



2016

"Small and Medium-sized
Enterprises Competitiveness"

ISBN 978-602-7577-70-1



PROCEEDING

INTERNATIONAL CONFERENCE

Agribusiness Development for Human Welfare



UMY

Universitas
Muhammadiyah
Yogyakarta

Unggul  Islami

Trusmi, Jl. No. 100, KECAM. PF/16 RI/PT/02011

Organized by:

Department of Agribusiness, Faculty of Agriculture
Universitas Muhammadiyah Yogyakarta

Supported by:



PROCEEDING INTERNATIONAL CONFERENCE

AGRIBUSINESS
DEVELOPMENT FOR
HUMAN WELFARE

*“Small and Medium-sized
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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



HAMENGGU BUWONO X

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.

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.

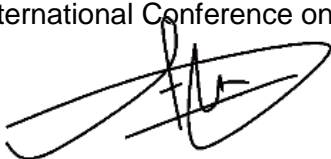
Especially, we are grateful to invited speakers, Prof. Zainal Abidin Mohamed and Asist. Prof. Pornthipa Ongkunaruk, for their willingness to share information and thoughts in this conference. As a bit report, that this conference has been attended by 85 speakers coming from five countries.

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




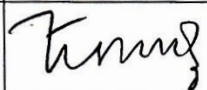
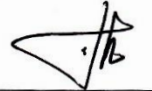


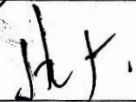
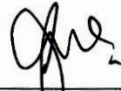




Dr. Aris Slamet Widodo, SP., MSc.

LIST OF REVIEWERS

1. Prof. Dr. Mad Nasir Shamsudin (Universiti Putra Malaysia)
2. Prof. Dr. Zaenal Abidin Mohamed (Universiti Putra Malaysia)
3. Dr. Ismail Abd. Latif (Universiti Putra Malaysia)
4. Dr. Juwaidah Sharifudin (Universiti Putra Malaysia)
5. Assist. Prof. Dr. Amin Mahir Abdullah (Universiti Putra Malaysia)
6. Assist. Prof. Dr. Nitty Hirawaty K. (Universiti Putra Malaysia)
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3	Prof. Dr. Ir. Irham, M.Sc	UGM	
4	Dr. Jangkung HM, SP. M.Ec	UGM	
5	Dr. Ir. Lestari Rahayu Waluyati, MP	UGM	
6	Ir.Edy Dwi Cahyono, M.Sc., PhD	UNIBRAW	
7	Wisnyu Ari Gutama, S.P, M.MA	UNIBRAW	
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10	Lusty Istiqamah, M.Biotech	LIPI	
11	Ir. M. Kismuntono	LIPI	

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.

Editor

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THE EFFICIENCY OF SUPPLY CHAIN EMPING MELINJO IN BANTUL REGENCY YOGYAKARTA

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Abstract

Emping melinjo is one of agroindustry products having potential to be developed. Industry of emping melinjo provides many contributions to economic growth as it can create jobs and alleviate poverty. The aim of this research study was to describe Supply Chain of emping melinjo and to analyze of efficiency Supply Chain of emping melinjo in Bantul. The field study to get primary data was done by interviewing supply chain agents (producer and traders of emping as well as traders and melinjo farmers). The result field study then tabulated and than descriptive analyzed and quantitatively using Linear Programming. The analysis results show that there are 40 networks of emping melinjo supply chain in Bantul. Supply chain agents include farmers and melinjo traders, emping melinjo producers, traders, small traders, wholesalers, retailers, and consumers. Activities of supply chain agents include harvesting, packaging, packing, trading, buying, peeling, storing, loading and unloading, distributing, sorting, and grading as well. Based on linear programming analysis, distribution cost will be minimum, that is, as much as Rp 1.042.010,- when the producer distribute emping directly to retailers at market of Ngablak, Ngipek, Godean, Gamping, Palbapang A and B, with total emping distributed as many as 3.568 kg/week.

Keywords: emping melinjo, supply chain, efficiency, activity

INTRODUCTION

Emping melinjo is one of agroindustry products having big potential to be developed. Industry of emping melinjo gives many contributions for economic growth owing to create jobs and alleviate poverty. Bantul Regency is emping melinjo industry center in Yogyakarta. Emping melinjo industry in Bantul comes to 688 units spreading in all districts. Emping melinjo industrial center is in district of Banguntapan, Bantul, Pajangan, Piyungan, Jetis, and Pandak. Emping melinjo industry is commonly household industry and more frequently called as rural industries (Dinas Perindustrian, Perdagangan dan Koperasi, 2012).

