Jurnal Veteriner
pISSN: 1411-8327; eISSN: 2477-5665
Terakreditasi Nasional, Dirjen Penguatan Riset dan Pengembangan, Kemenristek Dikti RI S.K. No. 36a/E/KPT/2016

Maret 2024 Vol. 25 No. 1 : 13-20
DOI: 10.19087/jveteriner.2024.25.1.13
online pada http://ojs.unud.ac.id/index.php/jvet

Multidimensional Analyses of Motivations for Pig Farming by the Residents of Kupang, Nusa Tenggara Timur, Indonesia

(ANALISIS MULTIDIMENSI MOTIVASI PETERNAK BABI RAKYAT DI KOTA KUPANG NUSA TENGGARA TIMUR INDONESIA)

Diana Meliani Sabat[1], Fransiskus Trisakti Haryadi[1], Nono Ngadiyono[1]

[1]Livestock Social Economica Departmen,
Animal Husbandry Faculty, Universitas Gadjah Mada
Jl. Fauna No 3, Bulaksumur, Kampus UGM
Yogyakarta, Indonesia 55821;
Email: dianasabat03@gmail.com

ABSTRACT

The most popular business for the people of Kupang City is the pig farming business. In doing their business, farmers certainly have certain motivations. So far, motivation is often seen as one complete variable, even though in doing business farmers do not only look at one reason, but see multidimensionally from various dimensions. The dimensions in question are economic, socio-cultural and household food waste utilization motives. This study was aimed to evaluate and analyze the multidimensionality of priority motivations in pig farming and determine which motives are most prioritized by farmers in conducting a pig business in Kupang City. There were 20 pig farmers involved in this study selected using purposive sampling method located in three sub-districts in Kupang City. The variables measured were farmers' motivations (economic motive, socio-cultural motive, and food waste utilization motive, farmer time and labor). Data analysis was conducted using the Analytic Hierarchy Process (AHP). The results showed that socio-cultural motives had the highest priority value (0.4032), followed by economic motives (0.3162) and household food utilization motives (0.2806).

Keywords: dimention motivation; cultural customs; excess food; income; pig farming; social status

ABSTRAK

Usaha yang paling banyak diminati oleh masyarakat Kota Kupang adalah usaha pemeliharaan ternak babi. Dalam melakukan usahanya peternak tentunya memiliki motivasi tertentu. Selama ini motivasi sering dipandang sebagai satu variabel yang utuh, padahal dalam melakukan usaha peternak tidak hanya melihat pada satu alasan saja, namun melihat secara multidimensi dari berbagai dimensi. Dimensi yang dimaksud yaitu motif ekonomi, sosial budaya dan pemanfataan sisa pangan rumah tangga. Tujuan dari penelitian ini adalah untuk mengevaluasi dan menganalisis secara multidimensi motivasi prioritas dalam beternak babi dan menentukan manakah motif yang paling diprioritaskan peternak dalam melakukan suatu usaha babi di Kota Kupang. Sebanyak 20 peternak babi terlibat dalam penelitian ini

yang dipilih dengan metode *purposive sampling* yang berlokasi di tiga kecamatan di Kota Kupang. Variabel yang diukur adalah motivasi peternak (motif ekonomi, motif sosial budaya, dan motif pemanfaatan sisa makanan, waktu dan tenaga kerja peternak). Analisis data dilakukan dengan menggunakan *Analytic Hierarchy Process* (AHP). Hasil penelitian menunjukkan bahwa motif sosial budaya memiliki nilai prioritas tertinggi (0,4032), diikuti oleh motif ekonomi (0,3162) dan motif pemanfaatan pangan sisa rumah tangga (0,2806).

