THE ANALYSIS OF FACTORS AFFECTING THE PERFORMANCE AND BENEFIT OF KARAPAN (RACING) CATTLE BUSINESS IN MADURA ISLAND, EAST JAVA, INDONESIA

Riszqina[1,2], Isbandi[1], E. Rianto[1] and S. I. Santoso[1]

[1]Faculty of Animal and Agricultural Sciences, Diponegoro University, Tembalang Campus, Semarang 50275 - Indonesia

[2]Permanent Address: Faculty of Agriculture, Madura University, Jl. Raya Panglegur Km 3,5 Pamekasan, Madura - Indonesia

Corresponding E-mail : qqhsoeyanto@gmail.com

Received January 05, 2014; Accepted February 20, 2014

ABSTRAK

Sebuah penelitian dilakukan untuk menganalisis pengaruh faktor-faktor produktif terhadap performans usaha sapi karapan di Pulau Madura, Provinsi Jawa Timur, Indonesia. Penelitian dilakukan menggunakan metode survei, dengan 135 peternak sapi karapan sebagai responden. Analisis data variabel zooteknis, motivasi peternak, curahan waktu tenaga kerja, keterampilan tenaga kerja, skala usaha, produktivitas usaha, performans dan keuntungan usaha sapi karapan dilakukan dengan program Lisrel 8.8. Hasil penelitian menunjukkan bahwa zooteknis, motivasi peternak, keterampilan tenaga kerja dan skala usaha berpengaruh sangat nyata (P<0,01) terhadap produktivitas sapi karapan, sedangkan curahan waktu tenaga kerja tidak berpengaruh nyata (P>0,05) terhadap produktivitas sapi karapan. Performans usaha sapi karapan dipengaruhi oleh produktivitas ternak sapi karapan (P<0,01). Keuntungan usaha sapi karapan dipengaruhi oleh performans usaha ternak sapi karapan (P<0,01). Disimpulkan bahwa performans usaha sapi karapan dipengaruhi oleh produktivitas sapi karapan.

Kata kunci: keuntungan usaha, produktivitas sapi karapan

ABSTRACT

A research was carried out to analyze the influence of productive factors on the performance of *karapan* (means racing) cattle business in Madura Island, East Java Province, Indonesia. The research was conducted by a survey method, with 135 karapan cattle farmers as respondents in regencies of Bangkalan, Sampang, Pamekasan and Sumenep (mainland). The data were collected in the period of April to August 2012. Data of zootechnique indicators variables, farmer's motivation, allocation time of labour, labour skills, business scale, productivity of karapan cattle, farmers' performance and benefit of karapan cattle business were analysed by Lisrel 8.8 program. The results showed that factors of zootechnique, farmer's motivation, labour skills and business scale had highly significant influence (P<0.01) on productivity of karapan cattle, but allocation time of labour did not have significant influence (P>0.05). The performance of karapan cattle business was highly influenced by productivity of karapan cattle (P<0.01). The benefit of karapan cattle business was influenced (P<0.01) by performance of karapan cattle business. It is concluded that the farmer's benefit of karapan cattle business was influenced by performance of karapan cattle, which in turn was influenced by productivity of the karapan cattle.

Keywords: benefit of business, productivity of karapan cattle

INTRODUCTION

Madura cattle are an indigenous breed in Madura Island, East Java Province, Indonesia. Madura Cattle are used as beef cattle or draught, beauty contest (*sonok* cows) and racing (karapan bulls). Madura Cattle population in the Madura Island in 2010 was 787,434 heads, contributing 21.02% of the total cattle population in East Java), spread over 4 regencies, namely Bangkalan (164,201 heads), Sampang (176,076 heads), Pamekasan (130,576 heads) and Sumenep

(316,571 heads) (Division of Animal Husbandry Service, East Java Province, 2011). The population of karapan cattle in Madura Island (mainland) in 2011 was 617 heads. Karapan cattle are prepared for racing cattle since the cattle are 4-5 months of age (Riszqina e*t al.*, 2012).

Productivity of agribusiness is influenced by land occupation, capital, number of labour, management, socio-economic condition of the farmer and climate (Hooper *et al.*, 2002, Soekartawi, 2010). Other factors that influence animal farming production are feed, age of animal, farming experience, animal handling, the use of technology, genetics, environment, time allocation in cattle farming, number of labour, number of cattle raised, and farmer's motivation (Isbandi 2005; Soekartawi, 2010; Luanmase *et al*., 2011; Guntoro and Riyadi, 2012). The animal productivity affects the performance of the farm animal agribusiness (Guntoro and Riyadi, 2012).