Supply Chain is companies network working together to produce and transport products to the end consumer. The

companies consist of supplier, factory, distributor, shop or retailer, as well as like logistics service companies (Pujawan, 2005). Supply Chain defined by Indrajit and Richardus (2002) as a system where an organization distributing goods production and services to its customers.

Supply Chain Management means a set of approaches applied to integrate supplier, entrepreneur, warehouse and other places of storage efficiently so that products produced can be distributed in proper quantity, location, and time to minimize cost and to satisfy the customers' need (Chopra & Meindl, 2001). According to Kotler (2003) Supply chain management includes all interactions among suppliers, producers, distributors, and customers. The main purpose of each supply chain is to fulfill the customers' need and to gain benefits for himself. In order to achieve the goal,

then must have an easy access for coordination, collaboration, and integration among suppliers (Moharana *et al*, 2012). Supply chain management has three objectives, namely cost reduction, capital reduction and service reduction (Siagian, 2005).

The supply chain of emping melinjo either in the upstream or downstream is independent each other. Each supply chain acts on information from themselves hence frequently occur distortion information (Mc.Cullen dan Towill, 2002). The producer get raw material in the form of melinjo from the traders being the customers similarly in marketing emping melinjo only for certain traders. There is a market with supply shortages of emping melinjo but some markets are supply exceeds. Due to such circumstance, profits gained by supply chain of emping melinjo is highly varied. The research study aimed at describing supply chain and analyzing efficiency of emping melinjo supply chain in Bantul.

METHOD

The research study done in Bantul using descriptive analysis method. The technique using survey method. In determining location using purposive sampling method by consideration that Bantul is the center of emping melinjo in Yogyakarta. Taking respondents of emping melinjo producer was through census, while determining the traders was through snow ball method.

Field study to get the primary data done by interviewing emping melinjo producer at the production centers, they were Banguntapan and Pajangan districts with 91 people, emping melinjo traders including small trader, wholesalers, and retailers with 56 people, and the supplier

consisting of farmer and melinjo traders with 17 people.

The analysis technique used was description analysis namely describing network of supply chain, activities supply chain agents of emping melinjo. To know the efficient network of supply chain was by the following model:

Function Purpose :

$$(Z) = C1J1 + C2J2 + C3J3 + \dots + C37J37$$

Annotation : Z = Total Costs

: Ci = Emping Melinjo Cost for networking to -i (Rp/Kg)

: Ji = Network to -i

The Constrain function consist of amount of supply of emping melinjo from the producer in Bantul and the consumer's demand of emping melinjo at retailers' level in Central Java and Yogyakarta. that are Magelang Market, Borobudur Market, Muntilan Market, Klaten Market, Beringharjo Market, Godean Market, Bantul Market, Gamping Market, Temanggung Market, Retailer A, and Retailer B in Palbapang, Kotagede Market, Ngablak Market, Prambanan Market, Piyungan Market, Sentul Market, Ngipek Market, Demangan Market, Imogiri Market and Parakan Market.

RESULT AND DISCUSSION

1. Activities of Supply Chain of Emping Melinjo

The Supply Chain agents do some tradings namely buying and selling, physical activities such as packaging, packing, storing, distributing, loading and unloading as well as facility activities namely sorting, and grading.

Table 1. Activities of the Supply Chain Agents of Emping Melinjo

Supply Chain Agents	Activity									
	Trading		Physic					Facility		
	Buying	Selling	Peelin g	Packagin g	Packin g	Storag e	Transportin g	Loadin g and Un loading	Sortin g	Gradin g
Farmer	X	√	X	80%	X	X	60%	X	80%	40%
Melinjo Traders	√	√	66,6%	√	X	41,6%	33,4%	41,6%	8,4%	41,6%
Producer	√	√	X	√	70%	5%	70%	2,5%	45%	35%
Trader	√	√	X	X	√	X	√	X	X	X
Small Traders	√	√	X	X	√	X	√	X	X	X
Wholesaler	√	√	X	X	√	20%	√	√	40%	40%
Retailers	√	√	X	√	X	21,1%	X	X	15,8%	15,8%

Source: primary data analysis 2015

Annotation : √ = all respondents do the activity

X = all respondents do not do the activity

Melinjo Farmers

Around 80% of the farmers harvest themselves and 20% harvested by trader because the trading system of "tebasan", that is the trader buys melinjo whilst still being on the tree. Most farmers (60%) sell it to the market retailers and the farmers pack it with sacks and transport it by motorcycle. Farmers sorting as many as 60% while that grading only done by 40% of the farmers.