Kata-kata kunci: dimensi motivasi; adat budaya; makanan berlebih; pendapatan; beternak babi status sosial

INTRODUCTION

Pig domestication has been taking place for millennia, and it is a common practice for many residents of Nusa Tenggara Timur (NTT) Province. Wea *et al*. (2020) reported that NTT has the highest concentration of pig farming in Indonesia, in which 85% are traditionally raised, and noted the shift in the breeds of animals from local to hybrids. Pigs have the potential to be reared because it has been easy to adapt and widely spread in several areas of NTT (Gomes and Code, 2020). The goal of raising local pigs is a strategy to improve the financial condition of smallholder farmers (De Almeida *et al.,* 2021).

Swine farming is an important source of income for many families, as well as filling other functions such as for cultural events, funding children's education, paying debts, and savings. Domesticated pigs are often used in cultural rituals, including wedding ceremonies, funerals, conflict resolutions, and peace offerings (Iyai *et al*., 2015). Pigs play an important role in increasing the income of farmer households and cultural purposes (Americo *et al.,* 2021).

Raising pigs can also be a social status, in which higher number of animals in a family increases that family's social position in the community. Along with the increased development in the economy, pig farming has also become a business to earn profits. Therefore, in addition to its social function, pig farming provides economic benefits. People raise two to ten pigs per household (Foenay and Koni 2017). Sold animals would increase family incomes and be used for meeting family's basic needs, such as food, clothing, medications, and education (Mutua *et al*., 2012). The type of pig farming in Kupang City is intensive farming. Livestock kept in pens varies, some are exclusively male animals alone or a collection of several female pigs. However, there are still some farmers who keep their animals without using pens (Bellini *et al.,* 2021). Livestock are tied in the yard and feed control is still a concern.

The success of pig farming depends not only on the management of reproduction, production, or maintenance, but also on the manpower, is the farmers. One of the aspects driving the farmer to succeed is motivation. Every person performs an activity or task based on a reason or background of certain needs, which is called motivation. Basically motivation refers to the achievement of organizational goals by meeting individual needs or demands. Pig farmers have more than one reason or motivation for raising pigs. To understand the farmers' conducts, it was important to determine the priority scale of these farmers in their pig raising practices in Kupang. The objective of this study was to evaluate and analyze the multidimensionality of priority motivations in pig farming and determine which motives are most prioritized by farmers in conducting a pig business in Kupang City.

RESEARCH METHODS

The study took place in September to October 2019 in three subdistricts of Maulafa, Oebobo, and Kelapa Lima, in Kupang City, NTT Province (Figure 1). Those locations were chosen because of the high numbers of pigs.

For the purpose of analytical hierarchy process (AHP), the responses from the farmers were tested for consistency, and 20 respondents were deemed to provide consistent responses, which were used for further analyses. The 20 respondents were selected from three subdistricts. The criteria to determine sampling included 1) having been in pig farming for at least 10 years, 2) raising pigs during the study, and 3) willing to share information (Sabat 2021).

Data collection were acquired from questionnaires and in-depth interviews. The collected data were analyzed using analytical hierarchy process (AHP), which is geared to describe the view of stakeholders on quantifying the alternatives (Widyaningsih, 2012) Respondents were given questionnaires to draw judgements on their motivations to raise pigs in Kupang City. In the first phase of AHP, theories were constructed from the whole methodology and designed in a hierarchy consisting of several factors/criteria and sub-factor or alternative criteria of the study (Singh and Acharya, 2014) .

This study employed a three-tiered hierarchy comprising of goal in the hierarchy level I, criteria in the hierarchy level II, and alternative criteria in the hierarchy level III. The goal or hierarchy level I of this study was the motivation of pig farming by the residents of Kupang. The hierarchy level II contained the criteria to achieve that goal, which were found to be motivations based on economic aspects, socio-cultural aspects, and household food waste utilization aspects. The hierarchy level III consisted of alternative criteria detailing the three criteria in the hierarchy level II.

