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"Small and Medium-sized
Enterprises Competitiveness"

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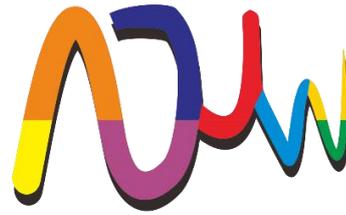
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AGRIBUSINESS
DEVELOPMENT FOR
HUMAN WELFARE

*“Small and Medium-sized
Enterprises Competitiveness”*



Agribusiness Development
for Human Welfare

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EDITOR FOREWORD

The economic integrations by ASEAN certainly have given a major influence on Small and Medium-sized Enterprises (SMEs). Beside economic integration in the form of free trade area (FTA) that has been going on since the early 2000s, economic integration in the form of ASEAN Economic Community (AEC) has been ongoing since the beginning of 2016. Through this integration, SMEs have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market.

In order to explore ideas, concept, and innovations related to the competitiveness of SMEs, International Conference on Agribusiness Development for Human Welfare (ADHW 2016) was held in Yogyakarta on May 14, 2016. The conference organized by Department of Agribusiness Universitas Muhammadiyah Yogyakarta, in collaboration with Department of Agribusiness and Information System Universiti Putra Malaysia, Department of Agro-Industrial Technology Kasetsart University, Department of Agriculture Socio-Economics Universitas Gadjah Mada, Department of Agriculture Socio-Economics of Universitas Brawijaya, Indonesian Society of Agriculture Economics, Agribusiness Association of Indonesia. Hopefully proceedings of ADHW 2016 provide stimulus for increasing competitiveness of SMEs in ASEAN, especially in Indonesia.

Furthermore, we are grateful to Allah, the Sustainer of all word, who always makes it easy for our affairs. We would like to acknowledge with thanks to all the institution and individual who joined with resources and efforts in organizing the conference that resulted in the papers which are published in this proceeding. Special thanks to all authors and discussants who contributed with their intellectual capital and responded to our call papers. Thanks and acknowledgment are also due to all reviewers of the conference who helped in evaluating submitted papers; and to the members of the Organization Committee, who ensured smooth execution of the event.

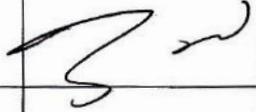
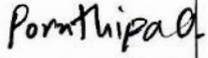
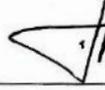
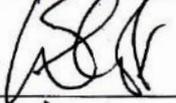
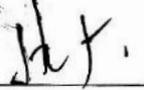
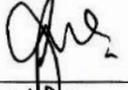
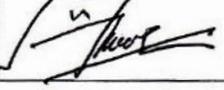
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PREFACE

Assalaamualaikum, Warahmatullaahi., Wabarakaatuh.
Dear Honorable Governor of Yogyakarta Special Province
Dear respectable Prof. Dr. Zainal Abidin Mohamed
Dear respectable Asist. Prof. Pornthipa Ongkunaruk
Dear respectable Rector of UMY Prof. Dr. Bambang Cipto, MA.
Dear all invited Guests, Speakers, and Participants of International seminar of ADHW 2016.

Alhamdulillah, all praise be to the Almighty God, so that we can be gathering here today at Muhammadiyah University of Yogyakarta in order to attend the Conference on Agribusiness Development for Human Welfare (ADHW) 2016.

Ladies and Gentlemen,

On behalf of the committee, I would like to say welcome to this International Conference on ADHW 2016 and thank you for attending our invitation.

Especially, we are grateful to invited speakers, Prof. Zainal Abidin Mohamed and Asist. Prof. Pornthipa Ongkunaruk, for their willingness to share information and thoughts in this conference. As a bit report, that this conference has been attended by 85 speakers coming from five countries.

This conference entitled "Small and Medium-sized Enterprise Competitiveness". ASEAN Economic Community is the largest economic integration that is going to be implemented at the beginning of 2016 (December 31, 2015). Through this integration, SMEs will have opportunity to expand access to markets, technology, and capital. But at the same time SMEs are required to improve their competitiveness in order to survive in the market. We expect that this seminar is capable of producing thoughts building SMEs within ASEAN, especially Indonesia, to face the free trade.

This event can be done by support and efforts from all sides. Therefore, I would like to say thank you to all committee members having worked hard to conduct this event. We, as the organizer committee, do apologize when there is a shortage in conducting this event.

Wassalamualaikum, Warahmatullaahi., Wabarakaatuh.

Chairman
International Conference on ADHW 2016



Dr. Aris Slamet Widodo, SP., MSc.

WORDS OF WELCOME

Assalamu'alaikum warahmatullahi wabarakatuh

Alhamdulillah, all praise be to Allah SWT, who has given us His blessings so that this International Seminar of Agribusiness Development for Human Welfare (ADHW) 2016 entitled "Small and Medium-sized Enterprises Competitiveness" can be conducted. This International Conference is held in cooperation among Agribusiness Study Program of Muhammadiyah University of Yogyakarta with Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), and Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB).

