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A Chicken Farm and Chilli Plants in Cingkes Village for Agricultural Development and Economic

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Abstract

Once of the flagship programs of North Sumatra Province is strengthening the role of the agricultural sector by utilizing the potential for integration through simple innovations that can convert livestock manure into organic fertilizer, thereby increasing the nutrition of agricultural land and utilizing agricultural waste as animal feed. It tries to build an integrated system that functions to increase and maintain income while taking into account the welfare of farmers and farmers. An increase in household income and an increase in agricultural and plantation yields can be resulted from the development relationship between these two variables. With the aim of improving the financial welfare of farmers' and ranchers' households by creating an ideal business model for integrating chicken with food crops.

Keywords
integration; income; welfare; productivity

I. Introduction

The idea of development is usually seen as closely related to the process of analyzing change; however, in this case, development is defined as a certain type of change which, by definition, is predetermined (Purba, et al., 2021). The need for modern society for economic literacy cannot be overstated (Faried, et al., 2021). In 2015, member states of the United Nations made a collective commitment to support the 17 Sustainable Development Goals (SDGs). The second target (SDG2) of the initiative is to “end hunger, ensure food security and improved nutrition, and promote sustainable agriculture” by 2030 (UN, 2015). they are a source of economic growth and they are essential for the proper functioning of biological systems (Simarmata, et al., 2021). To meet other Sustainable Development Goals (SDGs) and ensure that everyone has access to nutritious food that is also produced sustainably, SDG 2 invites all communities to integrate food production and consumption. Food production and consumption are separated by a “missing middle” between global targets and local implementation strategies, which can hinder progress towards SDG-2 (Veldhuizen, et al., 2020). Natural resources have two purposes: they are a source of economic growth and they are essential for the proper functioning of biological systems (Simarmata, et al., 2021). To meet other Sustainable Development Goals (SDGs) and ensure that everyone has access to nutritious food that is also produced sustainably, SDG 2 invites all communities to integrate food production and consumption. Food production and consumption are separated by a “missing middle” between global targets and local implementation strategies, which can hinder progress towards SDG-2 (Veldhuizen, et al., 2020). Natural resources have two purposes: they are a source of economic growth and they are essential for the proper functioning of biological systems (Simarmata, et al., 2021). which could hinder progress towards SDG-2 (Veldhuizen, et al., 2020). Natural resources serve two purposes: they are a source of economic growth and they are essential for the proper functioning of biological systems (Simarmata, et al., 2021). which could

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Productivity and economic growth of a population are two indicators that can be used to measure the level of success of a country in its development efforts (Kurniullah, et al., 2021). The act of producing or consuming (using) products and services by individuals, groups, or communities is called economic activity (Marit, et al., 2021). The economic condition of the population is a condition that describes human life that has economic score (Shah et al, 2020).

Efforts are made to maintain or expand food production in accordance with the environment by taking into account the available resources and the willingness and ability of farmers. Livestock Crop Integration System is an intensification of livestock systems through integrated management of natural resources and the environment with livestock components as part of business activities. This system also includes the use of livestock as part of business activities. The livestock-plant integration system is being developed to increase the productivity and welfare of the community so that agricultural development can be revitalized. Beef cattle, food crops, horticulture, plantations, and fisheries are part of the farming component of the livestock crop integration system.

Compost, granulated organic fertilizer, and biogas are industrial products of livestock waste processing, while agricultural waste is processed into animal feed. While solid biogas waste is composted and mixed with other materials for animal and fish feed, liquid biogas waste is used as liquid fertilizer for vegetable and water crops (Rajendran, et al., 2017). horticulture, plantations, and fisheries are part of the farming component of the livestock crop integration system. Compost, granulated organic fertilizer, and biogas are industrial products of livestock waste processing, while agricultural waste is processed into animal feed. While solid biogas waste is composted and mixed with other materials for animal and fish feed, liquid biogas waste is used as liquid fertilizer for vegetable and water crops (Rajendran, et al., 2017).). horticulture, plantations, and fisheries are part of the farming component of the livestock crop integration system.

