

Analysis of Socio-Economic Factor to Youth Business Interest in Beef Cattle Farming in Southeast Minahasa Regency, Indonesia

Erwin Wantasen^{1*}, Sintya J.K Umboh¹, Jein R. Leke²

¹Department of Socio Economics Faculty of Animal Husbandry Sam Ratulangi University, Manado-95115 Indonesia

²Department of Animal Production Faculty of Animal Husbandry Sam Ratulangi University, Manado – 95115 Indonesia

DOI: <https://doi.org/10.51584/IJRIAS.2024.910007>

Received: 20 September 2024; Accepted: 03 October 2024; Published: 05 November 2024

ABSTRACT

The research aims to analyze some socio-economic factors influencing young interest in cattle farming that can encourage their interest in farming cattle, while increasing cattle productivity and developing the beef cattle industry in the Southeast Minahasa Regency area. In detail, this research was performed in Southeast Minahasa Regency and site samples were purposively selected, where Belang District and East Tombatu District had the largest beef cattle populations, such as 888 and 678 cattle, respectively. Of 106 youth, 37 youth farming cattle and 69 youth not farming as well as aged 16-30 years were randomly selected as a sample of respondents from 265 youth farming cattle and not farming cattle using the formulation from Slovin. Data analysis used a multiple linear regression model, where variable of youth interest in beef cattle farming and the influencing variables were measured using a one to three-tiered Likert scale. The results of the research display that youth interest in farming beef cattle in Southeast Minahasa Regency, Indonesia was influenced by socio-economic factors, such as perceptions of income, communal environment, social status, and agricultural land availability for feed. Meanwhile, familial environment factor did not have a significant impact on youth interest in beef cattle farming. Therefore, these factors required consideration by policy makers in the research site so that youth conducting cattle farming gained knowledge related to profitable methods to farm beef cattle with minimal costs, while youth having not farmed cattle were assisted with beef cattle seeds to start their business and it is followed by facilitation to prevent cattle misuse by young farmers.

INTRODUCTION

Southeast Minahasa Regency has a growing number of beef cattle raising of 4,670 cattle or 4-5 times relatively lower than its neighboring Regencies, such as Minahasa Regency (26,289 cattle) and South Minahasa Regency (19,493 cattle) [1]. Belang and East Tombatu Districts are the largest beef cattle population in Southeast Minahasa Regency with the number of beef cattle as of 1,566 cattle (35.53%)

Research performed by Wantasen *et al* [2] displayed that labor factor influences the decline in cattle productivity in Southeast Minahasa Regency. One of the reasons is assumedly due to the decline of youth interest in the beef cattle farming sector. This interest does not appear spontaneously but it will grow and develop according to the influencing factors, both social and economic factors [3,4]. Social factors arise from external, such as familial environment, while economic factor, such as an income obtained by a person, which is money or goods [5]. The results of the pre-survey show that the largest number of cattle farmers in Southeast Minahasa Regency was in Belang District and East Tombatu District with a total of 521 cattle farmers, which was in 2020, and this decreased to 482 farmers in 2023. In addition, it would decline since 32% of farmers was over 60 years old [6]. Moreover, young residents were more interested in seeking job in cities with higher income [7]. This condition shows that youth in Southeast Minahasa Regency are currently less interested in the beef cattle farming sector. The results of other research [8] showed that many youth having a more advanced cultural value orientation are currently choosing jobs outside the agricultural sector with higher wages.

To prevent a reduction in the number of workers in the beef cattle farming sector, which may have reducing

impact on the availability of animal protein sources from beef in Southeast Minahasa Regency, some efforts are required to increase youth interest in cattle farming. Thus, an empirical study is needed to determine various socio-economic factors that influence youth interest in the beef cattle farming sector, which has never been conducted before.