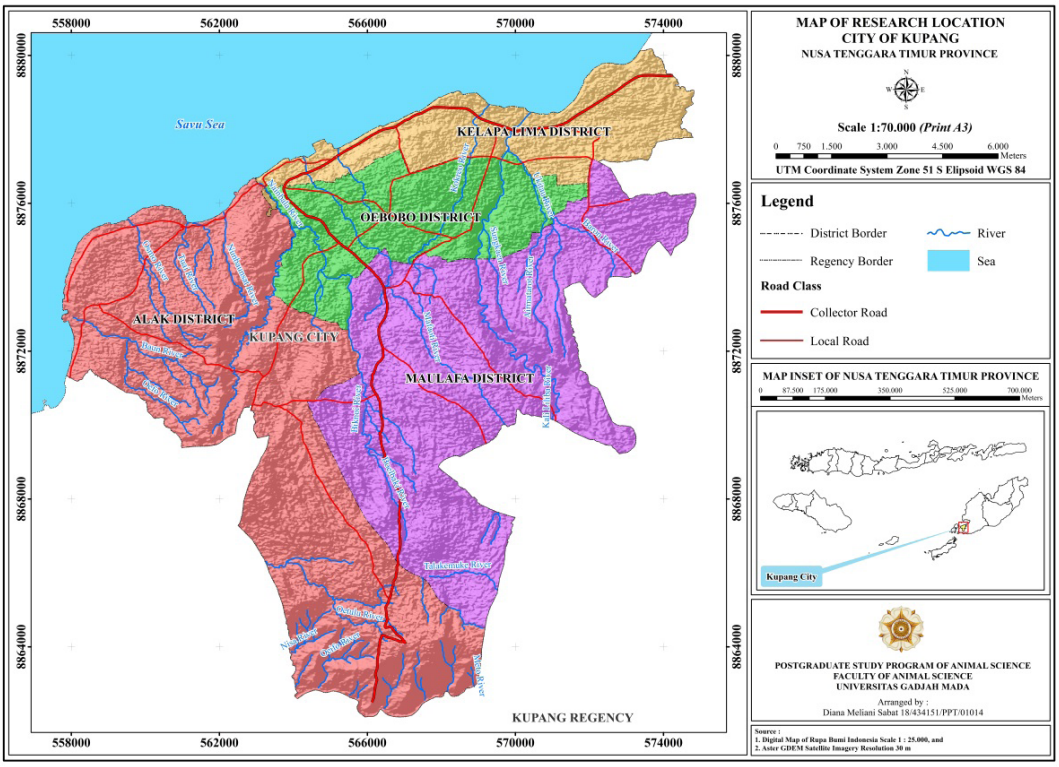

Figure 1. Geographical location of the study area, Kupang city district

There were ten alternative criteria and those were income improvement (II), household need fulfilment (HNF), fast capital return (FCR) saving benefit (SB), social status (SS), cultural events and weddings (CEW), inherited activity (IA), low cost (LC), ease of feed attainment (EFA), and labor and time saver (LTS). Subsequently, all dimensions that had been determined were constructed as a three-tiered hierarchy and connections were formed (Figure 2)

Data Analyses

Respondents were asked to fill out the questionnaire by assigning scores on the above criteria based on their own perspectives. The scores were arranged into a matrix and were analyzed using Microsoft^{R} Excel^{TM} 2013 (Saaty, 2008). The steps to evaluate the respondents' scores were: 1) The scores were averaged using the geometric mean because AHP only requires one answer for a comparative matrix; 2) Results from pairwise comparisons were presented in a pairwise comparison matrix; 3) Each element from a certain column was divided by the value of that column; 4) Results were normalized to generate an eigenvector matrix by averaging the sum of the rows against the five criteria. The above calculations exhibited eigenvectors, which were the priorities of the five criteria of the goal; 5) Consistency ratio (CR) were calculated with the following steps: a) Initial pairwise comparison matrices were multiplied by priorities; b) Sums of rows were multiplied by priorities; c) The results of above multiplications were divided by n to find the λmax values; d) Consistency Index calculation. It is important to understand the consistency of perceptions in decision making. The indicator for that consistency can be measured through Consistency Index, which is formulated as: $CI = (\lambda max - n) \times (n-1)^{-1}$. Notes: CI= consistency index; λ max= maximum eigenvalue; n= matrix order ; e) Consistency Ratio Calculation. The AHP measures overall consistency based on various considerations through Consistency Ratio, which is formulated as: CR = CI/RI. Notes: CR= Consistency Ratio; RI= Random Index; f) The value for consistency measurement is needed to determine the consistency of respondents' answers that will affect the validity of the results. The result in this study was $CR < 0.10$, which indicated that the responses to the questionnaire were consistent and the priorities were applicable; g) Once the priority of each criterion and alternative