Countries of ASEAN members like Indonesia, Malaysia, and Thailand have more than 90% Small and Medium-sized Enterprises (SMEs). In general, SMEs play important role in economic developments such as in terms of employment, added value, improve foreign exchange, and economic growth. For Indonesia, the role of SMEs is limited to employment and added value, while the foreign exchange from SMEs is still low. According to the General Director of SMEs of Industrial Ministry, in 2013 the total SMEs being able to pass through export market is just under 5 percent. For that required many breakthrough and innovation so that the role of SMEs becomes real economic development, especially in Indonesia, and generally in ASEAN countries.

On behalf of Agribusiness Department of Universitas Muhammadiyah Yogyakarta, we would like to express our gratitude Putra University of Malaysia (UPM), Kasetsart University (KU), Association of Indonesian Agricultural Economy (PERHEPI), Agribusiness Association of Indonesia (AAI), Universitas Gadjah Mada (UGM) and Universitas Brawijaya (UB) for all supports, sponsors, and all committee members having worked so hard that this International Conference can be conducted.

Hopefully, these synergies coming from various parties can provide contribution for developing SMEs in Indonesia and other ASEAN countries as well.

Wassalamu'alaikum warahmatullahi wabarakatuh

Head of Agribusiness Department
Universitas Muhammadiyah Yogyakarta



Ir. Eni Istiyanti, MP.



Gubernur

Daerah Istimewa Yogyakarta

Sambutan

KONFERENSI INTERNASIONAL

“*AGRIBUSINESS DEVELOPMENT FOR HUMAN WELFARE*”

Yogyakarta, 14 Mei 2016

Assalamu'alaikum Wr. Wb.

Salam sejahtera untuk kita semua.

Yang Saya hormati :

- Rektor Universitas Muhammadiyah Yogyakarta;
- Para Narasumber;
- Hadirin dan Para Peserta yang berbahagia,

Puji dan syukur marilah kita panjatkan kehadirat Allah SWT karena hanya atas limpahan rahmat serta karunia-Nya, kita dapat hadir pada kesempatan acara **Konferensi Internasional “*Agribusiness Development For Human Welfare*”** ini dalam keadaan sehat wal’afiat.

Pada kesempatan kali ini, secara ringkas Saya akan menyampaikan mengenai industri kecil menengah nasional yang menjadi tema pada pembukaan Seminar Internasional “*Agribusiness Development For Human Welfare*” ini.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Berdasarkan data BPS, pertumbuhan industri pengolahan nonmigas pada tahun 2015 secara kumulatif sebesar 5,04%; lebih tinggi dari pertumbuhan ekonomi (PDB) pada periode yang sama sebesar 4,79%. Pada periode Januari-Desember 2015, nilai ekspor produk industri pengolahan nonmigas mencapai USD 106,63 Milyar, dan nilai impor mencapai USD 108,95 milyar, sehingga neraca perdagangan industri pengolahan nonmigas pada periode yang sama sebesar USD 2,32 milyar (neraca defisit).

Usaha pemerintah untuk memperkecil defisit di atas, salah satunya dengan cara memberdayakan Industri Kecil dan Menengah (IKM) yang merupakan bagian penting dalam perkembangan industri nasional. Sampai saat ini, Industri Kecil dan Menengah

telah berkontribusi sebesar 34,82% terhadap pertumbuhan industri pengolahan nonmigas secara keseluruhan.

Angka ini dapat tercapai karena dukungan lebih kurang 3,6 juta unit usaha, yang merupakan 90 persen dari total unit usaha insutri nasional. Jumlah unit usaha tersebut telah mampu menyerap tenaga kerja sebesar 8,7 juta orang, yang tentunya berdampak pada meningkatnya ekonomi nasional serta mengurangi kemiskinan.

Industri Kecil dan Menengah (IKM) memiliki peran yang strategis dalam perekonomian nasional. Hal ini sejalan dengan Visi Pemerintah dalam Rencana Pembangunan Nasional Jangka Menengah (RPJMN) 2015-2019 yaitu *“Terwujudnya Indonesia yang berdaulat, mandiri, dan berkepribadian berlandaskan gotong royong”*.

Untuk lebih meningkatkan peran tersebut, Penumbuhan dan Pengembangan Industri Kecil dan Menengah diarahkan untuk memiliki tujuan jangka menengah guna mewujudkan industri kecil dan industri menengah yang berdaya saing, berperan signifikan dalam penguatan struktur industri nasional, pengentasan kemiskinan dan perluasan kesempatan kerja, serta menghasilkan barang dan/atau jasa Industri untuk keperluan ekspor.

Hadirin dan Saudara-saudara sekalian,

Awal tahun ini, kita telah memasuki era Masyarakat Ekonomi ASEAN (MEA). Dengan demikian, perekonomian nasional akan langsung bersaing dengan para pelaku pasar di kawasan ASEAN. Produk dan jasa termasuk investasi negara-negara anggota telas bebas memasuki pasar di kawasan ASEAN.