Melinjo Traders

Activities of melinjo traders start from buying melinjo from the farmers and sell it to emping producer. There are two kinds of melinjo traders in this research, namely wholesalers and retailers. More than 65% of the traders do some peeling and only 40% of those do some storage. All traders pack it to ease the transport. Most of them do not sort it as melinjo bought from the farmers meets the quality required by the traders. More than 40% of the traders do some grading, namely grouping melinjo into class A for big size, class B for the moderate, and class C for the small.

Emping melinjo Producer

Emping melinjo producer do some tradings by buying melinjo from traders at market, then sell it to trader, small traders, wholesaler and retailers. Physical activities done by the producer including packaging, packing, storing, transporting, as well as loading and unloading. Packaging done by the producer means putting emping melinjo into plastics while packing using big cartons. A few producer (11%) store emping melinjo within 4 to 5 months. Generally, the producer do not transport emping melinjo because it is directly taken by trader, small traders or retailers.

Sorting done by the producer by separating emping melinjo perfectly spherical from the broken one and only 37% of the producer sorting while grading only done by 23% of those by separating emping melinjo in three grades. The first one is emping featuring thin and clear coming from 1 to 2 melinjo. The second one is featuring quite thick, golden yellow coming from 3 to 4 melinjo. The third one is big emping featuring thick, coming from 25 to 30 melinjo

Traders

Trading activities done by traders buying emping melinjo from the producer and then resell it to wholesalers. Physical activities done by trader are packaging, transporting, as well as loading and unloading emping melinjo. Emping melinjo collected from several producer then put into sacks and then sent to wholesalers using motorcycle. The last activity done by trader is loading and unloading.

Small Traders

Trading activities done by small traders is buying emping melinjo from the producer and then resell it to retailers at Bantul market. Physical activity done by small traders is packing and transporting. Small traders bring in a relatively few so it does not require the cost of loading and unloading.

Wholesalers

Wholesalers buy emping melinjo from the producer and small traders and then resell it to retailers at various markets. Physical activities done by wholesalers include packaging, storing, transporting, as well as loading and unloading. Packaging done is putting emping melinjo packed into sacks to ease in transporting. All wholesalers do some packaging, transporting, as well as loading and unloading emping melinjo. Wholesalers usually use pickaback services to load and unload emping melinjo from the parking lot to the retailers. Around 40% of wholesalers do some sorting and grading.

Retailers

Trading activity done by retailers is buying emping melinjo from the producer, small traders, and wholesalers then sell it directly to the consumers. Physical activity done by retailers is storing and packaging. Storage done aimed to upcoming lebaran supply to gain higher profits. Packaging done by all retailers is by wrapping emping

melinjo in accordance with the purchase of consumers.

Consumers

In this study, consumers are defined as those using and consuming emping melinjo directly and do not resell it. They usually buy it directly from the retailers.

2. Network of Emping Melinjo Supply Chain

The network in Bantul district is 40 consisting of 23 networks in Pajangan district and 17 of those in Banguntapan district. The emping melinjo supply chain in Bantul involves some agents, they are farmers and melinjo sellers, emping producers, and emping sellers consisting of traders, small traders, wholesalers, retailers, and consumers.

While the supply chain networks in Pajangan district are as follows:

1. Farmer – Melinjo Trader - Producer – Magelang Market Retailer – Consumer
2. Farmer – Melinjo Trader - Producer – Borobudur Market Retailer– Consumer
3. Farmer – Melinjo Trader - Producer – Muntilan Market Retailer– Consumer
4. Farmer – Melinjo Trader – Producer – Wholesalers C – Magelang Market Retailer - Consumer
5. Farmer –Melinjo Trader - Producer – Wholesalers C – Temanggung Market Retailer– Consumer
6. Farmer –Melinjo Trader - Producer – Wholesalers B – Magelang Market Retailer – Consumer
7. Farmer – Melinjo Trader - Producer – Wholesalers B – Klaten Market Retailer– Consumer
8. Farmer –Melinjo Trader - Producer – Wholesalers A – Magelang Market Retailer– Consumer
9. Farmer – Melinjo Trader - Producer – Wholesalers A – Borobudur Market Retailer– Consumer
10. Farmer – Melinjo Trader - Producer – Wholesalers D – Bringharjo Retailer– Consumer