Previous studies regarding beef cattle are mainly related to analysis of income, production, production costs, use of cattle feed technology, cattle-plant integration, business scale, supply chain and marketing, business feasibility, and production efficiency [9,10,11,12,13 ,14,15,16]. Hence, the future challenge is how to empower village youth in Southeast Minahasa Regency through strategic efforts to increase their interest in the beef cattle farming sector. As a result, the reduction in the number of beef cattle population in Southeast Minahasa Regency compared to other regions in North Sulawesi can be prevented and it will improve cattle productivity and community income from the beef cattle business. Therefore, this research aims to analyze some socio-economic factors influence youth interest in cattle farming so that it can encourage their interest in cattle farming, while increasing cattle productivity and developing the beef cattle industry in the Southeast Minahasa Regency.

RESEARCH METHOD

Research Site and Sampling Method

The research was conducted in Southeast Minahasa Regency, where sample sites were selected purposively, where Belang District and East Tombatu District were the largest beef cattle populations, such as 888 and 678 cattle, respectively. Furthermore, in each district, 2 villages with the largest number of beef cattle were selected purposively, such as South Tababo Village and South Buku Village located in Belang District, and, in East Tombatu District, Molompar Village and Molompar I Village were selected. The number of youth population with an age ranged of 16- 30 year olds farming cattle and not farming cattle in the four village samples was 265 people, consisting of 87 youth farming cattle and 178 youth not farming cattle. Additionally, the sample of farmers was selected using the formulation from Slovin [37/17] so that the number of farmers selected as espondents was 106 farmers, consisting of 37 youth farming beef cattle and 69 youth not farming cattle.

Data Collecting Method

The research employed primary data and secondary data. Primary data collection was conducted using survey techniques (direct observation) on site by obtaining clear and detailed information about a particular issue using questionnaires and in-depth interviews. Meanwhile, secondary data was obtained from the Agriculture Service office of Southeast Minahasa Regency, Statistics Office of North Sulawesi Province, Statistics Office of Southeast Minahasa Regency, Belang District Office and East Tombatu District Office, and other online sources. Primary data included the respondent’s age, gender, education, occupation, income, youth interests, familial environment, communal environment, social status. Also, secondary data comprised data on the cattle population in North Sulawesi according to Regencies/Cities, Districts and villages existing in Belang District and East Tombatu District, climate data, agricultural area, and so forth..

Data Analysis

The analytical tool used in this research was Multiple Linear Regression, which aimed to determine/predict the influence of socio-economics (income, familial environment, communal environment, and social status) on youth interest in beef cattle farming by using SPSS 24.0 for Windows. [39/18]

The equation of Multiple Regression is as follows [38/19]:

$$Y_1 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5 d_5 + e \dots\dots\dots(1)$$

Where,

Y = Youth Interest in Beef Cattle Farming (Likert scale)

a = constant

X1 = Youth perception on income from beef cattle farming (Likert scale)

X2 = Familial Environment (Likert scale),

X3 = Communal Environment (Likert scale),

X4 = Social Status (Likert scale)

d = Land availability for beef cattle feed (dummy)

b1 b2 b3 and b4 = regression coefficients of variables X1, X2, X3, and X4, e = standard error

To test the influence of youth perceptions on income of beef cattle business (X1), familial environment (X2), communal environment (X3), and social status (X4) on youth interest in beef cattle farming (Y), t-test and statistical F-test were partially and simultaneously performed with the following formulation [38/18)

$$t = (\bar{X} - \mu) / (\frac{S}{\sqrt{n}}) \dots\dots\dots(2)$$

Where :

t = t-Coefficient

\bar{X} = sample mean

μ = population mean

S = sample standard deviation

n = number of sample

$$F \text{ count} = [R^2 / (k - 1)] / [(1 - R^2) / (N - k)] \dots\dots\dots(3)$$

Where:

R² = Coefficient of Determination

k = Number of variables

n = Number of samples

To determine the extent of the variation in the variable of youth interest in beef cattle farming due to variations in the variable of youth perception of beef cattle business income (X1), familial environment (X2), communal environment (X3), and social status (X4), measurements of coefficient of determination (R²) was conducted.

$$R^2 = 1 - \frac{RSS}{TSS} \dots\dots\dots(4)$$

Where:

RSS = Total of residual square (error)