Dalam rangka menghadapi hal tersebut, Pemerintah mengambil langkah-langkah strategis berupa peningkatan daya saing industri dan mendorong investasi di sektor industri; di mana peningkatan daya saing industri itu sendiri dilakukan melalui penguatan struktur industri dengan melengkapi struktur industri yang masih kosong serta menyiapkan strategi ofensif dan defensif dalam akses pasar.

Pemerintah telah melakukan Penguatan Sektor IKM dengan strategi ofensif dan defensifnya melalui beberapa program pelaksanaan, diantaranya antara lain: Penumbuhan Wirausaha Baru; Pengembangan IKM melalui Pengembangan Produk IKM serta Peningkatan Kemampuan Sentra dan UPT; Pemberian Bantuan Mesin dan Peralatan Produksi; Perluasan Akses Pasar melalui Promosi dan Pameran; Fasilitasi Pendaftaran Hak Kekayaan Intelektual; Fasilitasi Sertifikasi Mutu Produk dan Kemasan; serta Fasilitasi Pembiayaan melalui Skema Kredit Usaha Rakyat (KUR).

Saya berharap agar berbagai program-program pemerintah tersebut dapat didukung secara sinergis oleh seluruh komponen masyarakat. Untuk itu, Saya berpesan kepada Saudara-saudara sekalian agar semua program pemerintah dalam bidang

Industri, khususnya dalam program pemberdayaan Industri Kecil dan Menengah, didukung dengan sepenuh hati, agar dapat lebih bermanfaat bagi masyarakat dalam rangka pengembangan industri kecil menengah.

Hadirin dan Saudara-saudara sekalian yang Saya hormati,

Demikian beberapa hal yang dapat Saya sampaikan. Akhirnya dengan memohon ridho Allah Subhanahu Wata'ala, seraya mengucap "*Bismilahirrahmanirrahim*", **Konferensi Internasional "Agribusiness Development For Human Welfare"** dengan ini secara resmi Saya nyatakan dibuka. Semoga Allah SWT memberikan petunjuk, bimbingan, perlindungan dan kemudahan dalam setiap langkah dan upaya kita. Amien.

Sekian dan terima kasih.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 14 Mei 2016
GUBERNUR
DAERAH ISTIMEWA YOGYAKARTA



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DYNAMIC SYSTEM OF INDONESIAN HALAL MEAT INDUSTRY: SUSTAINABLE SUPPLY CHAIN MANAGEMENT PERSPECTIVE

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ABSTRACT

The aims of this research are to create the dynamic model and develop policy scenarios for halal meat supply chain management. This research is a combination of exploratory, descriptive and causal research which are indeed a combination of secondary data analysis, interrelationship studies and experiment. The data used in this research is secondary data "time series". The analysis of data applies dynamic model simulations. The basic system of halal meat supply chain is composed of the main subjects; breeders, farmers, halal meat processor or abattoir and consumers whether individuals or household as well as industry. Based on aggregate, Indonesian halal meat supply chain has a surplus, but by category then there is a deficit of halal meat of ruminants, especially the breed of beef that should be encourage in order to meet the needs of domestic beef. The best scenario policy with the success indicators is increasing of cattle population growth to 10% per year.

Keywords: dynamic system, halal meat, sustainable, supply chain

INTRODUCTION

Indonesia is the biggest market share of halal food in the world and has been known as the center of halal food in the world wide. Based on Reuters estimation in 2015, Indonesian halal food market share amounted of US\$ 190.4 billion or 17% of the world halal food market, which reached US\$ 1.13 trillion in 2014 and is estimated to expand continuity along with the growing number of Muslim population in Indonesia which is 1.5% per year. One of the potential growing of halal food industry is the halal meat industry. The annual indicator in the last five years experienced an average growth of 8.8% per year.

Halal meat industry in Indonesia will be higher in growth if there is halal meat self-sufficiency or self supporting. The availability of halal meat in Indonesia is still supplied from other countries (imported meat) such as from Australia and New Zealand. The non-Muslim countries dominate the supply of halal products, including supplies to many countries in the Middle East. The European countries, USA, Canada,

Australia, and New Zealand are the countries which export halal products highly oriented in quality, whereas Brazil, India, China, and Russia are among the countries exporters of halal products in gigantic world that oriented in the low price one (Dahlan, 2009).

On the other hand, the development of the halal food market is also driven by the increasing of consumer awareness of the importance of quality and the safety of the products consumed. Besides there is also a displacement in consumer perceptions of the halal conception which is no longer considered purely as a religious issue, but becomes a global symbol for quality assurance and lifestyle choices. One of crucial moment which turns to be the emergence milestone of world halal market especially halal food, one of which was the occurrence of some international events, especially concerning the issue of global diseases such as avian flu and mad cow disease.

Reflecting on the demands of the society as consumer and the current conditions of international trading, Indonesia as the country with the largest

amount of Muslim population in the world, as well as an agricultural country, needs to immediately develop the sustaining of halal meat supply chain management which pays attention to economic, social welfare, and environmental issue.

