

**PERSEPSI TIGA KUMPULAN YANG BERBEZA MENGENAI FACTOR
SOSIOEKONOMI TERHADAP PENTERNAKAN LEMBU PEDAGING DI SABAH**

GRANTLEY GODFREY

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BORANG PENGESAHAN TESIS

JUDUL: PERCEPTIONS OF THREE DIFFERENT GROUPS OF RESPONDENTS ON THE SOCIOECONOMIC FACTORS THAT INFLUENCE BEEF CATTLE INDUSTRY IN SABAH

IJAZAH: B. AGRI. (C. HONS) HG 36 UNIVERSITY MALAYSIA SABAH

SAYA: GRANTLEY GODFREY SESI PENGAJIAN: 2014/2018
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VERIFICATION

1. Prof. Madya. Dr. Nur Hardy bin Abu Daud
PENYELIA



Tandatangan dan cop

ASSOC. PROF DR. NUR HARDY ABU DAUD
LECTURER / HEAD OF PROGRAMME HGS4
FACULTY OF SUSTAINABLE AGRICULTURE
UMS SANDAKAN

2. Pn. Rohaidah Abdul Rashid
PEMERIKSA '

Tandatangan dan cop

3. Prof. Madya. Dr. Saafie bin Salleh
DEKAN

Tandatangan dan cop

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ABSTRACT

Beef cattle industry is one of the most important industries in our country as they provide source of protein for us. However until to-date, the self-sufficiency is still in a poor level as we still import beef product from the other country. The perceptions of current personnel related to beef cattle industry provide us the information on the situation of beef cattle industry in our country. The differences in perceptions of the current personnel related to beef cattle industry to the potential and the beneficial group provide us the picture on why the industry is still in a poor level of production as we compare to the other livestock industry. Therefore, a research was conducted in Tawau and Lahad Datu district from September until November 2017 to find out the demographic background and the perception of the current personnel related to beef cattle industry to find out the picture on the condition of the industry in Sabah. The software Minitab 16 was used to find the correlation between the demographic factor and the perception of the current personnel related to industry. The perception are then compared to the potential group (Livestock program student) and beneficial group (Consumer) to find out the differences in perception. Generally, the average age for the current related to beef cattle group is 27.6. The average experiences are 7.9. The literacy level is diverse. The study found that there is mostly no significant correlation on the demography factor and their perception of the current personnel related group. However, from the comparison of perception between the three groups of respondent shows that there are different in perception. Therefore, the comparison on the perception need to be leveled to achieved a better production.



PERSEPSI TIGA KUMPULAN YANG BERBEZA TERHADAP PENTERNAKAN LEMBU PEDAGING DI SABAH

ABSTRAK

Industri penternakan lembu pedaging merupakan salah satu industri yang penting di Malaysia kerana ianya merupakan salah satu sumber protein yang penting dalam diet manusia. Walau bagaimanapun, tahap sara diri daging lembu masih pada tahap yang rendah. Negara kita masih lagi bergantung kepada daging import dari Negara lain. Persepsi yang dikaji pada kumpulan industri lembu pedaging memberikan informasi mengenai industri lembu pedaging yang berlaku pada hari ini. Perbezaan persepsi antara warga industri lembu pedaging dengan kumpulan pelajar program penternakan dan kumpulan pengguna memberikan gambaran tentang keadaan industri pada masa kini. Oleh itu, sebuah kajian yang dilaksanakan sejak September hingga November 2017 di Tawau dan Lahad Datu Sabah dijalankan untuk mengetahui latar belakang demografi dan persepsi pada kumpulan industri lembu pedaging untuk mendapatkan gambaran mengenai industri lembu pedaging di Sabah. Perisian Mini Tab 16 digunakan untuk memudahkan analisis korelasi antara faktor demografi dan persepsi kumpulan industri lembu pedaging tersebut. Persepsi daripada kumpulan pelajar penternakan dan kumpulan pengguna di ambil untuk mengkaji perbezaan persepsi antara tiga kumpulan tersebut. Secara umumnya, purata umur bagi kumpulan industri pedaging adalah 27.6 tahun. Purata bagi pengalaman pula adalah 7.9 tahun. Manakala, tahap pendidikan adalah pelbagai. Kajian ini juga menunjukkan keseluruhannya tiada perbezaan bererti pada faktor demografi dan persepsi kumpulan industri pedaging. Walau bagaimanapun, perbandingan persepsi menunjukkan adanya perbezaan pendapat terhadap tiga kumpulan. Kesimpulannya, perbezaan persepsi ini boleh diselaraskan untuk mencapai pengeluaran yang lebih baik.