TSS = Total of squares

Subsequently, to test whether there was a violation of classical assumptions in the built analytical model, a normality test, heteroscedasticity test, multi-collinearity test, and autocorrelation test were performed [40/20 The concept and measurement of this research variable are presented in Table 1

Table 1. Concept of Socio-Economic Influence Variable on Youth Interest in Beef Cattle Farming

Variable	Sub-variables	Indicator	Measurement
Youth Interest (Y)	Youth interest in beef cattle farming	<ul style="list-style-type: none"> Youth interest to gain like feeling Youth interest to achieve attention Youth awareness to farm beef cattle Youth's willingness to farm livestock 	Likert Scale Score 3 = Agree Score 2 = Doubtful Score 1 = Disagree
Socio-Economic (X)	Youth Perception of Beef Cattle Business Income (X1)	<ul style="list-style-type: none"> Promising beef cattle business prospects Income level of beef cattle business 	Likert Scale Score 3 = Agree Score 2 = Doubtful Score 1 = Disagree
	Familial Environment (X2)	<ul style="list-style-type: none"> The level of family desire to run a beef cattle business Awareness for raising beef cattle Level of family economic need 	Likert Scale Score 3 = Agree Score 2 = Doubtful Score 1 = Disagree
	Communal Environment (X3)	<ul style="list-style-type: none"> Encouragement from surrounding environment dominantly operating beef cattle business Encouragement arising from successful beef cattle farmers environment Encouragement from people who have experience in beef cattle farming 	Likert Scale Score 3 = Agree Score 2 = Doubtful Score 1 = Disagree
	Social Status (X4)	<ul style="list-style-type: none"> Desire to be appreciated in conducting beef cattle business Desire to be respected in beef cattle business Desire to be highly considered in social status 	Likert Scale Score 3 = Agree Score 2 = Doubtful Score 1 = Disagree
	Availability of land for beef cattle feed (X5)	<ul style="list-style-type: none"> Having land for beef cattle feed 	Dummy: 0 if land \leq 0.3 ha 1, if the land is $>$ 0.3 ha

RESULTS AND DISCUSSION

Age of Respondents

The classification of respondents based on age level is presented in Table 2.

Table 2. Age of Respondents

Number	Age (Years)	Amount (people)	Percentage (%)
1	15-20	12	11.29
2	21-25	76	71.53
3	26-30	18	17.18
Total		100.00	106

The results in Table 2 demonstrate that the majority of youth in the research site (71.53%) aged 21-25 years. It means that the respondent’s age category was highly productive so they had physical abilities that were supportive of managing a beef cattle business. This was in line with Indey *et al* [21] stating that after reaching the age of 55-60 years, a person’s physical abilities decrease, so age affects the competence and performance of farmers.

Gender

A person’s gender can have an impact on the type of work they do. Gender also influences a person’s work productivity. Physical differences between men and women will certainly have an impact on their work results. Based on gender, the respondents were male. It was because the research targets were youth. The beef cattle business is a type of business that is mostly managed by men. This means that someone who desires to become a beef cattle farmer needs a lot of manpower so that those who pursue this work are men, though it does not obstruct the possibility that women can also do the same.

Educational Level

In the livestock business, the educational factor was expected to assist the community to increase the production and productivity of the livestock. An adequate level of education would have an impact on improving the performance and management capabilities of the livestock business. The classification of respondents based on education level in the research site is seen in Table 3.

Table 3. Classification of Respondents Based on Educational Level

No	Level of education	Amount (people)	Percentage (%)
1.	Elementary school	4	4.40
2.	Junior High School/Equivalent	19	17.65
3.	Senior High School/Equivalent	67	63.25
4.	Undergraduate	16	14.70
Total		106	100.00

Table 3 demonstrates the classification of respondents based on educational level. The result is that the highest educational level of respondents in the Southeast Minahasa Regency was senior high school, totally 67 people and percentage of 63.25% and the lowest was elementary school, such as 4 people with a percentage of 4.40%. This condition shows that the majority of youth in the research site of Belang District and East Tombatu District, Southeast Minahasa Regency started to consider the importance of education so that it supported beef cattle farming business. The higher the educational level of farmers, the wider their knowledge, so it would be easier to accept the introduction of new technology [22].