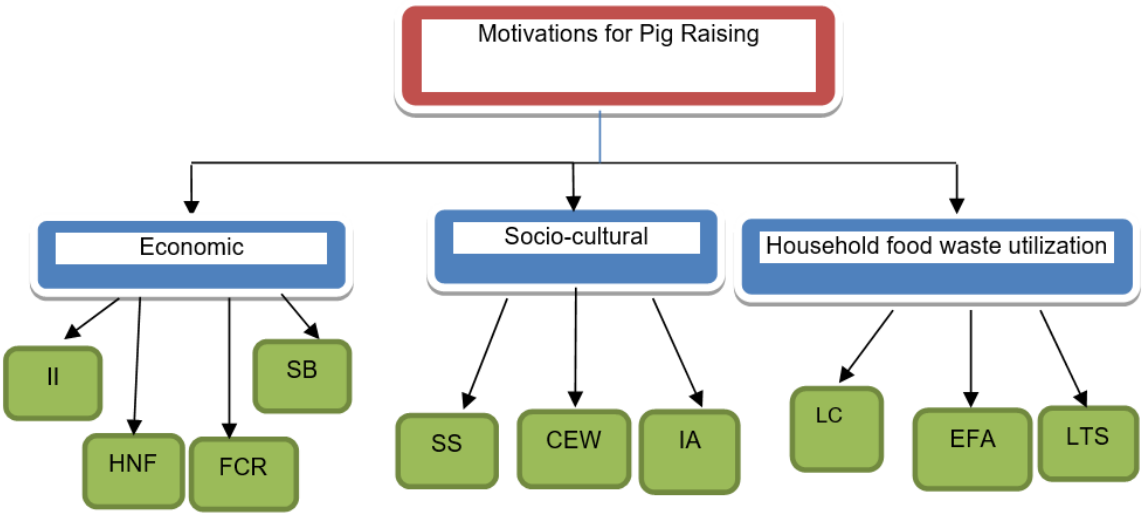

Figure 2. The hierarchy of motivational priorities in pig farming in Kupang, NTT;

criterion was established, alternative to be the main priorities were chosen. The whole value of each alternative criterion was the whole sum of multiplication between the priorities of a criterion and alternative criteria. The alternative with the highest value became the priority for the respondents.

RESULTS AND DISCUSSION

Priority Calculation in Analytical Hierarchy Process (AHP)

The development of the hierarchy was initiated by determining the goal, criteria, and alternative criteria to facilitate the subsequent data analyses. The resulting hierarchy was made up of three levels. Level I was the goal of this study, which was to determine the motivation priorities for pig farming in Kupang City. Level II consisted of reasons or motivations and factors that would affect the study objective. Level III comprised of sub-factors from the existing motivations. The purpose of alternative priorites was to understand the levels of factors from priority determination and explain that Level I stated the objective, Level II showed the influential factors, and Level III constituted the choices from the priority scale.

The results of priority value calculation (Figure 3) showed that the priority value of economic motivation was 0.3162, while those of socio-cultural and household-food-waste-utilization motivations were 0.4032 and 0.2806, respectively.

