

Implementation of Electronic Supply Chain Management for Potato Farmers through a Website

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Abstract: This research aims to improve the income of potato farmers in the mountainous areas of Dieng. For years, they have been dependent on the brokers who always set the prices of the potatoes. The brokers buy the potatoes for IDR 8,000–12,000 per kilogram. The market price of the high-quality potatoes can reach twice as much as the price the brokers set. This research is descriptive and qualitative and aims to examine the marketing of a potato commodity through a website. The potato farmers living in Dieng, Central Java are considered the informants and are the research unit. The results of this research indicate that the farmers started to learn how to export and sell the potatoes through the website, assisted and facilitated by the cooperatives in their areas. The study applies a promotion application using the Web and e-SCM for potato farmers in the mountains of Dieng, Wonosobo, Central Java, which can be viewed through the website link for Potato Indofarm: (<http://indopotatofarm.com>). The channel information and marketing distribution of Dieng potatoes are in the form of percentages and diagrams. The supply chain design of potato products in Wonosobo uses e-commerce.

Keywords: electronic supply chain management, farmers, potatoes

通过网站实施马铃薯农民电子供应链管理

摘要：这项研究旨在提高迪安山区马铃薯农民的收入。多年来，他们一直依靠经纪人来决定土豆的价格。经纪人以每公斤 8,000-12,000 印尼盾的价格购买马铃薯。优质土豆的市场价格可以达到经纪人设定价格的两倍。这项研究是描述性和定性的，旨在通过网站检查马铃薯商品的营销。居住在中爪哇省迪恩的马铃薯种植者被视为举报人，并且是研究单位。这项研究的结果表明，在该地区合作社的协助和协助下，农民开始通过网站学习如何出口和出售马铃薯。这项研究通过网页和电子供应链管理将推广应用程序应用到中爪哇省迪恩，沃诺索沃山区的马铃薯种植者，可以通过马铃薯种植者网站 (<http://indopotatofarm.com>) 的网站链接进行查看。Dieng 土豆的渠道信息和营销分布以百分比和图表的形式。月野庄的马铃薯产品供应链设计使用电子商务。

关键词：电子供应链管理，农民，土豆

Introduction

In 2017, Internet users in Indonesia grew to represent more than 50 percent of the Indonesian population [7]. The Internet has developed to become an intermediary for any transactions that meet market needs. Many business transactions have changed from manual to electronic. In terms of data exchange, this

can result in efficient business-to-business transactions, as well as business-to-consumer exchanges [8], all known as electronic commerce. The incremental nature of electronic commerce makes business connectivity and visibility more important, smart, and responsive to consumer needs [9]. It also makes the purchase and sale of goods and services between companies and consumers more efficient in the supply chain, and the

Received (date):

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ability to implement it is therefore an effective strategy [29], [30]. The emergence of e-business utilizing electronic media, information technology, and supply chain management is an essential part of progress.

In agriculture, the lack of a direct supply chain management system ultimately results in high prices. A long supply chain with complex intermediaries distorts pricing models. Several companies apply short-term solutions to make costs efficient by determining the structure of the supply chain and separating the tasks into small operations across a large number of companies [10]. On the other hand, by applying the concept of electronic supply chain management, the agricultural commodity business in Indonesia could avoid the need to involve many intermediaries between suppliers and end consumers.

This study will explore a method for improving the income of potato farmers. Recognizing the importance of potatoes globally [11] and the importance of Asian countries in their production should encourage farmers to focus on their potential to continue rapid expansion in the next few decades [12], [13]. In the early 1960s, only 7% of the world's total potato production occurred in developing countries; in recent years, Asian countries have contributed to 46% of the global output [14]. In the last five years, from 2011 to 2016, the population of workers in the agricultural sector was about 38.3 million to 42.5 million people or around 31.7% to 37.9% of the Indonesian workforce [15].

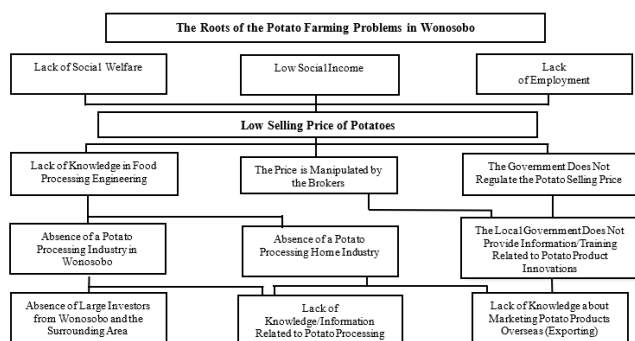


Fig. 1 The roots of the potato farming problems in Wonosobo [1]