Zhou and Benton (2007) stated that a supply chain is an integrated system. As a system, the analysis point of view towards supply chain must be comprehensive. All components of the system should be viewed as an inseparable unit. The imbalance in one of the component will disturb the whole system. Therefore, the objective study and analysis of a supply chain is not to improve the performance of one of the entity, but an overall proportional increase in the entire entity from upstream to downstream (Pujawan and Mahendrawati 2010).

According to De Lara and Martinet (2009) a variety of problems in natural resource management are influenced by the dynamism and uncertainty. The management of sustainable natural resources is a hard work, as the impact of the dynamism, uncertainty, and conflicts of interest (ecological, economical, and social).

The concept of sustainability has been widely utilized as a framework in the development of various activities, both economic and non-economic activity. Ortiz, et. al. (2008) defines sustainable development as improving the quality of life so as to enable humans to live in a healthy environment and improve the conditions in social, economy and environment for this generation and the up coming generation. Linton, et. al. (2007), describes the development of researches about sustainable development since the 1990s that continually experience increasing. Besides, he also introduced the relationship between the concept of sustainability and the supply chain. SCM which is sustainable should consider the aspect of economic, social and environmental.

Marimin and Nurul (2011), stated that supply chain management of agricultural products including halal meat is more complex, it is probabilistic and

dynamic because the meat supply chain comprises several chains, for instance: farmers, manufacturers, retailers and final customers (Jie, 2008). In each stage of the meat supply chain, there are nine halal critical points (Riaz and Choudry 2004).

Soemantri and Tahir (2007) conducted a simulation of dynamic systems in the rice availability in Merauke, the results are that in the next 10 years by implementing a policy of increasing the utilization of land and increasing production through increased IP (Farming Index) with technical irrigation, the application of agricultural mechanization, the use of quality seeds, the use of balanced fertilizer, postharvest handling and use of other infrastructure for rice production, giving a real impact on the ability of Merauke in supplying rice in eastern Indonesia. Through this scenario, Merauke's capability in supplying rice is 83.69% if the percentage of people who consume rice 30% and if there is a consumption displacement to 40%, then the ability of the supply turns to 62.77.

Meanwhile the research results of Widodo and Ferdinand (2010) stated that Indonesia textiles industry supply chain system composed of several actors of integrated systems vertically and interacted and related reciprocity. Actors of the systems include suppliers, industry and market as consumer representation. Through the simulation of dynamic systems, it can be seen from the fluctuations of Indonesia textiles industry performance parameters, namely the total performance of imports and total performance of exports of Indonesian textiles industry. The research Fisher, et. al as quoted by Arshinder et. al (2008) shows the lack coordination among partners throughout the supply chain in the food industry resulting in losses of up to US \$ 30 billion per year.

The objective of this study are to know the basic system of supply chain of Indonesian halal meat industry, to create the dynamic models and develop policy scenarios for halal meat supply chain management considering the economic, social and environmental.

METHOD

Design and Research Methodology

This study is a combination of exploratory, descriptive and causal research which is a combination of secondary data analysis, interrelationship studies and experiment. Exploratory and Descriptive research with secondary data analysis and interrelationship studies to determine the basic system and construct dynamic models of Indonesian halal meat supply chain, while the causal research with experiment to determine the causal relationship between phenomena by applying dynamic system simulation of sustainable Indonesia halal meat supply chain.

Type and Data Source

The data used in this research is secondary data time series in recent years. The data source of this research is BPS and Ministry of Agriculture in Indonesia.

Data Analysis

Data analysis was run by using a dynamic model simulation which used powersim with validation test program through the calculation of MAPE (Mean Absolute Percentage Error). The outlines of the stage of problems completion with the dynamic system approach are (1) to understand the system to be analyzed related to the circumstances of the problem (2) the compiling of the conceptual system includes identification of actors involved in the system, identifying the relationship between actors that become the basis in arranging causal loop and necessarily the restrictions on the system analyzed, because a system can be very broad and complex (3) formulation of a model to translate the relationship between elements or between actors in the system into programming languages (4) simulation and validation, the model simulated to see how the behavior of the model which is a picture of behavior of real system. Therefore, a model that has been created to be stimulated should be tested to analyze whether the model indeed

represent the actual system as a means to learn about the real system or not.

RESULT AND DISCUSSION

The Basic System of Indonesian Halal Meat Supply Chain

The basic system of Indonesian halal meat supply chain is a primary supply chain which comprises several actors who alter the additional value of a product through production and innovation activities among other sub-systems of breeders, farmers, processors (manufacturers) and consumers both household and industry as portrayed in Figure 1. The flow of halal meat supply chain from upstream to downstream, ranging from poultry and ruminants, processed into meat to be consumed directly in fresh meat and processed meat products. Supply chain sub-system of Indonesian halal meat industry is composed of elements that are more specific and strongly influenced by the development time and across sectors, so the supply chain system of Indonesian halal meat industry is dynamic.

Agro input sub-system is the provision of livestock production include breeding stock, feed, medicine, and health whether individual, households or companies. Breeding stock is commonly also as breeding farm, while the feed businesses related to agriculture, especially that conducted in household scale. Whereas animal health drugs and supplements are categorized business services and trade in the livestock sector.