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LIST OF SYMBOLS, UNITS AND ABBREVIATIONS

UNDP	United Nations Development Programme
MT	Metric ton
SSL	Self-sufficiency
%	Percentage
FAO	Food and Agriculture Organization
RM	Ringgit Malaysia
KG	Kilogram
DVS	Department of Veterinary Service
OIE	World Organization for Animal Health
ha	hectare



CHAPTER 1

INTRODUCTION

1.1 Introduction

Livestock as the sub-sector of agriculture industry has been very important to mankind ever since the beginning of time. Agriculture has been identified as an important component in achieving the Millennium Development Goals of the World Bank by 2015 (UNDP, 2009). According to Fadhilah (2015) livestock, which are included in the category of ruminants such as cattle, sheep, buffalo, goat and deer are still in a small scale to compare with poultry and pig. The industry is growing rather slowly in the 1996 to 2002 period. However it began to grow rapidly in 2005-2012 period due to the efforts and initiatives of the government. However, the self sufficiency level for ruminants is still less than 30% because higher demand than the supply by the local producers. Malaysia needs to increase livestock production to meet at least 50% of the local market needs.

According to Ariff *et al.* (2015), Malaysia has attained self-sufficiency levels in poultry meat and eggs and pork since the middle of the 1990s. The achievement of both poultry and pig industries in meeting more than the domestic demand for poultry and pig products is driven principally by the efficient assembly of the two major inputs of grow-out animals and feed, both of which are available locally and competitively priced. Unfortunately the ruminant industries lack these important inputs of breeding stock and feed in sufficient quantity and at reasonable cost for an efficient production of beef, mutton and milk.



Ariff *et al.* (2015) also stated that the beef consumption in this country is made up of meat from cattle and buffalo. However domestic production of beef from cattle and buffalo has not kept pace with the ever increasing demand for fresh beef and processed beef products. Many strategies have been proposed to boost beef production but thus far these developmental initiatives have yielded small contribution to the domestic beef supply.

There has been an increase in the gross economic value of the beef industry from RM697 million in 2008 to RM2.51 billion in 2013 comprising of the value of domestic output and imported animals and meat. There is a tremendous scope of further expanding the beef cattle industry in view of the low self-sufficiency level of beef which has hovered from 24% in 1990 to 25.67% in 2013. At current demand for beef, one percent increase in self-sufficiency level would require an additional slaughtering of about 14,000 head of cattle per year. By 2020 the government has targeted to raise the self sufficiency level of beef to 32.7% (Ministry of Agriculture, 2015), which translates in the slaughter of more than 450,000 head of cattle each year. This review attempts to examine the shortcomings faced by the beef industry in Malaysia and identify potential areas where the commodity is most likely to improve.

Livestock productivity is therefore of utmost importance as breeder's income, livelihoods, and ultimately the survival of entire populations and cultures relying on animal production. Numerous factors affect livestock productivity which are climate, diseases and parasites, and nutrition (Elsa *et al.*, 2012). However, according to Burger (1967), it can also be influent by socio-ecological factor. These involve all man's cultural contributions that affect the livestock industry. The social aspects encompass age, family size, education, marital status, cosmopolitness, extension contact, conservation concern and managerial aptitude. While economic dimensions include farm hectarage, labour and other capital inputs.

1.2 Significance of Study and Problem Statement

Cattle production is very crucial as it is one of the sources that serve protein for our country. According to Fadhilah (2015), livestock is an important industry as it supplies the largest source of protein for Malaysia population. The ex-farm value for this industry was RM14.1 billion in 2013, of which 76% are contributed by poultry meat. Generally, the livestock production especially in ruminant sector is still inadequate to meet the demand, following with the increasing of population and consumption. As evidence, Malaysia produces 51,000 metric tons of (MT) beef, while the demand was more than 201,000 MT in 2013. Other than that, Rachel *et al*/ (2015) stated that Malaysia's self-sufficiency level for dairy milk was only 5% in 2012, and this could be attributable to population increase. It was unable to meet the rising demand.