Respondent's Occupational Status

Work was a necessity for people to support their daily lives so they could finance all their clothing, food, and housing needs. The classification of respondents based on occupational level in Belang and East Tombatu Districts, Southeast Minahasa Regency can be seen in Table 4.

Table 4. Classification of Respondents Based on Occupational Status

Work	Amount (people)	Percentage (%)
Student	12	11.74
Breeder	48	45.54
Government employees	3	2.90
Private employees/employees	12	11.88
Farmer	20	19.14
Bricklayer	1	1.47
Self-employed	6	5.86
Motorcycle taxis driver	1	1.47
Total	100.00	106

Table 4 shows that the majority of respondents earned their living by farming beef cattle and other livestock, such as free-range chickens and pigs, such as 48 people with a percentage of 45.54%. Meanwhile, the lowest were motorbike drivers and bricklayers, which were 1 person with a percentage of 1.47%. It was because, according to respondents, livestock farming could provide promising income to satisfy daily life and was a hereditary occupation. However, 11.88% of youth respondents worked as private employees/employees working in Manado City as shop assistants or parking and security officers in private offices in Manado City with an average salary of IDR 2,000,000 – IDR 2,500,000/month, which was below the regional minimum wage for North Sulawesi province in 2024 as of IDR 3,500,000/month. This was in line with research [23] arguing that regional minimum wages have a positive effect on workers in the formal sector but do not provide any advantages for workers in the informal sector.

Income Level

The situation of respondents at the research site based on income level is shown in Table 5.

Table 5. Respondents' Income Level

Income Level (IDR/month)	Amount (people)	Percentage (%)
≤ 1,500,000	4	3.53
> 1,500,000 – 2,500,000	56	52.71
> 2,500,000	46	43.76
Total	106	100.00

The research results shown in Table 5 display that the majority (52.71%) of respondents' income ranged IDR 1,500,000 – IDR. 2,500,000 per month, while 43.76% had income greater than IDR 2,500,000/month, working as private employees, civil servants, farmers/breeders, motorcycle drivers and entrepreneurs. The lowest income level that was less than IDR 1,500,000/month was owned by 3.53% of respondents, working as bricklayers and parking attendants. The low income was related to relatively small size of land owned by farmers (< 0.353

hectares), and some had not had land for feed and other crops. The respondents' occupation was outside the agricultural and livestock sectors, which affected their income. The results of the research were in accordance with previous research conducted by [24,25], reporting that farmers' sources of income come from on-farm, off-farm, and non-farm sources. The sources of income from off-farm, such as trading agricultural and livestock products, have a greater percentage (50.37%), while income from on-farm, such as crops and livestock production businesses, contributes 43.36%, and the remainder comes from non-farm activities.

Youth Interest in Beef Cattle Farming

Youth interest in beef cattle farming was measured based on the youth's desire to achieve pleasure feeling, attention, and the youth's awareness and willingness to farm beef cattle. Table 6 shows youth responses to these indicators

Table 6. Assessment of Youth Interest to Achieve Pleasure Feeling

Youth's Desire to Get a Feeling of Pleasure	Frequency (Person)	Percentage (%)
Agree	72	68.00
Doubtful	34	32.00
Disagree	0	0.00
Total	100.00	106

The research results in Table 6 present that 68% of youth felt pleasure if they farmed beef cattle so it raised interest in cattle farming. It was in accordance with research conducted by Sulistyana *et al* (2021), stating that participation, enthusiasm, enjoyment, satisfaction, and technology adoption are determining factors of youth interest in Jabung District, Malang Regency to farm dairy cattle [26].

Furthermore, the research results in Table 7 display that most of youth interest in beef cattle farming was because they demanded attention from the surrounding community. Through farming beef cattle, farming youth felt cared for, so they would feel that they were respected as farmers, which motivated them to farm beef cattle. Similarly, it was in line with [27], arguing that one of the driving factors of farming practices in Northern Ghana community is the personal satisfaction factor. The farmers feel satisfied if their work is noticed and used as an example by others so that they are motivated to develop their farming and livestock businesses.