Livestock farming sub system is an attempt either individuals or households, groups of breeder or companies that produce animals that ready for slaughter. Halal livestock population as much as 13.8 million head ruminants (cattle and buffalo). Based on the results of the agricultural census BPS (2013) there were approximately 12.97 million farm households which experience the decreasing for about 30.26% during the decade. In 2003, there were 18.56 million farm (stockbreeding) households.

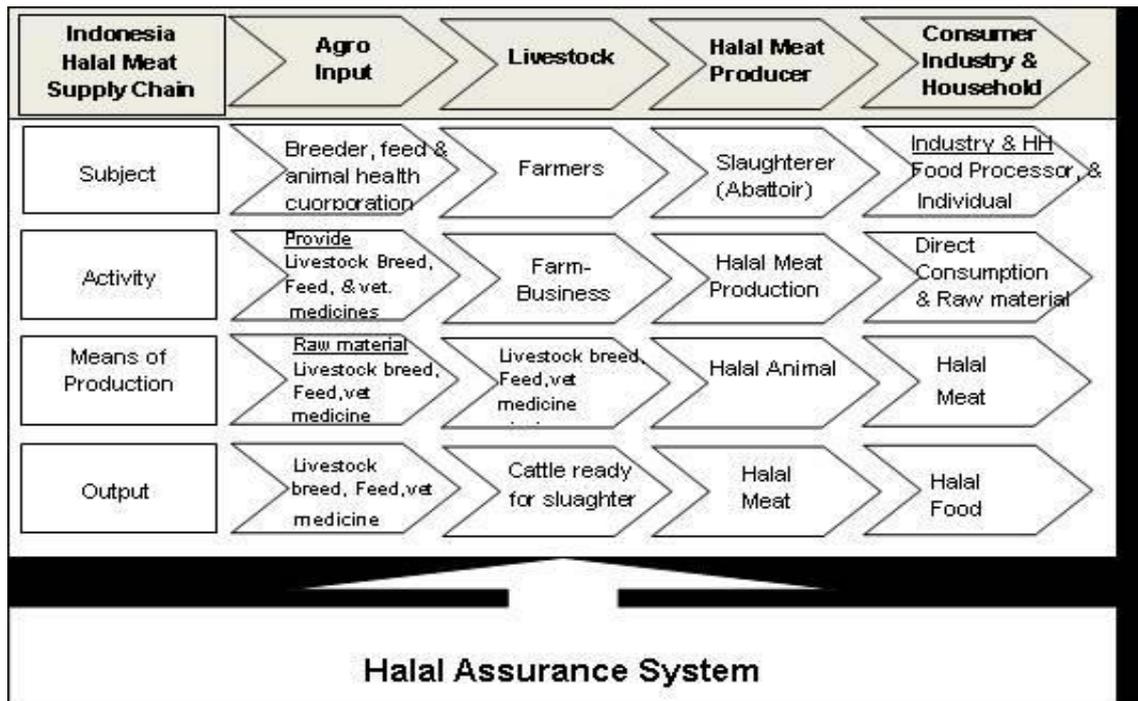


Figure 1. Supply Chain Basic System of Indonesian Halal Industry

The second largest decline in farm household after horticulture household is 37.40%. While the incorporated farm company as many as 636 companies with a growth of 33.89% over the last decade of as many as 475 companies. This is biggest growth in comparison with the growth of incorporated companies in other agricultural sectors. Stocks raised by the stock breeder is permissible types including cattle population of 15.49 million heads, 1.38 million head of buffalo population, a population of 16.51 million heads of sheep, goats population of 18.88 million heads, chickens population of 1.93 billion and 43, 49 million head of ducks.

Halal meat production sub system is a slaughterer in abattoir which is halal that spreads throughout Indonesia. Each county has at least one abattoir so that the number of abattoir in Indonesia is as many as 514 abattoir. Halal meat producers are also individuals or households that do their own abattoir. Data from the Directorate General of Livestock and animal health of Ministry of Agriculture (2015), Indonesia halal meat production reached 2.74 million tons with chicken meat of 2.04 million tonnes (74.3%), beef and buffalo 0.55 million tonnes (20.3%), sheep and goat meat 0.11 million tonnes

(3.9%) and other halal meat 0.034 million tonnes (1.5%).

Halal meat consumers are individuals or households and industries which include processed meat, food, hotel, restaurant and cafeteria. The amount of halal meat consumption of an individual depends on the level of halal meat consumption per capita, per year and population growth. The development of the population depends on birth and death rates of the population. While industrial consumption depends on the food industry, processed ones, restaurants and canteens that were using halal meat as a basic industrial material. Total consumption of halal meat Indonesia amounted to 2.04 million tons, more than half of the consumption is meat of chicken.