Indonesia is rich with various agricultural and plantation commodities, one of which is the potatoes produced in the mountains of Dieng, Wonosobo, Central Java. Wonosobo Regency was selected for this study based on its geographic location; Wonosobo has 15 sub-districts, and every sub-district has 16–21 villages (kelurahan). With an area of 984.68 km² and a population of more than 750 thousand people, most people in Wonosobo work as potato farmers and depend on their farming business. Of the 15 sub-districts, only five sub-districts produce potatoes: Kepil, Sapuran, Kalikajar, Garung, and Kejajar. The total area of the five regions covers 3,431 hectares, with 531,817 quintals in harvested commodities.

The welfare and income of the individuals living in

this area are low, and there is a lack of employment. Based on a previous study ([1], which was analyzed by the author, 2018), these conditions are caused by the low selling price of potatoes in Wonosobo, which results from three major problems: a lack of knowledge regarding food processing and engineering, price manipulation by brokers, and the lack of government regulations for potato selling prices.

This study will focus on the value chain or distribution of the potatoes; the majority of harvested potatoes will be sold (97%) and distributed to small brokers (55%), large brokers (32.5%), and large sellers or traders (12.5%) before reaching consumers through the central market. The distribution of the potatoes is illustrated in Figure 2 as follows:

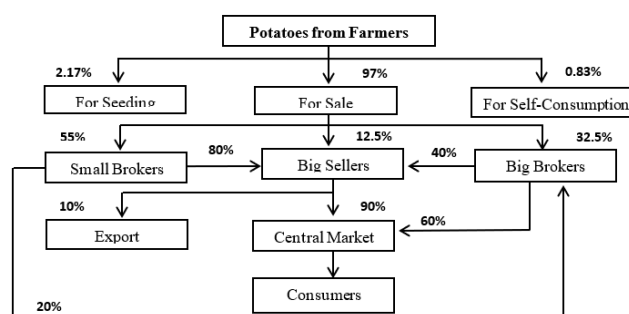


Fig. 2 The channel and distribution of potato marketing in Wonosobo Regency [2]

The value chain of potatoes in Wonosobo Regency starts with the farmers as the initial producers. It can be seen in Figure 2 that almost all potatoes produced by the farmers are sold to other parties (97%). Only a small portion of potatoes are consumed (0.83%) and used as seeds for the next planting season (2.17%). In the supply chain of potatoes, there are many parties involved with different values. This can be seen in the following distribution model:

- In the first model, the farmers sell the potatoes to large sellers, which then sell them to exporters (Farmers→Large Sellers→Exporters).
- In the second model, the farmers sell potatoes to large sellers, and then the large sellers sell to the central market before selling to the consumers (Farmers→Large Sellers→Central Market→Consumers).
- In the third model, the farmers sell to small brokers. The small brokers sell to the large sellers, who sell the potatoes to the central market, which then sells them to the consumers (Farmers→Small Brokers→Large Sellers→Central Market→Consumers).
- The fourth model is the farmers sell to big brokers who sell to the central market; then the consumers buy potatoes in the central market (Farmers→Big Brokers→Central Market→Consumers).

- The fifth model that is the focus of this study is the farmers put the potatoes in cooperatives and the potatoes will be sold by the website to consumers directly (Farmers→Cooperatives→Consumers).

1 Literature Review, Research Methods, and Discussion

1.1 Literature Review

A supply chain is the method of processing raw material goods into finished goods including the product distribution to the customers [16]. Christopher [17] said that supply chain management is a relationship management between the upstream and downstream processes that involves the suppliers and customers, purposively to lower the costs by providing competitive value to all supply chain processes.

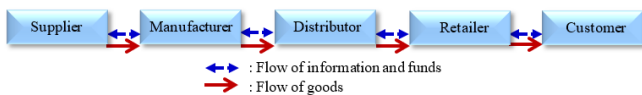


Fig. 3 The basic supply chain [3]

There is no doubt that the Internet has changed the concept of supply chain management and it has added a new dimension, changing the SCM to be e-SCM. The transformation started in 2000 onwards, indicating the new phase of e-SCM. Ross [4] described the evolution of e-SCM in several phases: In the first phase, the scope of SCM is about warehouse and transportation management (1960s). Then it expanded to total cost management in the 1980s and integrated logistics management till the 1990s. The concept of supply chain management (SCM) itself was known in the 2000s, which included upstream, mainstream, and downstream processes. The growth of Internet communication and technology (ICT) has influenced all aspects in business, including SCM; furthermore, the concept of SCM has grown to be e-SCM till today.