The importation of livestock product especially cattle's product will also affect our economy. In the ruminant sector, majority of breeder animals are brought from Australia and New Zealand (Mustaffa, 1994). Growing demand from other breed importing countries and short supply of quality breeder animals have led in higher import costs. Furthermore, the imported breeds are liable to suffer from diseases and hard to adapt to the local condition.

In Malaysia, a study on the productivity of beef production in both the feedlot and plantation integration systems showed that the technical efficiency of beef production in both system were low (MARDI, 2009). There were many reasons that were associated with the low efficiency performance of local beef production. One of the factors was the variation of animal husbandry and farming practices due to low adoption and application of technology in beef production. Another reason was the difficulty in obtaining consistent feed of sufficient quantity and quality within reasonable costs. This was especially so for small and medium scale farmers which form the majority of beef cattle producers in the country.

Due to the very importance of cattle industry to the national growth and socioeconomic progress, a study that assessing productivity of cattle in particular district is very important to enhance the productivity of cattle industry of that place so that it can contribute overall performance in livestock sector.

Besides that, the study on the perception on beef cattle industry in Sabah indirectly provides enhancement on facilitating the production in this industry. Many agricultural extension and related issues can be solves by the implementation of this study. Moreover, there were so many research has been done globally regarding with the perception to the livestock production. Thus, the study in this specifics district helps agriculturist as well as the Department of Veterinary Services to understand the current situation occurring in Sandakan.

Other than that, the study on how socio-economic factor influence the productivity of cattle in Sabah provide an aid for future industrial planning. As Sabah is a large state, where population does grow rapidly, and the land area had not being discovered yet, this study provides information and ideas for furthering the development on this industry so that we are able to create a great producer in this district that fill the demand locally and then globally.

1.3 The Groups of Respondents

The groups of respondent are categorized into 'Current Personnel Related to Beef Cattle Industry', 'Potential Personnel Related to Beef Cattle Industry' and 'Beneficial Personnel Related to Beef Cattle Industry'. These are the terminology that will be used to be kept on tract. Currently personnel related to beef cattle industry are those who involve directly to the beef cattle industry. The potential group is the student of livestock production where they are likely the group that will determine the future of the industry. The beneficial group is the consumer.

1.4 Objectives

The objectives for this research were:

- a) To determine the relationship between the demographic background of the current personnel related to beef cattle industry to the perception of beef cattle production in Sabah.
- b) To compare the current personnel related to beef cattle industry perception with the potential and beneficial personnel related to beef cattle industry group.

CHAPTER 2

LITERATURE REVIEW

2.1 Cattle Production in Malaysia

Livestock industry in Malaysia is classified into ruminant and non-ruminant. Nowadays, ruminant sector can be divided into beef cattle, dairy cattle, beef buffalo, dairy buffalo, sheep and goat are still reared in a smallholder company mainly for livelihood (Mohamed, 2007). Rapid growth for this industry can be seen in the couple of years. However it is still not being able to fully fill the demand in the local market. Thus, Malaysia imports most of the needs of beef and other product from abroad especially India, Australia and New Zealand to cater for the shortage. In 2014, the levels of self-sufficiency (SSL) for beef, 24.84%. The lag in this ruminant sector is normally associated with several factors such as the lack of land resources, high feed price, cheaper import substitutes, poor private sector involvement (Shanmugavelu, 2014), disease prevention and control (Mohamed, 2007), and lack of quality breeds, expertise and workforce (National Agro-food Policy, 2011).

In comparison, the non-ruminant sub-sector such as the poultry and swine industry had achieved it's self-sufficiency in the early 90's (Nor Amna A'liah M.N *et al.*, 2015). Nor Amna A'liah M.N *et al.* (2015), also stated that this is due to their well developed in term of production capacity and technology. They have achieved production scale and mostly operated by large multi-national integrators. The lag production of beef cattle industry compared with the non-ruminant industry shown that our country has not yet full emphasized on the beef cattle industry.



As the animal meat is the most important source of animal protein in the diet of the Malaysian population (Kaur, 2010). Cattle production increased steadily. The highest beef and mutton production changes are in 2000 to 2010 with the percentages of 158% and 161% respectively (Mohamed, 2007). This positive growth was largely contributed by the rearing of cattle and goats in plantations and feedlot cattle rearing by the private sector.