Table 7. Assessment of Youth Interest to Achieve Attention

Youth Interest to Achieve Attention	Frequency (Person)	Percentage (%)
Agree	71	67.24
Doubtful	35	33.12
Disagree	0	0.00
Total	106	100.00

The results of the analysis in Table 8 showed the level of youth awareness of beef cattle farming in Southeast Minahasa Regency.

Table 8. Youth Awareness of Beef Cattle Farming

Youth Awareness for Farming Beef Cattle	Frequency (Person)	Percentage (%)
Agree	88	82.20
Doubtful	18	17.80
Don't agree	0	0.00
Total	106	100.00

From Table 8, most respondents of youth had awareness of farming beef cattle. They were aware that farming beef cattle could provide benefits to themselves, such as selling cattle and cattle waste which was fertilizer from carcass and urine, so that their interest would be motivated in beef cattle farming [28].

Meanwhile, Table 9 presented the level of youth interest in beef cattle farming. The research results indicate that 70.22% of youth respondents had a strong desire to farm beef cattle. Their great desire to farm beef cattle was based on their idea that beef cattle could provide income in a relatively fast time, such as around 3-6 months through the fattening process with only 1-2 cattle. Youth thought that high desire would provide better results for them if they farmed beef cattle than those did not have interest. However, this great desire was impeded by the need for capital, mainly youth who had limited capital and relied on subsidies from their parents.

Table 9. Level of Youth Interest in Beef Cattle Farming

Youth Interest in Beef Cattle Farming	Frequency (person)	Percentage (%)
Agree	74	70.22
Doubtful	26	29.78
Disagree	0	0.00
Total	106	100.00

Analysis of the Influence of Socio-Economic Factors on Youth Interest in Beef Cattle Farming

The results of multiple linear regression analysis of the influence of socio-economic factors consisting of income, familial environment, communal environment, social status, and land availability on youth interest in beef cattle farming in Southeast Minahasa Regency are presented in Table 10.

Table 10. Multiple Linear Regression Analysis

Variable	Regression coefficient	T-count	Probability
Constant	-0.107	3,002	0.004**
Perception of Income (X1)	0.357	6,156	0,000**
Familial environment (X2)	0.114	1,637	0.108
Communal environment (X3)	0.233	3,201	0.004**
Social status (X4)	0.277	3,285	0.003**

Land availability (d)	1,209	2,117	0.072*
$R^2 = 0.723$			
Adj $R^2 = 0.659$			
Fhit = 14,207			0,000**

** = Significant at $\alpha < 0.05$; * = Real at $\alpha < 0.10$

Hypothetical test of partial influence in Table 10 shows that the variable of perception of income (X1), communal environment (X3), and social status (X4) had a significant influence ($P < 0.05$) on youth interest in beef cattle farming. Meanwhile, the variable of land availability (d) had a significant influence ($P < 0.10$) on youth interest in beef cattle farming in Southeast Minahasa Regency. Oppositely, it could be seen that the variable of familial environment (X2) had no significant influence on youth interest in beef cattle farming. The constant variable had a regression coefficient of 0.102. It presented that if the variable of youth's perception of income, familial environment, communal environment, social status, and land availability was equal to zero, youth interest in beef cattle farming tended negative with a value of -0.102. The adjusted R2 value of 0.659 showed that 65.9% of youth's interest in beef cattle farming could be explained by variables in the built regression model, while the remaining of 34.1% was influenced by external factors from the model. The results of the analysis also present that the variables of youth's perception of income, familial environment, communal environment, social status, and land availability dummy had simultaneously a significant influence on youth interest in beef cattle farming.