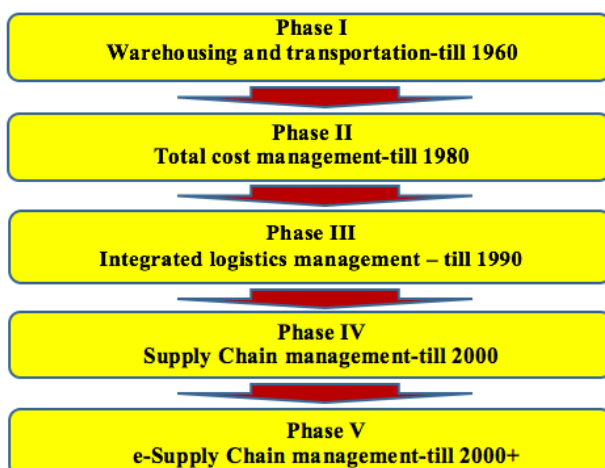


Fig. 4 Evolution of e-SCM [4]

Nowadays, ICT has changed rapidly to support

online trading, including business to consumer (B2C) and business to business (B2B) transactions [18]. Ingale et al. [19] as well as Saba, Rolandi, and Pilloni [18] said that e-agriculture or e-agribusiness is an ICT optimization in the agriculture field or in business agriculture. Currently, the growth of e-agribusiness in Indonesia can be seen from the emergence of websites and agribusiness networks as revealed by Soekartawi [20]. E-agribusiness has the potential for development in the future, with the following conditions: it is reliant on the number of agricultural commodity businesses that have websites, the number of promotional requests or agricultural commodities advertised on the Internet, and the number of buying and selling transactions of agricultural commodities through the Internet, communication, and technology (ICT). The concept of e-agriculture refers to the e-supply chain management (e-SCM) concept. Lapar et al. [21] developed a Bayesian approach for sellers to determine whether to enter the market. The sellers can make this decision in accordance with the available resources and establish their supply chain quality level for the market, which is determined by the supply type or the living inventory besides the quantity. This includes the information that is needed by the customers. Figure 3 shows the flow of goods and information that complement each other from the suppliers to the end consumers. The flow itself can be made more effectively with the advancements of ICT, especially e-SCM.

E-SCM is a new dimension derived from the previous concept of SCM. SCM developed along with the evolution of information technology and the Internet. Laudon and Laudon [22] stated that this type of organization is called digital organization, where all business connections with the customers, suppliers, and employees are performed in digital forms. The connections are activated and coordinated through a digital network connecting all parties. The connections and networks among those parties create opportunities for improving the values by using a simpler and more flexible system and information technology. Viswanadham and Gaonkar [5] said that the traditional SCM starts with assets and core competencies and then goes to the customers or known as push SCM. Another way e-SCM is started is with the customers to the assets' core competencies or known as pull SCM.



Fig. 5 Customer-centric e-SCM [5]

1.2 Research Methods

This research is a qualitative and descriptive study. According to Sekaran & Bougie [23], qualitative data

is data that can be in the form of words. Examples of qualitative data include focus group transcripts, transcription of videotapes, interview notes, accounts of experiences with products, answers to open questions, news articles and the like. Qualitative data generally comes from a variety of primary and/or secondary sources such as company records, government publications, individual focus groups and the Internet. Meanwhile, according to Copper & Schindler [24], qualitative research includes an “array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world.” Qualitative techniques are used at both the data collection and data analysis stages of a study. In this study, the scope of the research objective was determined according to the problem to be studied, namely the marketing of potato products or commodities through the website. The research unit analysed was potato farmers in the Dieng Mountains of Wonosobo, Central Java. The farmers are set as the sample or informants. The research informants were the people who know or the actors who were directly involved with the research problems, such as farmers owning the land, landless farmers, small brokers, potato sellers in traditional markets, the village chief (Lurah) and his staff, and the staff of the Department of Agriculture and Fisheries of Wonosobo District. This study aims to find out and explore the implementation of e-SCM of potatoes through the website, namely indopotatofarm.com in the Wonosobo area, Central Java. Through indopotatofarm.com, the potato farmers could write messages, deliver news or strategic information, and any promotional activities including advertisements, promotions, and customer database management.

The sampling technique used in this research was purposive sampling, with the farmers’ inclusion criteria as follows: 1) living in the mountain areas of Dieng, Wonosobo; 2) working as potato farmers; and 3) owning or leasing agricultural land in the Dieng mountains.