The Dynamic Model of Indonesian Halal Meat Supply Chain

The development of a dynamic model refers to the basic sub-systems of halal meat supply chain. This model is based on the identification of problems that poured into the causal diagram (causal loop), formulated in the flow chart (stock and flow) and simulated using the

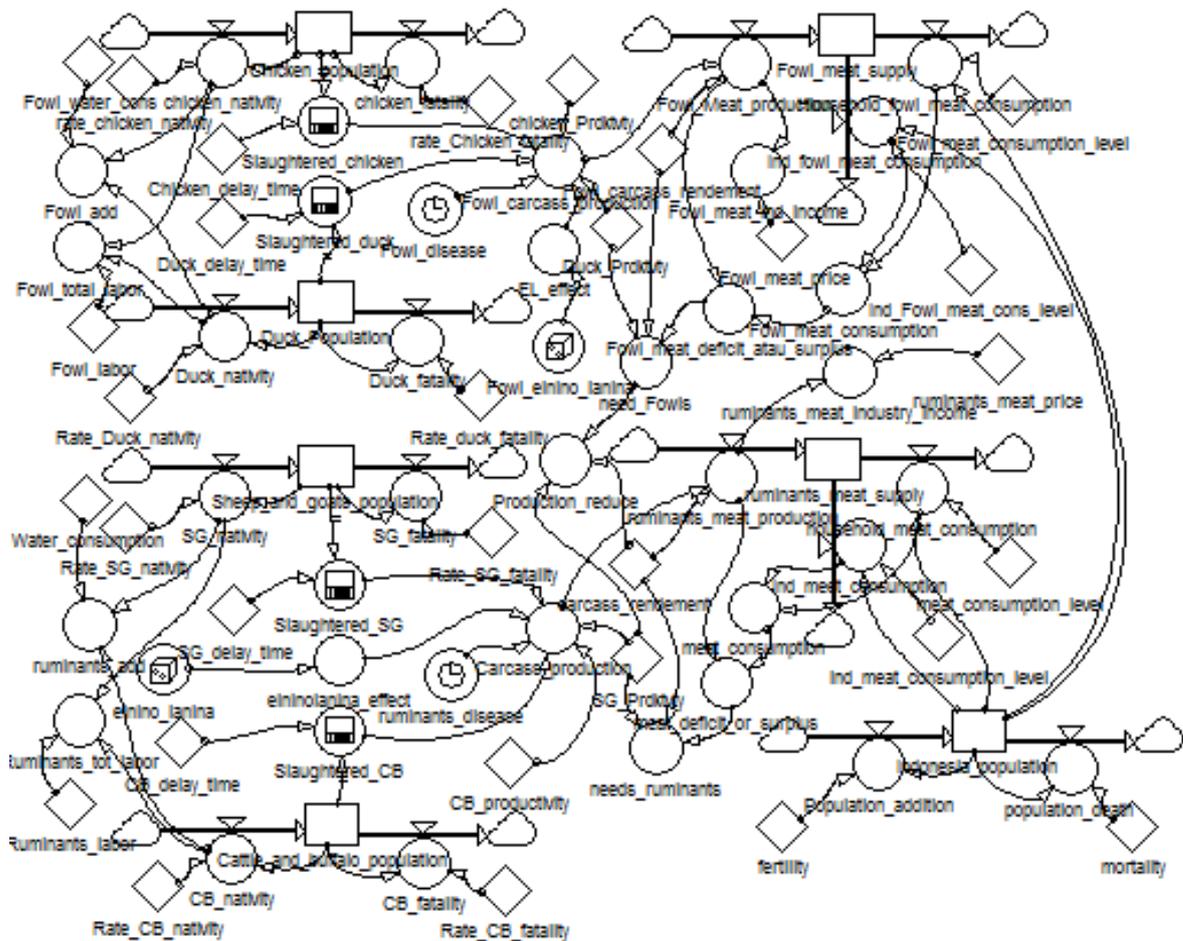


Figure 2. The Dynamic Model of Indonesia Halal Meat Supply Chain

software Powersim. Furthermore, the model formulation is formulated into mathematical form to represent the real system. Formulation of a model is linking variables that have been identified in the conceptual model with symbolic language.

Dynamic model of Indonesian halal meat supply chain as in figure 2 is valid for the validation test based on the value of MAPE (Mean Absolute Percentage Error) by 7.3%. It means that there is a deviation of 7.3% between the simulation results with actual data. Validation of the model is done by comparing the model output (simulation results) with the actual data obtained from the real system (quantitative behavior pattern comparison). Validation model performed on actual data that is data production of poultry meat and ruminant meat over the last decade.

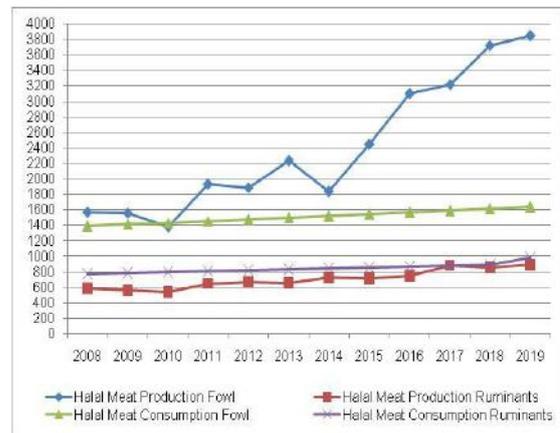


Figure 3. Dynamic Model Simulation of Indonesia Halal Meat Supply Chain (000 tonnes)

In the simulation of dynamic model above, the supply of halal meat in the aggregate Indonesia had a surplus, but by category then there is a deficit of halal meat of ruminants, especially the type of beef that should be encouraged in order to meet the needs of domestic beef even

capable of supplying to various countries. Through the simulation of dynamic systems then used to measure some success policy scenarios with the indicators focusing in meeting the needs of the beef.