Perceptions of Income in Beef Cattle Business

Youth's perception of income from beef cattle business had a significant influence on youth's interest in beef cattle farming because beef cattle business could provide income to satisfy their living needs. In this case, the higher the income expectations that would be obtained, the higher the interest of youth in beef cattle farming. This was in line with research [29], arguing that earning income is the main reason why someone works. The higher the profits is obtained, the greater the enthusiasm, interest and productivity of work are. These results had implications for youth already farming livestock to continuously improve their business management to increase income from beef cattle business, while youth not having farmed livestock required to learn about beef cattle business management from youth already farming livestock.

Familial Environment

The results of the regression analysis demonstrate that the familial environment variable had no significant effect ($P > 0.05$) on youth interest in beef cattle farming. This was because youth's parents provided the freedom to heir children to choose a job according to their children's abilities and desires. If parents forced their children to work in the cattle business but their children did not respond positively, the income or revenue obtained from this business would be worst. An entrepreneurial spirit would emerge in a person when a person had a confident attitude that his/her actions were correct and successful, though he/she dealt with many challenges [30]. Several things obtained from this research were that to increase youth interest in beef cattle farming was related to the familial environment, such as parenting method, the relationships between family members, and the understanding of parents.

Communal Environment

The results of the regression analysis illustrate that the variable of communal environmental had a significant effect ($P < 0.05$) on youth interest in beef cattle farming. The regression coefficient value of the familial environment was positive at 0.233, indicating that the communal environment tended to encourage youth interest in beef cattle farming. It was because the condition of the people in the surrounding area, farming beef cattle, had shown that the income that they earned could satisfy their family's needs. Additionally, the community supported youth in the research area to raise beef cattle so that regeneration occurs from the older generation to the younger generation [31]. The communal environment could influence interest in farming beef cattle if many

people farmed beef cattle in the surrounding area they lived. External factor influencing a person's interest was environmental factor so that character formation and fostering great interest from the communal environment had a big role [32]. The regression coefficient value of 0.277 indicates that social status made a largely positive contribution to youth interest in beef cattle farming.

Social Status

The results of the regression analysis in Table 10 indicate that the variable of social status had a significant effect on youth interest in beef cattle farming ($P < 0.05$). The regression coefficient value of 0.277 demonstrates that social status made a largely positive contribution to youth interest in beef cattle farming. It was because they, having sufficient income from beef cattle farming, would feel appreciated or respected by the surrounding community. Higher social status would influence people's attitudes and feelings of high appreciation so that they would try to obtain a higher social status. Also, their efforts to achieve higher position before society would be higher rather than low-income workers [33].

Land Availability

The research results in Table 10 indicate that the variable of land availability had a significant effect ($P < 0.1$) on youth interest in beef cattle farming with a regression coefficient value of 1,209. It demonstrates that youth having land larger than 0.3 ha had a higher interest in beef cattle farming than youth having smaller land availability. This condition was related to the feed requirements of farmed beef cattle, where farmers with relatively small land availability would have difficulty in satisfying their livestock feed. Cattle that did not receive sufficient quantity and quality of feed would have low productivity, so it reduced people's interest in livestock business [34].

CONCLUSION

Youth interest in beef cattle farming in Southeast Minahasa Regency, Indonesia has been influenced by some socio-economic factors, such as perceptions of income, communal environment, social status, and agricultural land availability for beef cattle forages. Meanwhile, familial environmental factor has not had a significant impact on youth interest in farming beef cattle. Therefore, these factors require consideration by policy makers in the research site. As consequence, youth farming cattle can gain knowledge continuously, such as profitable methods to farm beef cattle with minimal costs, while youth having not farmed cattle are assisted with beef cattle seeds to start their business, and it is followed by facilitation to prevent cattle misuse by young farmers.

ACKNOWLEDGMENT

The writer would like to thank the Rector of Sam Ratulangi University Manado for the granting of competitive grant funding for Superior Basic Research-K1 Unsrat to perform this research. Also, the writer would like to thank to the research team, such as Prof. Dr. Rinny J Leke and Dr. Sintya JK Umboh for their cooperation so that this research can be completed and this article can be written.