1.3 Discussion

1.3.1 Description of the Study Area

This research was conducted in the Dieng plateau located in Wonosobo, Central Java. Wonosobo Regency is 120 km from the capital of Central Java (Semarang) and 520 km from the capital city (Jakarta). Wonosobo is also one of 35 regencies or cities located in the central part of Central Java Province. Geographically, Wonosobo Regency is located between 7° 11' and 7° 36' south latitude, 109° 43' and 110° 04' east longitude. Other features of the area include:

- Average temperature of 14.3 -26.50 C°
- Annual rainfall is 1,713-4,255 mm / year,

- Elevation in the range of 250 m - 2,250 m asl, with 50% of total area in the range of 500 asl - 1,000 asl
- Annual rainfall ranges from 3,541 - 6,445 mm / year.

Wonosobo Regency has an area of around 98,468 hectares (984.68 km²) or 3.03% (percent) of the area of Central Java where the composition includes paddy land which takes up 18.99% of the land. Rice fields are widely used by farmers for various commodities, one of which is potatoes. Potato-producing potential exists around the Dieng plateau, namely Wonosobo, Banjarnegara, Pekalongan, Batang and Temanggung, but in this study only the Wonosobo area was taken, bearing in mind that the Dieng plateau is a plateau where most of the area lies in Banjarnegara District and partly on the east side lies in Kejajar District, Wonosobo Regency, Central Java [27].

Types of potatoes from the Dieng plateau, there are 4 types namely [26]

- Ordinary Potatoes
- Butter Potatoes are divided into 2 types namely Granola Potatoes and Test Potatoes (Marita)
- Red Potatoes (Red Pontiac or Desiree)

The selection of research sites, namely Wonosobo Regency, was carried out on purpose (purposive), Wonosobo has 15 districts, where each 1 district has 16-21 villages / villages, with an area of 984.68 Km² and a population of more than 750 thousand people, the majority of the population in the Wonosobo area who make a living as a potato farmer and depend on the farming for their livelihood. From these 15 districts only 5 districts produce potato crops with Kejajar sub-district as the largest potato producer, with an area of 2,853 hectares and production of 435,493 quintals.

1.3.2 The Characteristic of Potato Farmer in Dieng Plateau

Based on research done by Izdihar [28], farmers who are in the Dieng mountains, most of them are relatively only in elementary and junior high school (or equivalent), which is around 76%. This will certainly have an impact on farming methods adopted by farmers in the Dieng plateau. According to Sumarwan [25], the level of education of a person will affect the values they hold, the way they think, the way they look, and even their perception of a problem which then determines the decision process and patterns of consumption. In addition, the age of this respondent is included in the category of early adulthood, advanced adulthood, middle-aged and old according to the consumer's life cycle. Same thing with education, age will certainly also affect the farming methods applied. The table below shows that more than half the population (56%) belongs to advanced adulthood.

Table 1 Classification of population baes on age

No	Age (year)	Total
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		n	%
1	Early adulthood (19-24)	1	1
2	Advanced adulthood (25-35)	56	56
3	Middle-aged (36-50)	40	40
4	Old (51-65)	3	3
	Min – max (year)	22 - 52	
	Average \pm sd	35,79 \pm 6,23	
	Total	100	100

The level of education of farmers who are still relatively low and the level of age that is included in the elderly group makes it difficult for farmers to adopt the development of agricultural technology. Whereas the development of agricultural technology is believed to be able to encourage the productivity of agricultural products, especially potato commodities whose purpose is also for export. Commodities intended for export must be supported by qualified technology because the quantity and quality of products must be in accordance with export demand.

1.3.3 Supply Chain Problem in Potato Farmers in Dieng Plateau

The distribution channel that occurs in potato commodities in the Dieng plateau is quite long, starting from farmers, collectors, new traders to consumers, does not show high efficiency of farmers while farmers need a long time to market potatoes. Most farmers do not sell directly to large traders must first sell to collectors. This happens because the farmers do not have enough connections to large traders, so the sale must go through collectors at prices that are not in accordance with the collectors' when selling to traders.

If the current potato distribution channel can be cut where potato farmers directly market potatoes to large traders without going through the role of collectors so that they can cut off the existing distribution channels, then this will certainly have a good impact on farmers' incomes. Farmers will certainly get a higher income if they can directly sell their products to large traders and even exports. In addition, a more effective distribution channel will certainly maintain the yield of potato production considering the nature of potatoes as agricultural products that are perishable, voluminous and cannot last long.