A brief trend on the beef cattle industry in Malaysia, according to FAO (2002), the production of beef cattle in 2000 and 2001 are 59,702, 534 and 59,335,749 metric ton respectively. The value of import worldwide is USD 4.2 million (1,811,998 metric ton) in 1999 and USD 3.6 million (1,455,409 metric ton) in 2000. The demand kept on increasing year to year but the supplies dropped in 1999 from the average of 98.53 thousand metric ton to 97.4 thousand metric ton in 2000. This had caused increased in the import value where the market value for import beef was RM8.50 per kilogram while the market value for local beef was more expensive which is RM14.50 per kilogram.

FAO (2002, Also stated that the population of beef cattle in Malaysia until 2000 are 875,934 thousand. 90% of these population are reared in traditional manner. The annual growth is 2% from 1994 to 2000. Meanwhile, the self-sufficiency in 2001 is 21.12 thousand metric ton. It was estimated that the population of beef cattle in Malaysia will increase to 2.094 thousand in 2010, with the self-sufficiency of 67,89 thousand ton. The consumption of beef cattle in 2000 was 95.1 thousand metric ton, with the growth rate of 5.4% per that particular year. The per capita consumption also rises from 3.47 kg to 5.27 kg from 1999 to 2001 respectively.

However in the recent study, according to Ariff, O.M. (2005), there has been an increase in the gross economic value of the beef industry from RM697 million in 2008 to RM2.51 billion in 2013 comprising of the value of domestic output and imported animals and meat. There is a tremendous scope of further expanding the beef cattle industry in view of the low self-sufficiency level of beef which has hovered from 24% in 1990 to 25.67% in 2013. At current demand for beef, one percent increase in self-sufficiency level would require an additional slaughtering of about 14,000 head of cattle per year. By 2020

the government has targeted to raise the self sufficiency level of beef to 32.7%, which translates in the slaughter of more than 450,000 head of cattle each year.

According to DVS (2015), the total consumption of beef cattle rises by 45% from 138,980 ton in 2005 to 201,556 ton in 2013. However there are many importers of frozen beef who are filling in the more than 70% shortfall in the domestic supply by bringing in beef of differing price and quality from India, Australia and New Zealand. In 2013, 86% of the beef imported into Malaysia was sourced from India as buffalo meat owing to the relatively cheaper price and availability of buffalo meat compared to chilled and frozen beef from Australia and New Zealand. Fifteen percent of the domestic beef consumption was supplied from live cattle purchased from Australia and Thailand. Food manufacturers, either involved in the restaurant business or food processing, would often purchase beef based on customer requirement and price. Similarly homemakers who form the majority of the retail consumer block decide to purchase beef based largely on price and quality.

DVS (2015) also stated that the value of domestic supply of beef has grown slightly from RM535 million in 2005 to RM1,142 million in 2013, at an average annual supply growth rate of 12.6%. This has translated to an improved self sufficiency level from 21.15% in 2005 to 25.67% in 2013 while taking into consideration the slaughter cattle produced locally from short term fattening of feeder cattle from Australia as local beef output. However this trend in domestic supply with self sufficiency level hovering below 30% since 2005 has not coped well with an ever increasing consumption of beef which totaled 201,556 ton valued at RM2.51 billion in 2013.

2.2 Cattle Production in Sabah

The livestock industry in Sabah started from a humble beginning of backyard farming since 25 years ago. Through careful and continuous livestock development project, the livestock sector today shows rapid growth especially in the swine and poultry sector. It had expanded from a backyard rearing to a multimillion ringgit enterprise characterized by highly efficient and intensive operation. Sabah had achieved its self-sufficiency in the production of pork , poultry and eggs to some extent that they manage to export to the

neighboring country (Anon, 1996). While in the ruminant sector especially cattle, there was a gradual shift of management system from backyard, extensive free-grazing to a more intensive system where animals are kept in a limited area and fed through cut and carry. However, it has not attained the self-sufficiency and a far more lag behind the swine and poultry industry.