The purpose of this research was to analyze the influence of productive factors on the performance of karapan cattle business in Madura Island.

MATERIALS AND METHODS

The research was carried out in Bangkalan, Sampang, Pamekasan and Sumenep regencies in Madura Island. One hundred and thirty five karapan cattle farmers were interviewed to obtain the information needed. The respondents were chosen by random sampling method. The data were collected in the period of April to August 2012. The primary data were obtained from interviews and field observation, while the secondary data were obtained from the Livestock Services Bureau and Tourism Bureau of regencies. Questionnaire test was conducted by validity and reliability test on 30 respondents. The study began with a structured questionnaire to obtain information about the characteristics of farmers and cattle business (productivity of karapan cattle, performance of karapan cattle business and benefit of karapan cattle business). The subsequent study was conducted using questionnaire with Likert scale 1-5 on every indicator of variables to obtain information about the variable of zootechnique, farmer's motivation, the allocated time of labour, labour skills, and business scale.

Variables of zootechnique were measured using 5 indicators, namely stocker selection (Z1), feed (Z2), housing (Z3), reproduction (Z4), and health (Z5). Variables of farmer's motivation were measured using 5 indicators, namely basic needs (M1), needs of safety and comfort (M2), needs of belonging (M3), needs of esteem (M4) and needs of recognition (M5). Variables of time allocation of labour consisted of 6 indicators, namely cleaning the stall (C1), feeding (C2), cleaning and massaging the cattle (C3), training the cattle (C4), setting up and giving herbs (C5), and preparing cattle for the race (C6). Variables of labour skill were measured using 3 indicators, namely workers' knowledge (K1), the use of technology (K2), and labour experience (K3). Variables of business scale consisted of 3 indicators, namely capital (T1), social-economics condition of the farmer (T2), and number of cattle owned (T3). Productivity of karapan cattle was measured using 3 indicators, namely the difference in value of cattle (buying and selling) within a year (P1), the number of being raced within a year (P2), and the number races won within a year (P3). Variable of farmer's benefit was observed using 2 indicators, i.e. difference between revenue and total cost in one year (I1) and farming benefit per year divided by the number of cattle per year (I2). Variable of performance of karapan cattle business was observed using 2 indicators, namely R/C that was revenue of farmer divided by total cost per year (PF1) and B/C that was benefit of farmer divided by total cost per year (PF2). Benefit is the difference of revenue and total cost. The indicator variables obtained were transformed to a score scaled from 1 to 5.

Each variable was analysed by the confirmatory factor analysis (CFA) of Lisrel 8.8 program (Ghozali and Fuad, 2008) to determine indicators which influenced each variable of karapan cattle business. Indicators of CFA of each variable that was able to provide SLF (standard of loading factor) or $\lambda>0.5$ (Wijanto, 2008) and the value of $t > 1.96$ (Ghozali and Fuad, 2008), were used to support variables as Latent Variable Score (LVS). The level of reliability of each variable was determined by construct reliability (CR) value and variance extracted (VE). The CR value was expected to be higher than 0.70, and the value of VE was expected to be higher than 0.50 (Wijanto, 2008).

LVS of zootechnique, farmer's motivation, labour time allocation, labour skills and business scale on productivity of karapan cattle, income and performance of karapan cattle business were analyzed for Structural Equation Modeling (SEM) using Lisrel 8.8 program (Ghozali and Fuad,

2008). The equations used were as follows:

Productivity = (γ_1 Zootechnique) + (γ_2 Motivation) + (γ_3 Time Allocation) + (γ_4 Labour Skills) + (γ_5 Business Scale) …..... (1)

Performance = (β_1 Productivity) ….....(2)

Benefit of business = (β_2 Performance) ....(3)

RESULTS AND DISCUSSION

Characteristics of farmers

Karapan cattle farmers in Madura Island being the respondents in this research were all men, 18.5% were under 30 years old, 28.1% were between 30 to 40 years old, 44.4% were between 40 to 60 years old, and 8.9% were more than 60 years old. These data indicate that most of farmers were in the productive age (Sonbait *et al.*, 2011). According to Sonbait et al, (2011), age was one factor that affects a person's ability to work. This fact will certainly affect the productivity of farmers in the development of karapan cattle business.