Policy Scenario for Sustainable Halal Meat Supply Chain Management in Indonesia

Strengthening the supply of beef in the country through policy scenarios with the indicators of success include:

1. Improving of cattle population up to 10%/year.
2. Reducing the mortality rate of cattle to 10%/year
3. Improving the productivity of cattle carcasses to 228 kg/head.
4. Increasing the percentage boneless amounted to 80%.

Based on the policy scenarios of halal beef in Figure 4, the development of the national population is a solution to the increasing national consumption. Improvement cattle population regularly nowadays ranges from 3% - 5% per year. According to the Directorate General of Livestock of Ministry of Agriculture (2010) that some reason of the low rate of growth of the cattle population, among others;

1. Castrating productive cattle (female), still in big number and reach 150-200 thousand head/year. Particularly in NTT, NTB, Bali and Java. Castrating female cattle in productive ages means elimination (extinction) of beef cattle resource for reducing the number of cattle to born. The main cause is the economic factor breeder. Daily economic needs of farmers are demanding urgent sale of productive cows (without waiting for the birth).
2. Limitations of seed sources and frozen semen for breeding have not been done. One factor is the cattle breeding business requires a long payback time and a small margin.
3. Constraints national forage endurance. The main problem of national forage lies in the difficulty of raw material supply of concentrates feed and continuity and well quality. Likewise

green forage provision is still limited and then not optimized of natural grazing fields in NTT and NTB.

Indonesian local cattle is consist of Bali cattle, Madura cattle, PO cattle, Aceh cattle, Pesisir Selatan cattle is Indonesia genuine cattle that is currently found in some areas that having a slaughter weight relatively low compared with Bos Taurus cattle. This is due to local cattle genetics of Indonesia that is relatively small in size and the genetic decline is as a result of a cross inside (in breeding). Therefore, in order to be able to pursue national need of meat, it required numbers of local cattle.

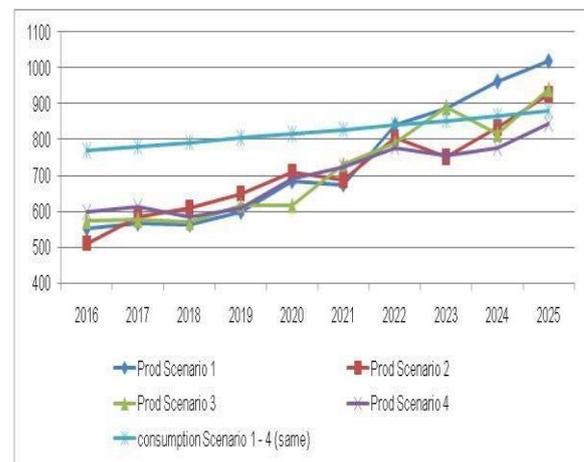


Figure 4. Supply Chain Management Scenario of Halal Meat Industry along with various Success Indicators (000 tonnes)

The weight of an average adult local cattle is around 200-250 kg, so it takes longer time to reach slaughter weight of 300-350 kg. Despite some achievements made in the field showed that Bali cattle that fed legume-based can achieve weight gain of 1.2 kg/day, but not in a systematic and mass performed in the field.

This is in contrast with the results of local crossing cattle with Bos Taurus cattle, which can reach higher body weight, which has also been done by many breeders. The crossing cows are considered particularly advantageous for breeding and fattening livestock of farmers, especially in Central Java and East Java.

Although Indonesian local cattle is low in meat production, but has an advantage in reproduction and adaptability, so that the potential of local cattle can be the source of germplasm and seed sources. In addition, local cattle productivity is low because of an inefficient problem management system and livestock mortality rate is still high, especially the death of the calf, which reached 20-40% and 10-20% of the parent's death. This happens due to lack of forage and water supply that is needed during the dry season.

Improvement of cattle population is through productive cattle rescue and the provision of local cattle. Rescue program of productive cattle, among others; inspection activities reproduction of productive cattle in the animal markets and in abattoir, coaching a group of farmers and the addition of paramedics. Whereas, program of providing local cattle, among others; provision of cattle seeds through interest subsidies (KUPS), strengthening the region and institutional sources of seed breeding and the development of breeding beef cattle through the village breeding center (VBC).

These programs must consider the aspect of sustainability which is the economic impact of increased income, in social form is labor absorption and more environmentally friendly. Based on the four scenarios described above, it would be explained the impact on sustainability as follows:

a. Revenue

Supply chain management scenarios on halal beef industry with various success indicators have a significant economic impact. Projected revenue on halal beef industry is ranging between US \$ 2.8 - 6.3 billion per year. Based on the average income, the largest is scenario one which is US\$ 4.5 billion per year and the lowest is scenario three of US\$ 4.2 billion per year.