Sabah has the potential on developing beef cattle industry into a better position. This is because, according to an article in Daily Express (2015), Sabah remains free from the foot and mouth disease. Sabah is still free from the disease right before the declaration was made in 2004 by the World Organization for Animal Health (OIE). However, precaution steps still necessary to be taken. Sabah also had the potential to develop more grazing field in order to improve the output of livestock in this state. About 67.43 acres of grazing field at Kg Kuangoh Bingkor was inside the 11th Malaysia Plan agenda to empower the livestock industry in rural areas. The department also plans to transfer livestock technology to breeders for better and profitable products. The restoration cost for the grazing field amounted to RM157,562,04. Sabah has about 99 grazing fields involving 31,000 acres.

Before this, Awang, S. (1991) stated that Sabah has a vast potential for livestock development. It has 127 grazing reserves with a total area of 21 698 hectares. However most of these areas are not developed and are under-utilized as grazing ground. For potential livestock development, large areas of coconut, cocoa, rubber and oil palm plantations which cover an area of 1.02 million hectares are available for possible integration with livestock as a mean of economic diversification by exploiting the grass and undergrowth which grow under the plantation crops. Disease free status couple with vast available land is a strong point for Sabah to be a major livestock producer in the future.

2.3 Agricultural Productivity

According to Olayide *et al.* (1982), in agricultural geography and economics, agricultural productivity is defined as 'the ratio of the value of total farm outputs to the value of total inputs used in farm production'. Meanwhile, Fulginiti and Perrin (1998), defined agricultural productivity as 'the output produced by a given level of input(s) in the agricultural sector of a given economy'. Similar to the measures of agricultural efficiency, profitability, it helps to give a general picture about the spatial organization and pattern of agriculture (Dharmasiri, 2011) in a country or region. In global perspective, agricultural productivity has been always focused and emphasized in agricultural development planning so that it help avoiding a recurring Malthusian crisis, a situation 'where the needs of a growing population outstrip the ability of humanity to supply food' (Guglie and Rada, 2013).

According to Liverpool-Tasie *et.al.* (2013), during the past, numerous economist had tried to measure agricultural productivity in various types. Generally the measures could either be partial or partial or total type depending on number of inputs under consideration. Output from crop or livestock production is compared with any inputs such as land, labour, capital and material resources that are involved in that production. Besides that, average Productivity Index that was used by Dharmasiri (2011) in his research applied its major components, the average yield and the harvested area of a country or state level, to identify the spatial distribution pattern of productivity of that particular region (Ibid)

2.4 Demographic Factor to Influence Cattle Industry

According to Brian (2015), herd size is an important consideration in cattle industry. In general, as herd size increases, producers are inclined to employ more value-added practices to increase productivity. The implication is that as herd size increases, the marginal cost of implementing certain management practices decreases, so larger producers may be more likely to adopt such practices. These results are consistent with

Ward et al. (2008), who found that larger producers have higher rates of castration, vaccination, implanting, and individual animal identification than smaller producers.

Brian (2015) also stated that, a producer life cycle effect is evident in the responses. Younger age groups adopt more practices than older producers. Young producers may be more open to aggressive management in the farm. Middle-aged producers have perhaps already learned which of those practices are profitable in their own operations and have abandoned those that are not. When producers near retirement, the life-cycle effect becomes evident as they continue to decrease the extent of calf management. Older producers have shorter planning horizons and may perceive that they will not fully recognize the benefits of practice adoption, though much of the payoff from value-added practice implementation in farms comes within the marketing year. Additionally, older producers may simply be less willing to change management practices than younger producers or may already have the knowledge to farm successfully, given their particular resources (Caswell *et al*, 2001). In contrast, Gillespie *et al.*,(2007) found that as age increased, the probability of adopting conservation-related best management practices in beef cattle production increased. However, such practices tend to be more expense-increasing as compared to primarily revenue-increasing value-added management practices.

Brian (2015) also stated that producers with education beyond high school adopt more value-added practices than those with high school diplomas and thus improve the productivity. On the other end, producers without a higher education are likely to adopt about two-thirds of a practice less than the base producer. In short, producers with at least a education are more likely to adopt more value-added practices than those without a high school education. R. Williams (2015) also stated that Producers deriving little income from cattle are likely to have lesser production since they adopt fewer practices in the farm management in comparison to a producer who derives more income from cattle.

Brian (2015) also stated that as a cattle producer gains experience, they adopt more management practices. Those with 16 to 25 years of experience adopt the most practices when compared to the base of those with less than five years of experience.

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