1.3.4 Implementation of E-SCM for Potato Farmers through a Website

Using a qualitative method, we obtained data directly from the informants (farmers) and questionnaires as supporting data. Regarding the channel results and distribution of the potatoes in Wonosobo Regency (Figure 2), it shows that the potato farmers sold 97% of their harvested potatoes to the small brokers, big brokers, and big sellers. Based on

the collected data, some potatoes from Wonosobo were exported, but unfortunately, the exporters were the big sellers, not from the farmers themselves, since they had never tried to export the potatoes.

These results inspired the farmers to create an e-SCM in a downstream process, namely Potato Indofarm [26]. Using this e-SCM, the farmers can export or ship the potato products directly to the consumers. This process would cut the existing distribution channels that might support the potato shipping process to the end consumers directly. In the early stage, the farmers were unable to stand alone, meaning that the farmers could not conduct the transactions to customers directly. Therefore, the transactions were facilitated and assisted by the local cooperatives as described in Figure 6.

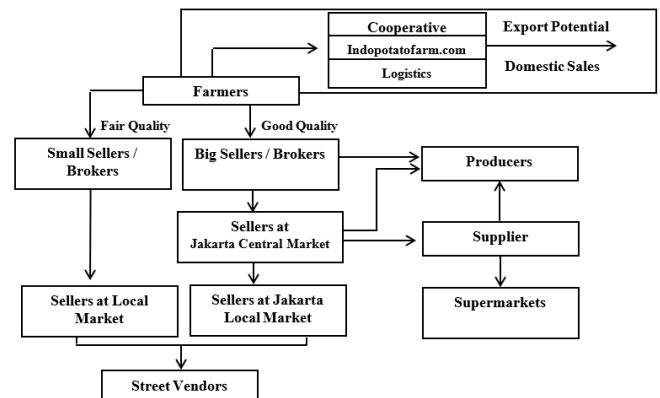


Fig. 6 The flow design of the potato supply chain in Wonosobo [6]

The research results of Sarjono et al. [6] indicate that so far, the potato farmers in Wonosobo, either who have large or small land, only sold the potatoes to the brokers as potato collectors. Thus, the farmers were suggested to establish a potato cooperative aiming at providing coaching and guidance regarding knowledge, technology, and marketing of the potatoes through e-SCM. The following figure displays the differences between the traditional and proposed supply chain for potatoes of the farmers in the Dieng areas. The e-SCM may produce different results.

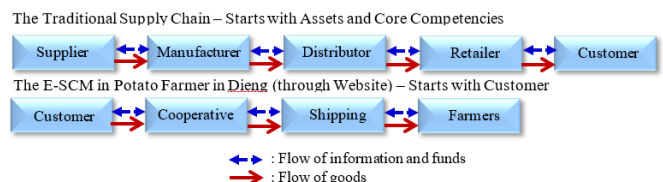


Fig. 7 The implementation of e-SCM for potato farmers in the Dieng Mountains [3], [5]

1.3.5 Electronic Supply Chain Management for Potato Farmers through a Website in Dieng

In implementing the E-Supply Chain Management (E-SCM) system, collaboration between farmers and customers is needed because each party concerned can provide the required information accurately, completely,

and in a timely manner.

2 Conclusion

The implementation of e-SCM has a significant impact in increasing effectiveness and efficiency, as the potato farmers can sell their harvests directly to the end consumers. The creation of the “Potato Indofarm” website is expected to provide convenience and help farmers in the mountain areas of Dieng sell their potatoes both at home and abroad. By cutting the distribution channels through e-SCM, the marketing of potato farmers is not dependent on the brokers or collectors. So, the farmers can determine the prices of potatoes based on an agreement with consumers. Local cooperatives provide facilitation, assistance, and direction to the farmers in making online transactions. With good integration among the farmers as the producers, cooperatives as the temporary intermediaries, and consumers, the Indonesian farmers are expected to have increased global competitiveness. This research is limited as it only discusses the potato farmers in the Wonosobo area. Potato farmers are also spread across Java areas such as Malang and Tawamangu. Further research may study the e-SCM topic with a more elaborate approach, along with the advancements of information technology.

Acknowledgments

The research is funded entirely by a higher education grant from the Ministry of Research, Technology, and Higher Education, the Republic of Indonesia, and the authors are grateful to Binus University, especially to Prof. Tirta Nugraha Mursitama, as the Vice Rector of Research and Technology Transfer.