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Integrating livestock crops requires a synergism, or linkage between crops and livestock that benefits both parties. Manure is used by farmers as organic fertilizer for their crops, which they then feed their livestock. Farmers use crop waste, such as rice straw, corn straw, peanut waste, and other agricultural wastes in livestock crop integration models to deal with the shortage of available feed. There is significant potential to promote nutritional diversity through agricultural diversification including legumes, fruits, vegetables, and animal source foods (ASF) (De Bruyn, et al., 2017). Economical, environmentally friendly agriculture and socially sustainable takes an integrated approach to increasing crop yields and managing resources to meet the three most important aspects of sustainability: economic, environmental and social. The IFS strategy seeks to achieve multiple goals, including sustainability, food security, and poverty alleviation. This

requires using the output of one company component as input for other related operations wherever it is feasible. For example, animal manure combined with agricultural residues and agricultural waste can be converted into nutrient-rich vermicompost (Deka, 2020). This requires using the output of one company component as input for other related operations wherever it is feasible. For example, Animal waste combined with agricultural residues and agricultural waste can be converted into nutrient-rich vermicompost (Deka, 2020). This requires using the output of one company component as input for other related operations wherever it is feasible. For example, animal manure combined with agricultural residues and agricultural waste can be converted into nutrient-rich vermicompost (Deka, 2020).

II. Review of Literature

Rural development focuses on defining and measuring sustainability. High species diversity, nutrient cycling, capacity (total production), and economic efficiency are important sustainability factors for smallholders. Sustainability is a global, national, regional, community and household issue. An ecologist may define sustainability differently than an economist, but most might support the Brundtland Report (United Nations, 1987), which includes social, economic, and environmental considerations. Integrating aquaculture with livestock to promote food sustainability socially, economically and environmentally raises important questions. Culture and institutions, key factors for change or conservatism, must also be considered.

The overall level of individual satisfaction can be seen as a measure of their level of well-being. As a result of this basic knowledge, two different debates have arisen: The first consideration is the extent to which the well-being of the two substances can be described as a collection of their intensities. When a person's social, material, and spiritual needs are met, they can be said to be in a state of well-being, and this state of well-being motivates them to work hard to improve their own lives, their families, and society as a whole (Sunarti & Khomsan, 2012). If the welfare of a society is taken into account, it can be said to have been prosperous. If one wishes to attain an ideal state of well-being, good health, and harmony, he must make efforts to the best of his ability. Weaknesses in welfare can be seen as a sign of society's ability to pay for goods and services for its citizens, according to economists. While there is no definite upper bound for well-being, it includes food, education, and health care, and is often extended to include other social benefits such as job opportunities, protection for the elderly, freedom from poverty, and so on.

This generally indicates that examples of the use of the family are considered as markers of financial transition events and government assistance from residents of a country. To determine the use of the family, it is necessary to determine the extent to which the utilization plan is implemented. Low external input systems are more similar to natural ecosystems, reducing environmental consequences. The implementing family, by supervising the use of the draft, not only plays a role in evaluating government assistance from the family, but also plays a role in the circulation of event finances and government assistance from state community groups. This is because no family has the same strategy and size of utilization as other families.

Considering the effect of its implementation on providing government support to families, often understood with reference to the family use case. All profits made by an individual are referred to as their income, and these profits can be expressed in terms of real money or in a conventional structure. The salary or the so-called resident salary is the result of the agreement of the factors of creation that it has in this field of creation which

"buys" these components of the work to be used as a contribution to the creation cycle at the cost of winning over the search for the factors of creation in the main market costs. This happens as a direct result of the agreement of the factors of creation that he has in this realm of creation. it is often understood with reference to the family use case. All profits made by an individual are referred to as their income. and these benefits can be expressed in terms of real money or in a conventional structure.

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The main problem is the potential competition for the limited amount of feed between chili and adult chickens, as well as the relative inefficient use of the available feed. The impact can be felt both nationally. The increasing demand for chili and chicken has had a positive impact on the long-term viability of feed sources and the environmental impact that accompanies this growth.

III. Research Method

The research was conducted in several stages, namely the preliminary stage, data analysis, distributing questionnaires to respondents, processing data using the SEM method, data interpretation and drawing conclusions. The parameters observed in this study were the income of integrated farmers and breeders on chili plants and native chickens in Cingkes Village which had indicators: standard of living, farming, productivity, income and welfare.

IV. Results and Discussion

The very small value of the determinant indicates an indication of a multicholinearity or singularity problem, so that the data cannot be used for research.

