumption increases.
3. A substantial difference in total food consumption based on side jobs is shown by the coefficient of the effect of side jobs on total food consumption, which is -0.130. This distinction indicates that the overall food intake without a side job is more significant than the consumption of food with a side job.

Equation 2 :
$$Y2 = -0.273\ X4 - 0.378\ X5 + 0.129\ X6 - 0.138 X7 - 0.200 Y1$$

Eq. 2 provides the following information:
1. According to the coefficient of the relationship between non-food spending and welfare level, which is -0.378, non-food spending significantly and negatively affects well-being. This influence means that the more non-food expenditure, the lower the level of interest.
2. According to the impact coefficient of operating years on welfare level is 0.129, operating years have a significant positive impact on welfare levels. Because of these effects, the longer a company operates, the higher the level of well-being.
3. Seed and feed costs negatively impact welfare, as shown by their correlation coefficient of -0.138. This effect suggests a decline in consumer interest as seed and food prices rise.
4. Total food intake has a negative and considerable impact on well-being, as shown by the coefficient of influence of total food consumption on welfare level of -0.200. Accordingly, welfare levels decrease as overall food intake increases.

According to the findings of statistical studies, family size positively and substantially impacts the food farmer families consume. The effect of the number of family members on overall food intake has a coefficient value of 0.205. Food consumption will rise as the number of family members increases. One aspect of farmer households' consumption is the number of family members. Because only some family members have the same food preferences, the overall household consumption will be more diverse the more significant the family size. So, the overall amount of food consumed increases with the number of family members. Income has a positive and considerable impact on total food consumption, as shown by the 0.217 coefficient of influence of cattle company income on total food consumption. The findings of this research support [10], assertion that a person's consumption expenses are closely correlated with his revenue. The farmer's family will have the chance to eat better food as the farmer's income rises, and the opposite is also true. The farmer's family will eat less food as their income declines.

A substantial difference in overall food intake based on side occupations is shown by the side job impact on consumption being -0.130. This distinction indicates that people who do not have a side job consume more whole foods than those who do. The primary source of income for farmer families in this research is from breeding, whereas supplemental income comes from side occupations 91% of houses have side employment, compared to 9% of homes without one. Therefore, the majority of agricultural families make money on the side. Depending on the principal and other sources of income, farmers' household income needs to be clarified. Breeders will hunt for side employment if their top source of income from breeding is insufficient to cover their living expenses. Generally, the primary income of families who raise cattle for breeding is worth more than the secondary income. Farmer households still depend on the immediate benefit of the head of the family's income from raising animals. Family members may all make further financial contributions simultaneously. The amount and quality of family food consumption are impacted by payment size. Higher-income households will place more importance on the quality of their meals. Homes that raise beef cattle and do not have a second employment concentrate on their primary business. Breeders will cultivate beef cattle with greater rigor. Compared to breeders who also have a second job, the quantity of livestock maintained is considerably more substantial.

The findings indicated that non-food expenditures have a considerable influence on interest levels and have an impact on well-being levels. However, the outcomes of non-food intake in this research are at a low level of well-being. The findings contradict earlier research theories since one of the largest outlays for non-food consumption in this study was for purchasing seeds, feed, and veterinary medications. Prices for food, livestock medications, and grains might change. Farmers' income will decline if the price of inputs, food, and drugs rises while the market price of their animals remains unchanged. As a result, payments to farmers will decline as seed, feed, and medicine prices rise. Breeders' well-being will therefore decrease.

The welfare level of farmer families is affected by the duration of business by 0.129. This influence demonstrates that the size of the firm significantly and favorably impacts the degree of well-being. Due to this impact, interest will grow the longer the business is around. According to [11]; [12], the findings of this research indicate that a person's income level will change depending on how long they have been in the company and how much skills and experience they have accrued.

The results show that the cost of seeds, drugs, and feed significantly negatively impacts the level of well-being, and the impact coefficients are -0.138. These effects lead to a decline in farmers' household well-being and higher crop prices, medicines, and food prices.

The welfare level is negatively and significantly impacted by total food intake, which affects the welfare level of -0.200. Because of the impact, interest in and information on whole foods will decline. According to the findings of this research [13] family welfare decreases as food expenditure rises, and vice versa; household prosperity increases as food expenditure decreases.