The main profession of the respondents were farmers (45.2%), village officials (14.0%), businessmen (13.3%), traders (11.9%) and civil servants/pensioners (15.6%). Most of the farmers (46.7%) finished elementary school or never finished elementary school, 14.1% finished junior high school, 31.1% finished senior high school, and only 8.1% graduated from higher education. According to Mwanyumba *et al*. (2010) and Sonbait *et al*. (2011), the profession levels of education are associated with the ability and willingness to adopt new technology or knowledge. People who were not farmers tended not to keen in running their animal farm business, because they had family income from other sources. Farmers with low education are less likely to accept reforms in the livestock business, farmers with higher level of education had better motivation to raise their cattle and improve their knowledge and skills (Mubyarto, 1995; Guntoro and Riyadi, 2012).

Productivity and Performance of Karapan Cattle Business

Productivity of karapan cattle was measured by the difference between selling value and buying value of cattle per year of each farmer. The average of the productivity was IDR. 93,850,370 (Table 1). The average number participation in the race per year was 4 events, the average of winning the race per year was 1 event, and the average value of prize per year was IDR.9,776,296.

The average of benefit from karapan cattle per year was IDR. 1,948,010. The average benefit per head of cattle was IDR. -120,405 that was presented in Table 2. The value was negative because the money received from the selling was less than the cost. The high cost was spent for feed, eggs-herbal medicine, labour and cattle training (running speed and balanced running in pair). The karapan cattle were given medicine and chicken eggs everyday for two weeks before the competition. The big cattle spent higher cost for herbs than the small cattle. The price of karapan cattle was more expensive than the price of beef cattle (Riszqina *et al.*, 2011). The performance of karapan cattle business based on the R/C ratio and B/C ratio is presented in Table 3. The average value of R/C ratio and B/C ratio of karapan cattle business were 0.95 and -0.05, respectively. These indicated that most of karapan cattle businesses were not profitable because farmers suffered from loss (Soekartawi, 1995). Nevertheless, most of the karapan cattle farmers still reared the karapan

Table 1. Productivty of Karapan Cattle

Component	Average	Maximum	Minimum	Standard Deviation
The difference of selling value-buying value (IDR)/year	93,850,370	1,086,000,000	-40,000,000	162,292,984
The number participation in the race/year (event/year)	4	30	0	5
number winning participation in the race per year (event/year)	1	5	0	1

Table 2. Karapan Cattle Business Cost Analysis in Madura Island

Component	Average/year	Maximum/year	Minimum/year
	---------- IDR.----------		
Fixed costs / farmer	5,188,929	58,425,000	500,000
Fixed costs / head	1,607,006	7,777,500	250,000
Variable costs / farmer	194,045,566	3,306,240,000	11,680,000
Variable costs / head	47,804,761	254,093,333	6,195,000
Total cost / farmer	199,234,496	3,364,665,000	12,808,000
Total cost / head	49,411,768	257,230,000	6,456,666
Revenue / farmer	201,182,506	3,370,825,000	3,031,500
Revenue / head	49,291,362	250,063,000	1,515,750
Benefit / farmer	1,948,010	907,502,000	-828,570,000
Benefit / head	-120,405	136,084,000	-107,266,000

Table 3. Performance of Karapan Cattle Business

Component	Average/year	Maximum/year	Minimum/year
R/C ratio/farmer	0.95	5.60	0.11
R/C ratio/head	0.94	3.93	0.09
B/C ratio/farmer	-0.05	4.60	-0.89
B/C ratio/head	-0.06	2.93	-0.91

cattle because of social need of Madura people (needs of esteem and needs of recognition) (Zimmerman, 2002; Oladipo, 2009).