Table 1. Normality of Critical Ratio Value Data

Variable	min	Max	skew	cr	kurtosis	Cr
KS1	8,000	14,000	,528	3.709	-,560	-1,966
KS2	6,000	12,000	1.143	8027	-,184	-,647
KS3	8,000	12,000	,898	6.310	-,347	-1,219
PN3	5,000	14,000	-1.094	-7,684	1.336	-4,691
PN2	5,000	13,000	,871	6.114	-,747	-2,623
PN1	7,000	12,000	-,365	-2.564	-1.046	-3.675
PT1	6,000	14,000	-1.354	-9.512	-1.521	-5,340
PT2	6,000	15,000	-1.159	-8,139	-2,302	-8.084
PT3	4,000	14,000	-1,685	-11,837	-2,749	-9,654
UT1	3,000	15,000	-,011	-,074	-,174	-,611
UT2	7,000	15,000	,102	,719	-,778	-2,733
UT3	7,000	15,000	,088	,616	-,830	-2,915
TH1	4,000	14,000	-,384	-2,695	-,642	2.254
TH2	5,000	14,000	-,153	-1.075	-,127	-,448
TH3	3,000	15,000	,363	2,549	-,063	-,221
Multivariate					292.026	111.238

Source: Processed AMOS

To verify that the data distribution is normal, the score in the CR column must be greater than 2.58 or less than negative 2.58 (-2.58). The assumption of normality is met because 296 observational data were used in this study.

Table 2. Normality of Outlier Value Data

Observation number	*Mahalanobis d-squared*	p1	p2
295	130663	,000	,000
290	123,848	,000	,000
289	100,919	,000	,000
70	97,560	,000	,000

Observation number	*Mahalanobis d-squared*	p1	p2
296	87.872	,000	,000
288	86,512	,000	,000
294	79,500	,000	,000
293	72.175	,000	,000
281	62,400	,000	,000
291	60,621	,000	,000
292	60,621	,000	,000
279	60,228	,000	,000
282	58.133	,000	,000
280	57,584	,000	,000
286	50,974	,000	,000
285	49,780	,000	,000
278	48,773	,000	,000
284	39,653	.001	,000
287	39,455	.001	,000
266	38,220	.001	,000
283	37,705	.001	,000
62	36,658	.001	,000
26	34,614	,003	,000
85	31,357	,008	,000
1	31,000	,009	,000
46	30.102	0.012	,000
86	29,865	0.012	,000
267	29,466	0.014	,000
57	28,696	0.018	,000
272	28,421	0.019	,000
74	28.077	,021	,000
25	27,935	,022	,000
268	27,786	,023	,000
77	26,890	0.030	,000
87	26,418	,034	,000
273	25,366	0.045	,000
221	24,771	0.053	,000
101	24,610	0.055	,000
102	24,610	0.055	,000
38	24,209	,062	,000
261	23,713	0.070	,000
276	23,584	,073	,000
249	23,282	,078	,000
222	22,774	,089	.001
2	22,235	,102	,004
80	22,161	,104	,004

Observation number	*Mahalanobis d-squared*	p1	p2
3	22,100	,105	,003
103	22.081	,106	,002
168	21,958	,109	,002
151	21,842	,112	,002
149	21.775	,114	,002
190	21,685	,116	,002
56	21,649	,117	.001
271	21,455	,123	,002
277	21.164	,132	,005
61	20,865	,141	0.013
148	20,730	,146	0.016
155	20,384	,158	0.045
29	20.090	,168	,092
247	19,980	,173	,100
224	19,638	,186	,210
229	19.403	,196	,302
73	19,387	,197	,263
265	19,317	,200	,259
65	19,121	,208	,338
274	18,969	,215	,393
27	18,901	,218	,390
60	18,877	,219	,355
244	18,605	,232	,508
269	18,579	,233	,474
114	18,494	,238	,485
201	17,987	,263	,802
47	17,827	,272	,852
42	17,596	,285	,918
18	17,261	,303	,975
15	17,211	,306	,974
113	17.171	,309	,971
275	17,166	,309	,962
225	17.093	,313	,964
100	16,541	,347	,998
223	16,500	,350	,998
196	16,493	,350	,997
218	16,403	,356	,998
59	16,250	,366	,999
146	16,186	,370	,999
199	16,026	,380	1,000
35	15,946	,386	1,000
238	15.505	,416	1,000

Observation number	*Mahalanobis d-squared*	p1	p2
24	15,477	,418	1,000
16	15,342	,427	1,000
270	15,323	,428	1,000
41	15,221	,436	1,000
14	15,138	,441	1,000
49	15,105	,444	1,000
150	14,753	,469	1,000
215	14,615	,479	1,000
262	13,841	,538	1,000
174	13.695	,549	1,000
147	13.694	,549	1,000
55	13,467	,566	1,000

Source: Processed AMOS

These are the findings of the Univariate Summary Statistics test on the normality of the data. Based on the results of normality, it can be concluded that there is a normal data set. Where most of the Mahalanobis d-squared P-values for p1 and p2 are more than 0.05.