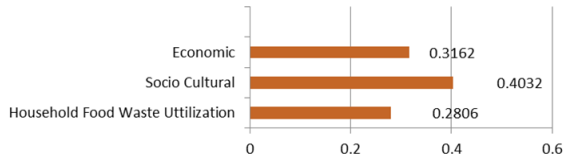

Figure 3. The distribution of priorities in hierarchy level II

The socio-cultural motivation scored 0.4032 of priority value, which indicated that 40.32% pig farmers in Kupang City raised pigs based on socio-cultural reasoning. Tukan *et al*. (2019) categorized the reason of farmers raising pigs was for economic and socio-cultural reasons. The number of pigs in possession of a family significantly determines the social status of that person in the community. Pig farming has a significant role in various religious and social events in the peoples of NTT, who almost always use pigs as the sacrificial animals in cultural ceremonies (Americo *et al.,* 2021). The pigs being cared for are also the results of inherited activities from one generation to the next. Result from interviews with several respondents showed that 50% farmers raised pigs because their parents did too. Almost all farmers cared for their animals the same way as their parents previously did.

Economic motivation was second to the socio-cultural motivation. This phenomenon could be explained by the farmers' admission that pig raising was a secondary occupation and not the main source of income. However, the attitude of most respondents understood the benefits from animal sales that could be used as savings for future needs as well as meeting family needs. This results indicated that pig farming showed a prospect for a household economic activity

The third priority was occupied by the motivation to utilize household food waste with the value of 28.06%. One of the factors that significantly affect the productivity of pig farming is feed because it constitutes 60-70% of the total cost of production (Patience *et al.,* 2015). Pig farmers in NTT depend on household food waste and are reluctant to use commercial feed for the reason of high cost (Ly and Kallau, 2014). The relatively high cost of pig feed cases many farmers to use household food waste without regard to the nutrient contents. Low skill and attitude

of not wanting to be preoccupied are some of the technical difficulties encountered in managing and precision in generating high quality ration. Hartini *et al*. (2015) reported that farmers mixed pig ration without measuring the nutrient contents. This practice would affect the growth of pigs, which in turn would reduce the sale value.

The priority calculations of the matrix normality (Figure 4) showed that among the ten alternative criteria, the three highest priority values were cultural events and weddings, social status, and inherited activity, with scores of 0.1246, 0.1151 and 0.0999 respectively. Whereas the priorities with the lowest values consisted of ease of feed attainment (0.0808), low cost (0.0836), and labor and time saver (0.0845).

The data analyses on all alternative criteria/sub-factors of the three main criteria resulted in cultural events and weddings (0.1246), household need fulfillment (0.1190), and social status sosial (0.1151) occupying the top three positions (Figure 3). Two of those sub-factors belonged to the socio-cultural motivation, which revealed that the farmers' priority for raising pigs was mostly influenced by the socio-cultural motivation followed by the economic one.

Iyai *et al*. (2015) reported that domesticated pigs were often used in cultural rituals, for instance wedding expenses, peace ceremonies, funerals, and other social activities. Tukan *et al*. (2019) communicated that pigs had been domesticated for generations and become involved in cultural rituals, such as traditional events, dowry (locally known as *belis*) as well as requirements for customary ceremonies. The sub-factor of cultural events and weddings is the main priority among the alternative criteria because of the use of pigs in those ceremonies. The number of animals given as a dowry depends on the social status and/or the education level of the bride, ie. the higher the status/education, the more pigs are required for a dowry. The same case is observed in the traditional rituals, in which the more pigs sacrificed, the higher value is bestowed on the ceremony.

The study also showed that household-need fulfilment occupied the second priority. This phenomenon demonstrated that domesticated pigs are not only used for cultural and social activities, but also for meeting the household needs, which keep increasing, from the sales of the animals. Previous study showed that economic motivation fell into high category (80%) because the public had become aware of the facts that pigs could be used for improving the family welfare, and also for savings that could be monetized during emergency (Tulle *et al*., 2012).