The results of multivariate regression analysis of the data obtained are as presented in the following structural equations:

1. Productivity = (-0.78*Zootechnique) – (1.01*Motivation) - (0.015*Time Allocation) + (0.62*Labour Skill) + (0.42* Business Scale), $R^2 = 0.35$
2. Performance = (1.96*Productivity), $R^2 = 0.99$
3. Benefit of business = (0.98*Performance), $R^2 = 0.99$

Contributing Factors to the Karapan Cattle Productivity

The results of multivariate regression analysis (Table 4) showed that productivity of karapan cattle (indicated by the number of races being participated and the number of races being won in a year) was highly significantly ($P<0.01$) influenced by zootechnique factor (t = - 4.42), farmer's motivation (t = -3.69), labour skills factor (t = 0.68), and the business scale factor (t = 0.42). On the other hand, the productivity was not significantly ($P>0.05$) influenced by time allocation of labour factor (t = -0.43). The zootechnique factors consisted of stocker selection, feeding, and housing. The farmer's motivation consisted of needs of esteem and needs of recognition. Labour skill consisted of workers' knowledge, and labour experience. Business scale consisted of social-economics condition of farmer and number of cattle owned. Based on the standardized total influence of the

variables on the productivity of karapan cattle, the order of the most influencing variables was labour skill, farmer's motivation, zootechnique, and business scale. The structural equation was as follow:

Productivity = (-0.78*Zootechnique) - (1.01*Motivation) - (0.015*Time Allocation) + (0.62*Labour Skill) + (0.42*Business Scale), $R^2 = 0.35$

The cost of karapan cattle business was mostly variable cost, i.e. 97.4% of total cost, while the fixed cost took only 2.60%. The variable cost consisted of animal purchase (53.38%), feed (1.53%), herbal medicine (26.54%), labour (7.21%), cattle exercise (5,22%), and race (3.52%). The fixed cost consisted of pen (0.44%) and equipment (2.16%). Cattle price was the prominent cost in karapan cattle business. In Southern Boswana, herd productivity increased with greater investment in operating inputs and fixed improvement, and was positively (indirectly) influenced by secure land tenure (Mahabile *et al.*, 2005)

Contribution of the Productivity to the Performance of Karapan Cattle Business

The productivity of karapan cattle highly significantly ($P<0.01$) influenced the performance of karapan cattle business ($t = 5.34$). A results of structural equation was as follows:

Performance = (1.96*Productivity), $R^2= 0.99$

Performance of karapan cattle business was 99% affected by productivity of karapan cattle, and can be explained by variables: labour skill, farmer's motivation, zootechnique, business scale and time allocation of labour respectively, and 1% by another factor. The performance of karapan cattle business can be measured by using level of productivity, the R/C and B/C ratio. The performance of karapan cattle business was depend on revenue, farmers income and total costs (Soekartawi, 2010), so it was influenced by the input and output prices, the purchasing value of cattle and final value of the cattle. Initial and final value of livestock were crucial components of productivity of karapan cattle.

The results of this research confirmed that benefit of business was the excess of revenue, total costs, and the labour. The amount of benefit was determined by the value /price of livestock end, while the total cost was determined by the initial price of cattle. The price of buying and selling livestock were the major determinants of profitability for beef cattle fattening enterprises in Lake Zone, Tanzania (Mlote *et al.*, 2013).

Benefit was strongly influenced by changes of the price of karapan cattle. Karapan cattle prices depend on the achievements in the race. The greater level of competition that was followed and won by the karapan cattle made the cattle prices higher (Hasan, 2012; Rozi, 2013).

Contribution of the Performance to the Benefit of Karapan Cattle Business

The benefit of karapan cattle business was affected ($P<0.01$) by the performance of karapan cattle business (Table 4) and can be explained by variables: productivity and the performance of

Table 4. Relationship between Factors in Karapan Cattle Business

Relationship	Standard Solution		T value	Significance
	Beta	Gamma		
Productivity ← Zootechnique	--	-0.99	-4.42*	P = 0.0010
Productivity← Motivation	--	-1.19	-3.69*	P = 0.0035
Productivity ← Time Allocation	--	-0.03	-0.43	P = 0.6750
Productivity ← Labour Skill	--	1.40	4.47*	P = 0.0009
Productivity ← Business Scale	--	0.95	3.50*	P = 0.0049
Performance← Productivity	0.99	--	5.34*	P = 0.0002
Benefit ←Performance	0.99	--	19.15*	P = 0.0000

*$t_{0.05} = 1.96$

karapan cattle business. The result of structural equation was:

Benefit of business = (0.98*Performance),

$R^2 = 0.99$

The benefit of karapan cattle business was affected by 99% of the performance of karapan cattle business, and that can be explained by factors: labour skill, farmer's motivation, zootechnique, business scale and time allocation of labour, respectively. Performance and profitability of beef cattle feeding were affected by housing, type, season, initial BW, concentrate level, sex and pen cattle population (Koknaroglu *et al.*, 2005). Estimation of costs and returns of livestock enterprise in Northern Areas, Pakistan, revealed that size of family, number of livestock, labour days engaged were the major factors contributing to household income (Afridi *et al.*, 2009)