REFERENCES

1. BPS Sulut. (2022). Sulawesi Utara Dalam Angka. BPS Sulut, Manado
2. Wantasen, E., S.J.K Umboh, J.R Leke. (2022). Produktivitas ternak sapi potong dan strategi pengembangannya di Kabupaten Minahasa Tenggara. Laporan Penelitian RDUU Unsrat.
3. Muhammad A., Agustono, A Wijianto. (2016). Faktor faktor yang mempengaruhi minat petani dalam berusahatani padi di Kecamatan Kebak Kramat Kabupaten Karang Anyar. *SEPA*, 12(2):205-213
4. Khai, H. V., M. Yabe. (2011). Technical Efficiency Analysis of beef cattle Production in Vietnam. *J. ISSAAS*, 17(1):135-146
5. Suhartini, (2011). Analisis faktor faktor yang mempengaruhi minat mahasiswa dalam berwiraswasta. *Jurnal AKMENIKA UPY*. 7: 46-55
6. BPS Minahasa Tenggara. (2023). Minahasa Tenggara Dalam Angka.
7. Suntajaya I.G.K.(2014). Faktor faktor yang mempengaruhi terjadinya urbanisasi di Provinsi Bali.

- Piramida 10(2) :61-70
8. Herlina (2012). *Orientasi Nilai Budaya Pemuda Pada Keluarga Perkebunan*. Penerbit Institut Pertanian Bogor. Bogor
 9. Wantasen, E, S.J.K Umboh and J.R Leke. (2023). Beef cattle farmers' economic behavior in The Minahasa Tenggara Regency, Indonesia. *International Journal of Advanced Engineering Research and Science*. 10(9): 09-15
 10. Endoh, E.K.M., and E. Wantasen, (2018). Effort to increase cattle farmers capacity in application of compact organic fertilizer technology. *Advances in Plants & Agriculture Research*, 8 (5): 413-415
 11. Wantasen, E., and U. Papatungan. (2018). Economic assessment of dual purpose type of cattle farming in Minahasa Regency- Indonesia, *Alanya Academic Review*, 2 (3) : 213-224
 12. Wantasen, E., S O.B Lombogia dan U. Papatungan. (2018). Analisis faktor faktor yang mempengaruhi pendapatan dan biaya produksi usaha ternak sapi potong di Kecamatan Langowan Barat Kabupaten Minahasa. *Prosiding Seminar Nasional Peternakan Untuk Peningkatan Ekonomi Pedesaan di Luar Pulau Jawa*. Fapet Unpad p: 362-370
 13. Wantasen, E., SJ.K Umboh and J.R Leke. (2022). Technical efficiency of beef cattle production in the Regency of Minahasa Tenggara, Province of North Sulawesi Indonesia. *GRC Advanced Research and Reviews*, 12(2): 204-215
 14. Wantasen, E., J.R Leke and S.J.K Umboh. (2021). A market analysis of beef cattle: Study in North Sulawesi Province- Indonesia. *GSC Advandced Research and Reviews*. 8 (3): 64-70
 15. Syakur, M.A., H Sutrisno, Purnomo dan B.S Hertanto. (2017). Analisis Rantai pasokan daging sapi dari rumah pemotongan hewan sampai konsumen di Kota Surakarta. *Sains Peternakan*, 15 (2): 52-58.
 16. Elly, F.H. A. Lomboan, Ch. L. Kaunang, M. Rundengan, Z. Poli, and S Syarifudin. (2020). Development potential of integrated farming system (Local cattle-Food crops): *Animal Production*, 21 (3): 143-147
 17. Sugiyono. (2014). *Management Research Methods*, ed. 1. Alfabeta, Bandung,
 18. Santoso, S. (2000). *Buku Latihan SPSS Statistik Parametrik*. Jakarta. PT AlexMedia Kompetindo Gramedia
 19. Algifari. (2000). *Analisis Regresi (Teori, kasus dan Solusi)*. BPFE YOGYAKARTA. Yogyakarta.
 20. Mardiatmoko, G. (2020). Pentingnya uji asumsi klasik pada analisis regresi linier berganda. *BAREKENG: Jurnal Ilmu Matematika dan Terapan* 14 (3): 333- 342
 21. Indey S., Saragih E.W, and Santoso B. (2021). Karakteristik peternak sapi di sentra produksi ternak sapi potong di Kabupaten Sorong. *Journal of Tropical nimal and Veterinary Science*, 11 (3): 245-256
 22. Paltasingh K.R., and Goyari P. (2018). Impact of farmer education on farm productivity under varying technologies: case of paddy growers in India. *Agricultural and Food Economics*, 6 (7): 1-19 <https://doi.org/10.1186/s40100-018-0101-9>
 23. Hohberg M., and Lay J. 2015. The impact of minimum wages on informal and formal labor market outcomes: evidence from Indomesia. *IZA Journal of Labor & Development*, 4 (14): 1-25, Doi: <https://doi.org/10.1186/s40175-015-0036-4>
 24. Prasetyo E., Ekowati T, and Gayatri S. (2020). An income analysis of beef cattle fattening system and its contibution to the total household income in Central Java Province. *Journal of the Indonesian Tropical Animal Agriculture*, 45 (4): 365-372. Doi: <https://doi.org/10.14710/jitaa.45.4.365-372>
 25. Christopher O.E., Chidebelu S.A.N.D, and Jackson N.N. (2015). An Evaluation of off-farm work and household income among Small-scale farmers in North Central Nigeria. *Journal of Agriculture and Sustainability*, 7 (2): 227-244
 26. Sulistyana, Shinta M, and Azizah S. (2021). Faktor faktor yang mempengaruhi minat pemuda untuk beternak sapi perah (Studi di dusun Krajan, Desa Kemiri Kecamatan Jabung Kabupaten Malang Jawa Timur. Thesis. Universitas Brawijaya
 27. Bedi S.M., Descheemaeker K, Kotu B.H, Frimpong S, and Groot J.C.J. (2020). Motivational factors influencing farming practices in Northern Ghana. *Wageningen Journal of Life Science* 92 (1): 1-13 doi: <https://doi.org/10.1016/j.njas.2020.100326>
 28. Rekwot G.Z., Abdulsalam Z, Yusuf O, and Oyinbo O. (2019). Profitability of beef cattle farming: Evidence from the Northwest Zone of Nigeria. *Proceedings at the 3rd Biennial Conference of the Society for Grassland Development in Nigeria Held at the National Animal Production Research Institute, ABU-SHIKA, ZARIA 3rd – 6th Nov. 2019. p.222-227*