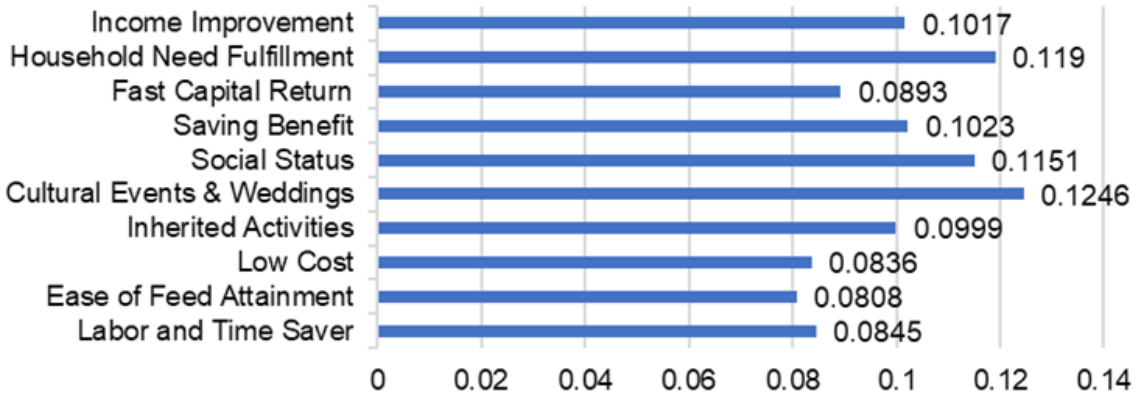

Figure 4. The priority values of hierarchy level III.

Table 1. The results of Consitency Ratio (CR) calculations

Criteria	Consistency Ratio Values (< 0.1)
Hierarchy Level I	0.08
Hierarchy Level II	0.09

The results of consistency calculations (Table 1) illustrated that Hierarchy Level I (criteria) and Hierarchy Level II (alternative criteria) exhibited consistency ratios of less than 0.1. This meant that the tests on all levels were consistent, therefore the consistency of the respondents' answers could be used as the base to determine the priority scale (Saaty 2008).

CONCLUSION

The motivation that became the main priority for farmers in raising pigs was socio-cultural motivation, with economic motivation in second place, and household-food-waste utilization in last place. Traditions and wedding celebrations, meeting household needs, and social status occupied the three highest positions among the ten alternative criteria studied

SUGGESTION

In the development of pig farming in Kupang city, it is necessary to pay attention to and optimally utilize the socio-cultural aspects of pig raising which are the main considerations for farmers in making decisions to raise pigs.

My suggestion for future research is that evaluation related to assistance for farmers in the application of pig farming innovations needs to be more intensified for farmers who have low economic motives and farmers who rely more on utilizing household food waste in raising pigs.

ACKNOWLEDGEMENT

I would like to express gratitude to the Magister Study Program of Animal Husbandry Faculty, Universitas Gadjah Mada, Yogyakarta, for the financial support, and pig farmers of Kupang for providing information pertinent to this study.

REFERENCES

Americo J, Suparta IN, Inggriati NWT, Putri BRT. 2021. Competence and Performance of Agricultural Extension Agents in Increasing Pig Farmers' Performance in Timor-Leste - The Universal Digital Repository. *International Journal of Agricultural Extension and Rural Development Studies* 8(5): 17–28.

Bellini S, Casadei G, De Lorenzi G, Tamba M. 2021. A Review of Risk Factors of African Swine Fever Incursion in Pig Farming within the European Union Scenario. *Pathogens* 10(1): 84.

De Almeida A, Olmo L, Copland R, Alders R, Toribio JALML. 2021. "Investigation of Animal Health and Husbandry Practices in Smallholder Pig Production Systems in Timor-Leste." *Veterinary Parasitology: Regional Studies and Reports* 26. doi: 10.1016/j.vprsr.2021.100615.

Foenay, Tri Anggarini Yuniwati, and Theresia Nur Indah Koni. 2017. "Usaha Pembibitan Ternak Babi Maulafa." *Jurnal Pengabdian Masyarakat Peternakan* 2(1); 69-75 doi: 10.35726/jpmp.v2i1.152.