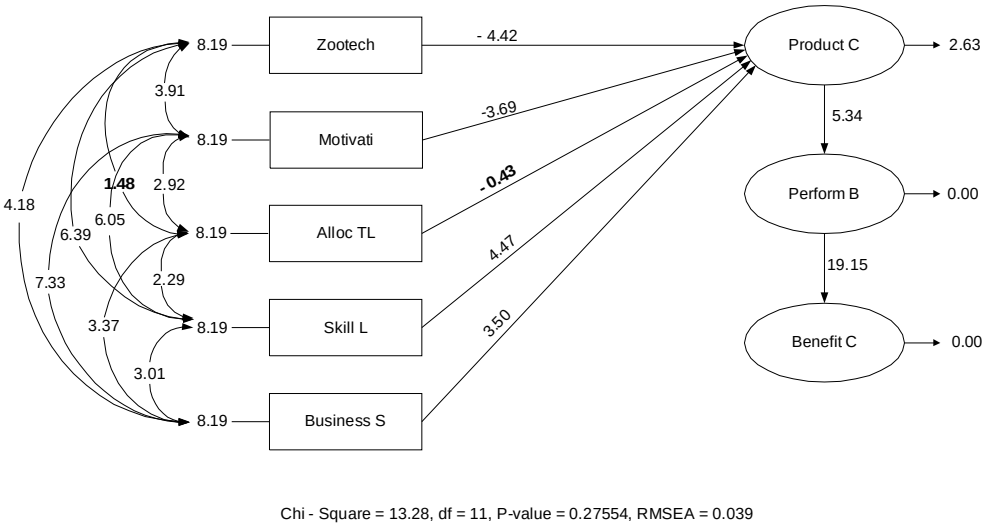
The Multivariate Regression Model of Karapan Cattle Business

The results of the model fit test showed that the degree of freedom was 11. It gave a good fit model as presented in Table 5 indicating the model was good for eligibility regression model factors in the karapan cattle business (Figure 1).

The results of regression matrix showed that

Table 5.Suitability Index Regression Models of Karapan Cattle Business

Criteria	Cut - 0ff Value	Results	Information
Chi-square	Expected small	13.90	Good fit
Significance prob.	≥0.05	0.28	Good fit
RMSEA	≤0.08	0.039	Good fit
GFI	≥0.90	0.98	Good fit
NNFI	≥0.90	0.98	Good fit
CFI	≥0.90	0.99	Good fit



Zootech = Zootechnique; Motivati = Motivation; Alloc TL = Allocation time of labour;
Skill L = Skill of labour; Business S= Business scale; Product C = Productivity of Karapan cattle;
Performa B = Performance of Karapan cattle business; Benefit C = benefit on Karapan cattle business

Figure 1. T-value of Relation Factors Productive in Productivity, Performance and Benefit on Karapan Cattle Business

productivity of karapan cattle, performance of karapan cattle business and benefit of karapan cattle business were influenced significantly by labour skill, farmer's motivation, zootechnique and business scale. Zootechnique and farmer's motivation influenced productivity in negative way; labour skill and business scale had positive influence on the productivity of karapan cattle. The more intensive of the cattle management, the more cost was needed, however it did not improve the performance of the business. Good handling of the karapan cattle supported the karapan cattle to be the winner in a racing. The farmers felt proud and maintained the achievement and condition of the karapan cattle by intensifying handling. After winning a race, the farmer became more selective in participating karapan competition. The karapan cattle that has won a race would not be participated in lower level competitions, so that the status and the farmers' pride and cattle prices were maintained.

CONCLUSION

Based on the results it is concluded that the performance and benefit of karapan cattle business were affected by its productivity through zootechnique, farmer's motivation, labour skills and business scale factors.

REFERENCES

Afridi, G.S., M. Ishaq and S. Ahmad. 2009. Estimation of costs and returns and factor productivity in fivestock enterprise in Northern Areas, Pakistan. Pakistan J. Life Soc. Sci. 7(1): 43-51.