IV. CONCLUSION

1. Food consumption is positively and significantly impacted by the number of family members, favorably and impacted considerably by company revenue, and negatively and significantly impacted by side occupations.

2. The degree of well-being is negatively and significantly impacted by food intake. Consequently, the amount of welfare will decline as overall food intake rises.

REFERENCES

[1] H. Y. Sikone, B. Hartono, Suyadi, H. D. Utami, and B. A. Nugroho, "Value-Added Analysis of the Meat Agroindustry in Indonesia," *Online J. Anim. Feed Res.*, vol. 12, no. 5, pp. 266–271, 2022, doi: 10.51227/ojafr.2022.36.

[2] M. W. Rosegrant, C. Ringler, S. Msangi, T. B. Sulser, T. Zhu, and S. A. Cline, "International model for policy analysis of agricultural commodities and trade (IMPACT): Model description," *IFPRI Washingt. DC*, no. June, p. 42, 2002.

[3] A. W. Yudaningrum, "Analisis Hubungan Proporsi Pengeluaran Dan Konsumsi Pangan Ketahanan Pangan Dengan Ketahanan Pangan Rumah Tangga Petani Di Kabupaten Kulon Progo," *Uns*, pp. 1–79, 2011, [Online]. Available: https://digilib.uns.ac.id/dokumen/detail/18817/AnalisisHubunganProporsi-Pengeluaran-Dan-Konsumsi-Pangan-Dengan-KetahananPangan-Rumah-Tangga-Petani-Di-Kabupaten-Kulon-Progo

[4] H. Hasniati, S. Adyatma, and R. Kumalawati, "Analisis Proporsi Pengeluaran Dan Konsumsi Pangan Dengan Ketahanan Pangan Rumah Tangga Petani Di Kecamatan Gambut Kabupaten Banjar," *JPG (Jurnal Pendidik. Geogr.*, vol. 5, no. 1, pp. 1–7, 2018, doi: 10.20527/jpg.v5i1.4983.

[5] BPS KOta.Probolinggo, *Kota Probolinggo Dalam Angka 2021*, vol. 21, no. 1. Probolinggo: BPS Kota Probolinggo, 2020. [Online]. Available: http://journal.um-surabaya.ac.id/index.php/JKM/article/view/2203

[6] M. Singarimbun and S. Effendi, *Metode Penelitian Survei*. Jakarta: LP3ES, 2006.

[7] M. A. Siyoto, S dan Sodik, "Dasar Metodologi Penelitian Cetakan Pertama," *Literasi Med.*, vol. 66, no. February, pp. 37–39, 2015, [Online]. Available: http://dx.doi.org/10.1016/j.jsames.2011.03.003%0Ahttps://doi.org/10.1016/j.gr.2017.08.001%0Ahttp://dx.doi.org/10.1016/j.precamres.2014.12.018%0Ahttp://dx.doi.org/10.1016/j.precamres.2011.08.005%0A http://dx.doi.org/10.1080/00206814.2014.902757%0Ahttp://dx.

[8] R. Rusastra, I Wayan Rusastra; Geolf, Thompson; J.W. Taco Bottema; Balwin, *Food Security and Poverty in the Era of Decentralization in Indonesia*. Bogor-Indonesia: UNESCAP-CAPSA, 2008.

[9] Ramadiani, "Structural Equation Model Untuk Analisis Multivariate Menggunakan LISREL," *J. Inform. Mulawarman Februari*, vol. 5, no. 1, pp. 14–18, 2010.

[10] S. Sukirno, *Pengantar Teori Ekonomi Mikro*, vol. 2, no. 1. 2013.

[11] A. Sartono, *Manajemen Keuangan, Teori dan Aplikasi*, 4th ed. Yogyakarta: BPFE, 2016.

[12] C. N. Hikmah and H. Juliansyah, "Effects of Income, Education and Number of Family Members Towards the Development of Child Worker in Bireuen District," *J. Malikussaleh Public Econ.*, vol. 2, no. 1, pp. 32–40, 2020, doi: 10.29103/jmpe.v2i1.1725.

[13] D. F. Septiarini, "Akuntansi Keperilakuan, Landasan Akuntansi Keperilakuan Dalam Perspektif Islam," *AKRUAL*, vol. 5, no. 1, pp. 45–58, 2013.