References

- [1] ILMU I. Peningkatan Harga Jual Jagung, 2014. <http://irpan-ilmu.blogspot.com/2014/02/v-behaviorurldefaultvmlo.html>
- [2] PRATIWI L. F. L. Rantai Nilai Komoditas Kentang di Dataran Tinggi Dieng Kabupaten Wonosobo, 2017. <http://terastani.faperta.ugm.ac.id/2017/06/rantai-nilai-komoditas-kentang-di-dataran-tinggi-dieng-kabupaten-wonosobo/>
- [3] CHOPRA S., & MEINDL P. *Supply Chain Management*. Prentice Hall, New York, 2001.
- [4] ROSS D. F. *Introduction to E-Supply Chain Management, Enabling Technology to Build Market-Winning Business Partnerships*. St. Lucie Press, Boca Raton, Florida, 2003.
- [5] VISWANADHAM N., & GAONKAR R. Understanding e-Supply Chains, Design, and Future Trends, the Logistics Institute-Asia. Research Paper No: TLIAP, 2001, 02-01:3-7.
- [6] SARJONO H., SANNY L., and MELATI I. Supply chain design of potato commodity in Wonosobo Regency, Central Java – Indonesia. *International Journal of Engineering and Technology (UAE)*, 2018, 7(4): 42-45. <https://doi.org/10.14419/ijet.v7i4.4.19607>
- [7] ASOSIASI PENYELENGGARA JASA INTERNET INDONESIA. Infografis Penetrasi dan Perilaku Pengguna Internet Indonesia, 2018. https://www.apjii.or.id/survei_2017
- [8] KHAN S., & SHAHZAD S. Adoption of electronic supply chain management and e-commerce by small and medium enterprises and their performance: A survey of SMEs in Pakistan. *American Journal of Industrial and Business Management*, 2004, 4: 433-441. <https://doi.org/10.4236/ajibm.2014.49051>
- [9] WANG Y., & PETTIT S. E-logistics: An introduction. In: WANG Y., & PETTIT S. *E-Logistics: Managing Your Digital Supply Chains for Competitive Advantage*. Kogan Page, London, 2016.
- [10] TEIMOURY E., JABBARZADEH A., and BABAEI M. Integrating strategic and tactical decisions in livestock supply chain using bi-level programming, case study: Iran poultry supply chain. *PLOS ONE*, 2017, 12(10): 1-24. <https://doi.org/10.1371/journal.pone.0185743>
- [11] FOOD AND AGRICULTURE ORGANIZATION. *International Year of the Potato 2008: New Light on a Hidden Treasure. An End of Year Review*. Food and Agriculture Organization, Rome, 2009. <http://www.fao.org/potato-2008/pdf/IYPbook-en.pdf>
- [12] SINGH H. P. Policies and strategies conducive to potato development in Asia and the Pacific Region. In: PAPADEMETRIOU M. K. *Proceedings of a Regional Workshop to Commemorate the International Year of the Potato-2008*. Food and Agricultural Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, 2008: 18-29. <http://www.fao.org/3/i0200e/I0200E07.htm>
- [13] WALKER T., THIELE G., SUÁREZ V., and CRISSMAN C. *Hindsight and Foresight about Potato Production and Consumption*. International Potato Center, Lima, 2011.
- [14] SCOTT G. J., & SUAREZ V. The rise of Asia as the centre of global potato production and some implications for industry. *Potato Journal*, 2012, 39(1): 1-22. <http://epubs.icar.org.in/ejournal/index.php/PotatoJ/article/view/32257>
- [15] HAZLIANSYAH. Dominasi Sektor Pertanian di Indonesia, 2017. <https://www.republika.co.id/berita/nasional/intan/17/04/06/onyups280-dominasi-sektor-pertanian-di-indonesia>
- [16] LAUDON K. C., & LAUDON J. P. *Essentials of Management Information Systems*. Pearson, Upper Saddle River, New Jersey, 2011.
- [17] CHRISTOPHER M. *Logistics and Supply Chain Management*. FT Press, Upper Saddle River, New Jersey, 2011.
- [18] SABA A., ROLANDI S., and PILLONI M. Small and medium sized wine producers dealing with business to business e-commerce: Towards a relational model for enhancing value (co-) creation. *BIO Web of Conferences*, 2017, 9: 03017. <https://doi.org/10.1051/bioconf/20170903017>
- [19] INGALE S. T., NAIK V. G., TALATHI J. M.

Entrepreneur E-Agribusiness. Science Tech, 2007.