Table 3. Feasibility Test Results of Research Models for Analysis

Goodness of Index fit	*Cut of Value*	Analysis Results	Model Evaluation
Minimum fit function of chi-square	p>0.05	(P = 0.88)	Fit
Chisquare	Carmines & Melver (1981) Df=168 = 129.69	1961,49	Fit
Non-Centrality Parameter (NCP)	Example of cov . deviation matrix and small fit<Chisquare	2634,962	Fit
Root Mean Square Error of Approx (RMSEA)	Browne and Cudeck (1993) < 0.08	0.322	Fit
AIC models	Model AIC >Saturated AIC <Independence AIC	2788,962>Saturated AIC (240) < Independence AIC (8398,657)	Fit
CAIC models	CAIC Model < Saturated CAIC < Independent CAIC	2948,434< CAIC saturated (802.843) < CAIC Independence (8469,012)	Fit

Normized Fit Index (NFI)	>0.90	0.975	Fit
Parsimony Norm Fit Index (PNFI)	0.60 – 0.90	0.653	Fit
Parsimony Comparative Fit Index (PCFI)	0.60 – 0.90	0.658	Fit
PRATIO	0.60 – 0.90	0.819	Fit
Comparative Fit Index (CFI)	>0.90 (Bentler (2000)	0.981	Fit
Incremental Conformity Index (IFI)	>0.90 Byrne (1998)	0.982	Fit
Relative Fit Index (RFI)	0 – 1	0.603	Fit
Conformity Index (GFI)	> 0.90	0.952	Fit
Adjusted Conformity Index (AGFI)	>0.90	0.975	Fit
Parsimony Goodness of Fit Index (PGFI)	0 – 1.0	0.396	Fit

Source: Exodus Amos 20

The SEM model can be based on all model analysis based on the results of the Fit Model Assessment. The test results can be seen in the table below which shows the path analysis of each variable, either directly or indirectly. To accommodate the degree of freedom compared to other models, the AGFI measure is a modification of the GFI. While 0.8 >AGFI >0.9 is a very good match, 0.8 - AGFI >0.9 is a marginal match. The model's AGFI score of 0.975 is higher than the 0.9 cutoff, indicating that the model fits. To compare models, the Tucker-Lewis Index (TLI) or non-normed fit index (NNFI) takes into account the number of coefficients. Good fit is TLI>0.9, and moderate fit is TLI>0.8. Since the TLI scores are in the range of 0.8-0.9, indicating a viable model, the model is considered good. It is the number of mismatches that exist between the target model and the base model which is the NFI value. The NFI value varies from zero to one. A good match is NFI >0.9, while a moderate match is NFI 0.8-NFI >0.9. The NFI result is 0.975, which indicates that the model is healthy. Between 0 and 1 is the range for the Incremental Fit Index (IFI). In general, if >0.9 is a reasonable fit, although if 0.8 >IFI >0.9 is marginal, a score of 0.912 indicates that the model's IFI is within the desired range of 0.8 to 0.9 points. while the moderate match is NFI 0.8-NFI >0.9. The NFI result is 0.975, which indicates that the model is healthy. Between 0 and 1 is the range for the Incremental Fit Index (IFI). In general, if >0.9 is a reasonable fit, although if 0.8 >IFI >0.9 is marginal, a score of 0.912 indicates that the model's IFI is within the desired range of 0.8 to 0.9 points. while the moderate match is NFI 0.8-NFI >0.9. The NFI result is 0.975, which indicates that the model is healthy. Between 0 and 1 is the range for the Incremental Fit Index (IFI). In general, if >0.9 is a reasonable fit, although if 0.8 >IFI >0.9 is marginal, a score of 0.912 indicates that the model's IFI is within the desired range of 0.8 to 0.9 points.