29. Sarma, P.K., Raha S.K, and Mankhin B. (2015). Impact analysis of beef cattle agribusiness on income: A double difference approach. *American-European Journal of Management and Economic* 1 (1): 10-18. Doi: <https://doi.org/10.3329/jbau.v13i1.28726>
30. Agusmiati D dan Wayudin A. (2018). Pengaruh lingkungan keluarga, pengetahuan kewirausahaan, kepribadian dan motivasi terhadap minat berusaha dengan self efficacy sebagai variabel moderating. *Jurnal Pendidikan Ekonomi*, 7 (3):878-893. Doi: <https://doi.org/10.15294/eeaj.v7i3.28317>
31. Anwarudin O., Sumardjo S, Satria A, and Fatchiya A. (2020). Process and approach to farmer regeneration through multi-strategy in Indonesia. *Jurnal Penelitian dan Pengembangan Pertanian*. 39 (2):73-85.
32. Góngora R., Milan M.J, and Gelats F.L.I. (2019). Pathways of incorporation of young farmers into livestock farming, *Land Use Policy*, 85: 183-194. Doi: <https://doi.org/10.1016/j.landusepol.2019.03.052>
33. Widiyanti E., Setyowati N, and Ardianto D.T. (2018). Young generation perception an agricultural sector. *IOP Conference Series: Earth and Environmental Science*, 200 (012060) :1-5. Doi: <https://doi.org/10.1088/1755-1315/200/1/012060>
34. Katoch R. (2022). Impact of forage availability on livestock rearing and socioeconomic aspects. In: *Nutritional quality management of forages in the Himalayan Region*. Springer, Singapore. https://doi.org/10.1007/978-981-16-5437-4_2