[20] SOEKARTAWI S. E-Agribisnis: Teori dan Aplikasinya. *Seminar Nasional Aplikasi Teknologi Informasi*, 2007: M-19-M-25. <https://journal.uui.ac.id/Snati/article/view/1760>

[21] LAPAR M. L., HOLLOWAY G., and EHUI S. Policy options promoting market participation of smallholder livestock producers: a case study from the Phillipines. *Food Policy*, 2003, 28(3): 187-211. <https://doi.org/10.22004/ag.econ.294778>

[22] LAUDON K. C., & LAUDON J. P. *Management Information Systems*, Volume 8. Prentice Hall, Upper Saddle River, New Jersey, 2015.

[23] SEKARAN U., & ROGER B. *Research Methods for Business: A Skill-Building Approach*, 6th ed. Wiley, Hoboken, New Jersey, 2013.

[24] COPPER D. R., & SCHINDLER P. S. *Business Research Methods*, 12th ed. The McGraw-Hill Companies, New York, 2014.

[25] SUMARWAN U. *Perilaku konsumen: Teori dan penerapannya dalam pemasaran*. Ghalia Indonesia, Bogor, 2011.

[26] POTATO INDOFARM, 2020. <https://www.potatoindofarm.com>

[27] WALUYO B., ROOSDA A. A., ISTIFADAH N., RUSWANDI D., and KARUNIAWAN A. Identification of fifty sweet potato (*Ipomoea batatas* (L.) Lam.) promising clones for bioethanol raw materials. *Energy Procedia*, 2015, 65: 22-28. <https://doi.org/10.1016/j.egypro.2015.01.024>

[28] IZDIHAR H. Motivasi dan Persepsi Petani Kentang Dataran Tinggi Dieng terhadap Pestisida Organik serta Analisisnya berdasarkan Theory of Planned Behavior, 2012. <https://123dok.com/document/ozldk46y-motivasi-persepsi-kentang-dataran-pestisida-analisisnya-berdasarkan-behavior.html>

[29] UTOMO D. T., PRATIKTO, SANTOSO P. B., and SUGIONO. Preliminary Study of Web Based Decision Support System to Select Manufacturing Industry Suppliers. *Journal of Southwest Jiaotong University*, 2020, 55(2). <http://jsju.org/index.php/journal/article/view/549>

[30] KHANH N. H., & DUNG N. T. Enhancing the Quality of Strategy Formulation for the Customs Department. *Journal of Southwest Jiaotong University*, 2020, 55(3). <http://jsju.org/index.php/journal/article/view/645>

参考文:

[1] ILMU I. 玉米销售价格上涨, 2014. <http://irpan-ilmu.blogspot.com/2014/02/v-behaviorurldefaultvml.html>

[2] PRATIWI L. F. L. 沃诺索博摄政区迪恩高原的马铃薯商品价值链, 2017年。 <http://terastani.faperta.ugm.ac.id/2017/06/rantai-nilai-komoditas-kentang-di-dataran-tinggi-迪恩-卡布帕滕-沃诺索博>

[3] CHOPRA S. 和 MEINDL P. 供应链管理。纽约普伦蒂斯厅, 2001。

[4] ROSS D. F. 电子供应链管理简介, 使技术能够建立赢得市场的业务合作伙伴关系。圣露西出版社, 佛罗里达州博卡拉顿, 2003。

[5] VISWANADHAM N. 和 GAONKAR R. 了解电子供应

链, 设计和未来趋势, 亚洲物流学会。研究论文编号: 特里普, 2001, 02-01: 3-7。

[6] SARJONO H., SANNY L. 和 MELATII. 印度尼西亚中爪哇省月野庄摄政区马铃薯商品的供应链设计。国际工程技术杂志 (阿联酋), 2018, 7 (4): 42-45. <https://doi.org/10.14419/ijet.v7i4.4.19607>

[7] 互联网服务提供商协会印度尼西亚。印度尼西亚互联网用户的渗透率和行为图表, 2018. <https://www.apjii.or.id/survei> 2017

[8] KHAN S. 和 SHAHZAD S. 中小企业采用电子供应链管理 and 电子商务及其绩效: 对巴基斯坦中小企业的调查。美国工商管理杂志, 2004, 4: 433-441. <https://doi.org/10.4236/ajbm.2014.49051>

[9] 王 Y, 和 PETTIT S. 电子物流: 简介。在: WANG Y. 和 PETTIT S. 电子物流: 管理数字供应链以获取竞争优势。高根页面, 伦敦, 2016。