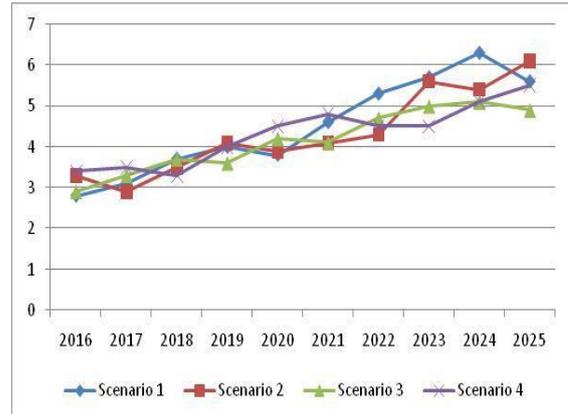


Figure 5. Economic Potential of Management Scenario of Halal Beef Supply Chain (US\$ Billion/year)

b. Labor absorption

Supply chain management scenarios on halal beef industry with a wide range of success indicators have social impacts such as potential labor absorption. Projected labor absorption on halal beef industry ranged between 709 thousand - 3.3 million people per year. Based on labor absorption, the most scenarios are 1 and 2 on average 2.3 million people per year and the lowest scenarios are 3 and 4 on average 892 thousand people per year.

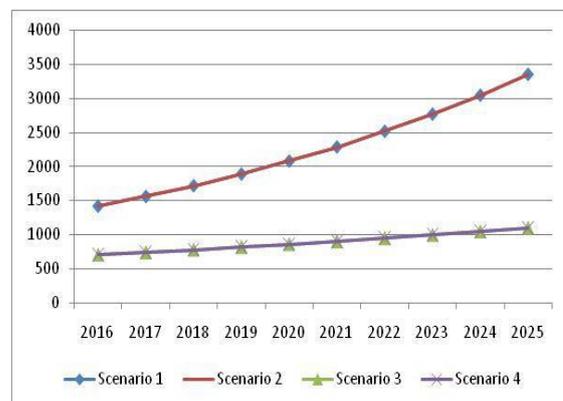


Figure 6. Potential Labor Absorption from Management Scenario of Halal Beef Industry Supply Chain (thousand inhabitants/year)

c. Environment

Supply chain management scenarios on halal beef industry with various indicators of success have an environmental impact in the form of castrating prevention of productive female. Projection of castrating female

cows that can be prevented is ranged from 6 thousand-30 thousand heads. The most is in scenarios 1 and 2 on average of 20 thousand heads per year and the lowest is on scenarios 3 and 4 on average 8 thousand per year.

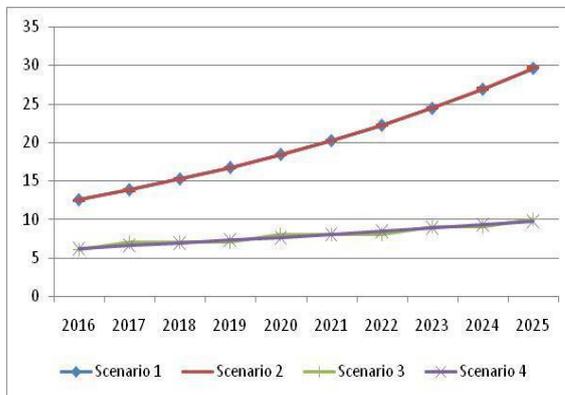


Figure 7. Castrating Prevention of Productive Female Casttle from management Scenario of Halal Beef Industry Supply Chain (Thousand Head/Year)

CONCLUSION

The basic system of halal meat supply chain is composed of the main actors such as farmers, slaughterer and consumers whether individuals or households and industry. Indonesian halal meat supply in the aggregate has a surplus, but by category then there is a deficit of halal meat of ruminants, especially the type of beef that that should be encouraged in order to meet the needs of domestic beef. The best scenario of the policy with success indicators is to increase cattle population to 10% / year. The research suggestion are focus programs to cattle population improve, i.e ; insentive for cattle breeding, village breeding center development, Intensive for hybridization, etc.

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DISCUSSION FROM PARALLEL SESSION

PAPER TITTLE	Dynamic System of Indonesia Halah Industry: Sustainable Supplay Chain Management Perspective
AUTHOR	Akhmad Mahbubi, Pita Merdeka
DISCUSSION	
QUESTION	<ol style="list-style-type: none"> 1. Indonesia ITPT stands for? Indonesia TPT? 2. Why the impact of scenarios are not mentioned the abstract? 3. Why don't formulated in the impact more specifically?
ANSWER	
SUGGESTION	<ol style="list-style-type: none"> 1. Native check for the English 2. Impact of the scenarios should be included in the main paper and abstract 3. Formulated the scenarios into a more specific terminology. 4. Mentioned the e,g: revenue, employment, and productivity for female cattle because their analysis is mainly focused on the employment (in the abstract)



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