11. Farmer – Melinjo Trader - Producer – Wholesalers E – Bringharjo Market Retailer– Consumer
 12. Farmer – Melinjo Trader - Producer – Trader – Wholesalers B - Magelang Market Retailer – Consumer
 13. Farmer – Melinjo Trader - Producer – Trader – Wholesalers B - Klaten Market Retailer – Consumer
 14. Farmer – Melinjo Trader - Producer – Trader – Wholesalers C - Magelang Market Retailer – Consumer
 15. Farmer – Melinjo Trader - Producer – Trader – Wholesalers C - Temanggung Market Retailer– Consumer
 16. Farmer – Melinjo Trader - Producer – Godean Market Retailer– Consumer
 17. Farmer – Melinjo Trader - Producer – Retailer A – Consumer
 18. Farmer – Melinjo Trader - Producer – Retailer B – Consumer
 19. Farmer – Melinjo Trader - Producer – Bringharjo Market Retailer– Consumer
 20. Farmer – Melinjo Trader - Producer – Bantul Market Retailer– Consumer
 21. Farmer – Melinjo Trader - Producer – Small Traders – Bantul Market Retailer– Consumer
 22. Farmer – Melinjo Trader - Producer – Gamping Market Retailer– Consumer
 23. Farmer – Melinjo Trader - Producer – Temanggung Market Retailer– Consumer
- Network of emping melinjo supply chain at Banguntapan district is as follows:
1. Farmer – Melinjo Trader – Producer – Consumer
 2. Farmer – Melinjo Trader - Producer – kotagede Market Retailer– Consumer
 3. Farmer – Melinjo Trader - Producer – ngablak Market Retailer– Consumer
 4. Farmer – Melinjo Trader - Producer – Prambanan Market Retailer - Consumer
 5. Farmer – Melinjo Trader - Producer – Piyungan Market Retailer– Consumer
 6. Farmer – Melinjo Trader - Producer – Ngipek Market Retailer– Consumer
 7. Farmer – Melinjo Trader - Producer – Demangan Market Retailer - Consumer
 8. Farmer – Melinjo Trader - Producer – Beringharjo Retailer – Consumer
 9. Farmer – Melinjo Trader - Producer – Trader – Beringharjo Retailer– Consumer
 10. Farmer – Melinjo Trader - Producer – Trader – Demangan Retailer– Consumer
 11. Farmer – Melinjo Trader - Producer – Wholesalers – Parakan Market Retailer - Consumer
 12. Farmer – Melinjo Trader - Producer – Wholesalers – Bringharjo Retailer– Consumer
 13. Farmer – Melinjo Trader - Producer – Trader – Sentul Market Retailer – Consumer
 14. Farmer – Melinjo Trader - Producer – Trader – Consumer
 15. Farmer – Melinjo Trader - Producer – Trader – Solo Wholesalers - Klaten Retailer– Consumer
 16. Farmer – Melinjo Trader - Producer – Wholesalers - Klaten Retailer– Consumer
 17. Farmer – Melinjo Trader - Producer – Imogiri Market Retailer– Consumer
3. **Efficiency of Emping Melinjo Supply Chain**
Efficiency of supply chain analyzed using linear programming aiming to minimize distribution cost and supply

obstacles from the producer as well as emping melinjo demand at some markets where consumers buy.

The function-purpose models are as follows:

$$Z = 356J_1 + 270J_2 + 320J_3 + 350J_4 + 120J_5 + 520J_6 + 422,995J_7 + 472J_8 + 1020J_9 + 1220J_{10} + 1675J_{11} + 2215,7J_{12} + 1978,62J_{13} + 3413,99J_{14} + 2408J_{15} + 320J_{16} + 320J_{17} + 420J_{18} + 860J_{19} + 760J_{20} + 1325J_{21} + 1225J_{22} + 785J_{23} + 685J_{24} + 640J_{25} + 650J_{26} + 1204J_{27} + 1104J_{28} + 1014J_{29} + 913,5J_{30} + 270J_{31} + 220J_{32} + 120J_{33} + 320J_{34} + 719,9J_{35} + 270J_{36} + 320J_{37}$$

Annotation : J_i : supply chain network to i ($i = 1, 2, 3, \dots, 37$)

According to the analysis known that minimum distribution cost of emping melinjo is Rp 1.042. 010,- achieved when emping melinjo from Bantul district with 3.568 kg/week directly distributed from the producer to the retailer at Ngablak market with 210 kg, Prambanan market with 350 kg, Ngipek market with 105 kg, Magelang market with 1190 kg, Borobudur market with 700 kg, Godean market with 546 kg., Palbapang A with 49 kg, Palbapang B with 119 kg, Bantul market with 54 kg and Temanggung market with 245kg. The supply chain network being not chosen means that there is no supply to that market.