[10] TEIMOURY E., JABBARZADEH A. 和 BABAEI M. 使用双层编程将战略和战术决策整合到牲畜供应链中, 案例研究: 伊朗家禽供应链。一号公报, 2017, 12 (10): 1-24. <https://doi.org/10.1371/journal.pone.0185743>

[11] 食品和农业组织。2008年国际马铃薯年: 隐藏宝藏的新发现。年终回顾。粮食和农业组织, 罗马, 2009. <http://www.fao.org/potato-2008/pdf/IYPbook-zh.pdf>

[12] SINGH H. P. 有利于亚洲及太平洋区域马铃薯发展的政策和战略。在: PAPADEMETRIOU M. K. 纪念国际马铃薯年 2008 年区域研讨会的会议记录中。联合国粮食及农业组织, 亚洲及太平洋区域办事处, 曼谷, 2008: 18-29. <http://www.fao.org/3/i0200e/I0200E07.htm>

[13] WALKER T., THIELE G., SUÁREZV. 和 CRISSMAN C. 关于马铃薯生产和消费的意见和远见。2011, 利马国际马铃薯中心。

[14] SCOTT G. J. 和 SUAREZ V. 亚洲作为全球马铃薯生产中心的崛起及其对工业的影响。马铃薯杂志, 2012, 39 (1): 1-22. <http://epubs.icar.org.in/ejournal/index.php/PotatoJ/article/view/32257>

[15] 哈兹良雅。印度尼西亚, 农业部门在印度的统治地位, 2017. <https://www.republika.co.id/berita/nasional/intan/17/04/06/onyups-280-dominasi-sektor-pertanian-di-indonesia>

[16] LAUDON K. C. 和 LAUDON J. P. 管理信息系统要点。皮尔森, 上萨德尔河, 新泽西州, 2011。

[17] CHRISTOPHER M. 物流与供应链管理。金融时报出版社, 新泽西州上萨德尔河, 2011。

- [18] SABA A. , ROLANDI S. 和 PILLONI M. 与企业对企业电子商务打交道的中小型葡萄酒生产商：建立一种关系模型以增强价值（共同）创造。生物网络会议，2017，9：03017. <https://doi.org/10.1051/bioconf/20170903017>
- [19] INGALE S. T. , NAIK V. G. , TALATHI J. M. 企业家电子农业综合企业。科学技术，2007。
- [20] SOEKARTAWI S. 电子农业：理论与应用。国家信息通报研讨会，2007：M-19-M-25。
<https://journal.uui.ac.id/Snati/article/view/1760>
- [21] LAPAR M. L. , HOLLOWAY G. 和 EHUI S. 促进小农户畜牧生产者的市场参与的政策选择：来自菲律宾的案例研究。食品政策，2003，28（3）：187-211。
<https://doi.org/10.22004/ag.econ.294778>
- [22] LAUDON K. C. 和 LAUDON J. P. 管理信息系统，第8卷，新泽西州上萨德尔河普伦蒂斯厅，2015。
- [23] SEKARAN U. 和 ROGER B. 商业研究方法：一种技能培养方法，第六版。Wiley，霍博肯，新泽西州，2013。
- [24] COPPER D. R. 和 SCHINDLER P. S. 商业研究方法，第12版。麦格劳-希尔公司，纽约，2014。
- [25] SUMARWAN U. 消费者行为：理论及其在营销中的应用。加里·印度尼西亚（加里娅印度尼西亚），茂物，2011。
- [26] 土豆印度农场，2020。
<https://www.potatoindofarm.com>
- [27] WALUYO B. , ROOSDA A. A. , ISTIFADAH N. , RUSWANDI D. 和 KARUNIAWAN A. 确定了五十个甘薯（番薯（大号。））有前途的生物乙醇原料克隆。能源学报，2015，65：22-28。
<https://doi.org/10.1016/j.egypro.2015.01.024>
- [28] IZDIHAR H. Dieng 高原马铃薯农民对有机农药的动机和感知及其分析基于计划行为理论，2012。
<https://123dok.com/document/ozldk46y-motivasi-persepsi-kentang-dataran-pestisida-analisisny-berdasarkan-behavior.html>
- [29] UTOMO D. T. , PRATIKTO , SANTOSO P. B. 和 SUGIONO. 基于网络的决策支持系统选择制造业供应商的初步研究。西南交通大学学报，2020，55（2）。
<http://jsju.org/index.php/journal/article/view/549>
- [30] KHANH N. H. 和 DUNG N. T. 提高海关部门战略制定的质量。西南交通大学学报，2020，55（3）。
<http://jsju.org/index.php/journal/article/view/645>