Gomes GS, Code AM. 2020. Effect of *Moringa oleifera* Lam Leaf Flour in Diet to Increase the Production Performance of Local Pig of Timor Leste. *International Journal of Fauna and Biological Studies* 7(3): 691–693.

Iyai DA, Mulyadi, Gobay B. 2015. Trend Analyses of Economical and Socio-Cultural Options of Arfak Tribe Pig Farmers on Shaping Pig Farming Development in Manokwari, West Papua-Indonesia. *Jurnal Peternakan Sriwijaya* 4(1): 54-65. doi: 10.33230/jps.4.1.2015.2300.

Ly J, Kallau NHG. 2014. Pengaruh Suplementasi *Saccharomyces cerevisiae* Sebagai Probiotik dalam Ransum Berbasis Pakan Lokal Terhadap Performans dan Kecernaan Nutrisi Pada Babi Lokal Fase Starter. *Jurnal Kajian Veteriner*2(2) : 111-118

Mutua, Florence Kanini, Catherine Dewey, Arimi S, Ogara W, Levy M, Schelling E. 2012. A Description of Local Pig Feeding Systems in Village Smallholder Farms of Western Kenya. *Tropical Animal Health and Production* 44(6): 1157-1167 doi: 10.1007/s11250-011-0052-6.

Patience JF, Rossoni-Serão MC, Gutiérrez NA. 2015. A Review of Feed Efficiency in Swine: Biology and Application. *Journal of Animal Science and Biotechnology* 6(33): 1-9.

Saaty TL. 2008. Decision Making with the Analytic Hierarchy Process. *International Journal Scientia Iranica* 1(1): 83–98. doi: 10.1504/ijssci.2008.017590.

Sabat DM. 2021. Hubungan Motivasi Peternak Berdasarkan Pendekatan Multidimensional dengan Adopsi Inovasi Pemeliharaan Ternak Babi di Kota Kupang. [*Thesis*]. Yogyakarta. Gadjah Mada University.

Samkol P, Borin K, Sovann S. 2006. Pig Systems in Southeast Asia—The Case of Cambodia. Proceedings of Pig Systems in Asia and the Pacific: How Can Research and Development Enhance Benefits to the Poor, Bangkok, 23-24 November 2006, Hlm. 34-42. http://cdn.dairyasia.org/APHCA/dmdocuments/PAP_06_Asia_Pig_Systems_Ws.pdf

Singh RK, Acharya P. 2014. An AHP Model Approach to Supply Chain Flexibility: A Case Study of Indian FMCG Firm. *Operations and Supply Chain anagement: An International Journal* 7(2): 64-69. doi: 10.31387/oscm0170109.

Tukan DH, , Hartono B, Nugroho BA. 2019. Household Economic Analysis on Pig Farms in East Flores Regency East Nusa Tenggara Province. *International Research Journal of Advanced Engineering and Science* 4(4): 190–95.

Tulle D, Haryadi FT, Arinto. 2012. Analisis Motivasi dan Pendapatan pPada Usaha Pemeliharaan Ternak Babi Skala Rumah Tangga di Kota Kupang. *Buletin Peternakan* 29(2): 88-96 doi: 10.21059/buletinpeternak.v29i2.1173.

Wea R, Ninu AY, Leoanak SP. 2020. Optimalisasi Peternakan Babi Bibit Unggul (Persilangan Landrace dan Duroc) Bagi Peternak Lokal di Nusa Tenggara Timur." *Jurnal Pengabdian Kepada Masyarakat* 26(3): 138-141. doi: 10.24114/jpkm.v26i3.14897.

Widyaningsih EY. 2012. Penerapan Analisis Hirarki Proses (AHP): Dalam Penentuan Formula Alokasi Dana Desa. [*Thesis*}. Surakarta. Universitas Sebelas Maret.