Table 2. Distribution and Fullfilman Demand of *Emping Melinjo* at various Markets Optimally

No.	Production/ Demand (kg)	Production/ Demand (kg)	Distributed/ Fulfilled (kg)	Surplus/ Defisit	Dual Price (Rp.)
1	Potters	3568	3568	0	320
2	Kotagede	420	0	420	0
3	Ngablak	210	210	0	50
4	Prambanan	350	350	0	0
5	Piyungan	567	0	567	0
6	Ngipik	105	105	0	200
7	Demangan	105	0	105	0
8	Sentul	700	0	700	0
9	Imogiri	700	0	700	0
10	Bringharjo	1680	0	1680	0
11	Parakan	1400	0	1400	0
12	Klaten	5600	0	5600	0
13	Magelang	1190	1190	0	0
14	Borobudur	700	700	0	0
15	Muntilan	2100	0	2100	0
16	Godean	546	546	0	50
17	Bantul	245	54	191	0
18	Gamping	245	245	0	50
19	Temanggung	1050	0	1050	0
20	Retailer A	49	49	0	100
21	Retailer B	119	119	0	200

Bantul has produced emping melinjo as much as 3.568 kg/week and has all been distributed. Therefore, lack and surplus worth zero because there is no lack or surplus at all. While dual price worth Rp. 320 meaning that there is distribution cost add Rp. 320 when the producer adds production as 1 kg.

Every demand adds of 1 kg will lead to distribution cost as much as Rp 50,- occurring at Ngablak market, Godean and Gamping markets, and distribution cost adds Rp 100 happen to retailer A at Palbapang. Marketing additional costs being the highest Rp 200 happens when Retailer B at Palbapang adds 1 kg of demand. Distribution additional costs as Rp.0 when demand exceeds at other markets such as Kotagede market, Piyungan market, Sentul market, Magelang market, Borobudur market, Muntilan market, Klaten market, Beringharjo market, Bantul market, and Temanggung market.

Emping melinjo production from the producer has lower limit with 3.514 kg and top limit with 3.759 kg. The lower limit decreasing from real production (3.568 kg) shows that emping melinjo production from the producer in Bantul which is uncertain. However, distribution will remain optimal when emping melinjo production in the producer level is on lower and top limit intervals.

CONCLUSION

Supply chain of emping melinjo in Bantul consists of 40 networks. The supply chain agents include farmers, melinjo traders, emping melinjo producer, traders, small traders, wholesalers, retailers and consumers. The agents of supply chain do some harvesting, packaging, packing, purchasing, peeling, storing, loading and unloading, transporting, sorting, and grading.

Based on linear programming analysis done, that distribution cost of emping melinjo will be minimum when the producer distribute emping melinjo

directly to retailers at market Ngablak, Ngipek, Godean, Gamping, Palbapang A and B.

ACKNOWLEDGMENT

We feel grateful to Kopertis Wilayah V DIY Ministry of Education and Culture who has funded our research of such "Hibah Bersaing".

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DISCUSSION FROM PARALLEL SESSION

PAPER TITLE	The Efficiency of Supply Chain Emping Melinjo in Bantul Regency Yogyakarta
AUTHOR	Eni Istiyanti, Diah Rina Kamardiani
DISCUSSION	
QUESTION	Please tell us about the analysis technique used was description analysis namely describing network of supply chain? Try about it's.
ANSWER	
SUGGESTION	<ul style="list-style-type: none"> - Need to write GAP clearly - Revise the result, just discuss the most important thing, don't need to put all findings - Make the implication - Purpose method explain name in the paper - It's enough but try again in your writing in your paper - Title it's to locally - GAP of the research - Make the common equation, no need to mention full equation - Make short explanation on one topic. <ul style="list-style-type: none"> o Ex: supply ex chain in one page - No need to explain in conclusion to just rewrite what mention in result. - Didn't find the GAP - Don't give numeric/list at the conclusion. But in a sentence