Dinas Peternakan Provinsi Jawa Timur. 2011. Pengembangan Pulau Madura sebagai "Pulau Ternak". Dinas Peternakan Provinsi Jawa Timur, Surabaya http://pusatdata.jatimprov.go.id/ Accessed September 06, 2011.

Ghozali, I. and Fuad. 2008. Structural Equation Modeling. Teori, Konsep dan Aplikasi dengan Program Lisrel 8.80. Badan Penerbit Universitas Diponegoro, Semarang, P. 53-153

Guntoro, B. and R. Riyadi. 2012. Motivation and performance of beef cattle smallholder famers in Central Java Indonesia. Res. J. Anim. Sci. 6(4-6):85-89

Hasan, F. 2012. Dampak sosial ekonomi pergeseran nilai budaya karapan sapi. Jurnal Sosial Ekonomi Pertanian dan Agribisnis 8(2):75-82

Hooper, S., P. Martin, G. Love and B.S. Fisher. 2002. Farm size and productivity. Australian Commodities. 9(3):495-500

Isbandi. 2005. Dinamika Kelompok, Sebagai suatu ilmu kemasyarakatan. Badan Penerbit Universtas Diponegoro, Semarang. p. 57

Koknaroglu, H., D.D. Loy, D.E.Wilson, M.P. Hofman and J.D. Lawrence. 2005. Factors affecting beef cattle performance and profitability. Prof. Anim.Sci. 21: 286-296

Luanmase, C.M., S. Nurtini and F.T. Haryadi. 2011. Beef cattle farming motivation of local and transmigrant farmer and its effect on the income at Kairatu District, Seram Bagian Barat Regency. Bulletin Peternakan 35(2): 113-123

Mahabile, M., M.C. Lyne, and A. Panin. 2005. An empirical analysis of factors affecting the productivity of livestock in Southern Bostwana. Agrekom. 44(1):99-117

Mlote, S.N., Mdoe N.S.Y., Isinika A.C. and L.A. Mtenga. 2013. Profitability analysis of small scale beef cattle fattening in the Lake Zone, Tanzania. J. Agric. Econ. Dev. 2(5): 203-216

Mubyarto. 1995. Pengantar Ekonomi Pertanian. Lembaga Penelitian, Penyelidikan dan Penerangan Ekonomi dan Sosial. Jakarta.

Mwanyumba, P.M., A. Mwang'ombe, E. Lenihan, F. Olubayo, M.S. Badamana, R.G. Wahome and J.W. Wakhungu. 2010. Participatory analysis of the farming system and resources in Wundanyi location, Taita district, Kenya: a livestock perspective. Livest. Res. Rural Dev. 22(2):article#26

Oladipo, S.E. 2009. Psychological empowerment and development. Edo J. Counselling. 2(1): 119-126

Riszqina, L. Jannah, Isbandi, S.I. Santoso and E. Rianto. 2011. Analisis pendapatan peternak sapi potong dan sapi bakalan karapan di Pulau Sapudi Kabupaten Sumenep. J. Ilmu dan Teknologi Peternakan. 1(3):188-192

Riszqina, L. Jannah, Isbandi, S.I. Santoso, and E. Rianto. 2012. Potensi sapi Madura sebagai sumber pendapatan keluarga di Pulau Sapudi. Prosiding Seminar Nasional: Zootechniques for Indogenous Resources Development. Semarang.. 19-20 Oktober 2011. Faculty of Animal Agriculture, Diponegoro University - Indonesian Society of Animal Agriculture, Semarang. p. 267-

270
Rozi, A.B. 2013. Metafisika kerapan sapi. Jurnal Pelopor Pendidikan. 4(1):73-83
Soekartawi. 1995. Analisis Usaha Tani. UI-Press . P. 85-88
Soekartawi. 2010. Agribisnis, Teori dan Aplikasi. P.T. Radja Grafindo Persada, Jakarta. P. 45-46, 215-216
Sonbait, L.Y., K.A. Santoso and Panjono. 2011. Evaluasi program pengembangan sapi potong gaduhan melalui kelompok lembaga mandiri yang mengakar di masyarakat di kabupaten Manokwari Papua Barat. Buletin Peternakan. 35(3):208-217
Wijanto, S.H. 2008. Structural Equation Modeling dengan lisrel 8.8. Graha Ilmu, Yogyakarta. P. 173-212
Zimmerman, M. 2002. A Theory of Human Motivation by Abraham Maslow (1943). Psychological Review. 50(4):370-396