From 0 to 1, the CFI scale ranges. A good match was defined as CFI >0.9; marginal fit was defined as CFI > 0.8. Since the IFI value of the model is more than 0.982, this is very good. The Relative Fit Index (RFI) is a number between 0 and 1. A good fit is defined as an RFI >0.9 while a moderate fit is defined as an RFI 0.8 >0.9. There is an RFI value of 0.803, which is within the acceptable range, so the model is accurate.

The t-CR value of 5.017 with a significance level of 0.000 indicates that the estimation parameter between the influence of the Standard of Living on the welfare of the community shows significant results in Cingkes Village, this indicates that there is a considerable influence between the standard of living on the welfare of the community. Thus, the first hypothesis is accepted, meaning that the welfare of farmers and ranchers will grow if the standard of living is increased or fulfilled. The welfare and living conditions of farmers have been positively affected by the high standard of living in Cingkes Village before and during the good land convention. Before the development of chili and agriculture, they tried to make money through the cultivation of long beans. Pests are unlikely to produce high quality fruit because they are constantly losing.

The community in Cingkes Village, Simalungun Regency, has a standard of living below the community income standard. As a result, the second hypothesis is ruled out, which suggests that income is not affected by a person's standard of living. Extension activities in Cingkes Village, Simalungun Regency have not gone well, the Village Heads do not care and agricultural extension activities are rarely held, even though they are very useful for residents in increasing their experience and knowledge in managing, farming properly and correctly. effectively. According to the results of farmers and breeders in terms of income, it is clear that the timing and results are much different. Once a month or two weeks, chili production is paying off. Meanwhile, because it is calculated from the process of raising animals for sale in the market, livestock yields cannot be determined in a year or a month.Shown by t CR of 4.864 and a significance level of 0.000, farming has a significant effect on community welfare in Cingkes Village, Simalungun Regency, indicating that the estimating parameter between the effect of farming on community welfare shows significant results. Consequently, the third hypothesis is supported, which suggests that agriculture is an important factor in increasing overall well-being. The results showed that the area of land included in Farming 0.448 had a positive effect on changes in the welfare level of chili farmers, or it can be said that the wider the agricultural land, the greater the opportunity for chili farmers to develop their businesses. This is supported by the results of the regression calculation. Farming that covers land area has a significant effect on farmers and ranchers, which is why I observe that as land area increases, farmers and ranchers see an increase in their income and business welfare. To a large extent, the amount of land available for harvest has an impact on yields. The wider the agricultural land, the more profitable it is for livestock to use the land as a place to raise native chickens. Farmers who cultivate less than 1 hectare are eligible for subsidized fertilizer assistance to help offset higher wages and maintenance costs associated with larger land areas. more profitable for livestock to use the land as a place to raise native chickens. Farmers who cultivate less than 1 hectare are eligible for subsidized fertilizer assistance to help offset higher wages and maintenance costs associated with larger land areas. more profitable for livestock to use the land as a place to raise native chickens. Farmers who cultivate less than 1 hectare are eligible for subsidized fertilizer assistance to help offset higher wages and maintenance costs associated with larger land areas.

In contrast to goods with an area of more than 1ha, they are said to be able to buy fertilizer and process chili with good quality. They are given subsidized fertilizer through farmer groups, and those who do not follow the rules are not given subsidized fertilizer.

The results of the survey using chicken manure-based fertilizers and the growth process can be said to be good, only a little complicated to process chicken manure. Residents who do not get subsidized fertilizer because they do not join farmer groups can add chicken manure they bought to be used as chili fertilizer. The integration system has many advantages, one of which is the use of chicken manure as fertilizer and the consumption of plant stems by chickens.

V. Conclusion

1. Standard of Living has a significant influence on the welfare of farmers and ranchers in the Cingkes Village community, Simalungun Regency. Where the CR value is 5.017 and the probability value is 0.000. The standard of living has no significant effect on the income of farmers and ranchers in the Cingkes Village community, Simalungun Regency.
2. Farming has a significant influence on the welfare of farmers and ranchers in the Cingkes Village community, Simalungun Regency. Where the CR value is 4.864 and the probability value is 0.000. Farming has no significant effect on the income of farmers and ranchers in the Cingkes Village community, Simalungun Regency. Where the CR value is -2.283 and the probability value is 0.022.
3. Biota that can be used as chicken feed can be grown on plantations, reducing feed costs by up to 50%. Another advantage of the integrated farming method of chili and chicken is that rice and ducks can be harvested simultaneously without disrupting production. As a result, farmers' income will increase if the farming system is supported.

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