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**“Globalization and Current Business Trends in Industrial
Revolution 4.0”**

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Welcome Message

Dear Participants,

On behalf of Rajamangala University of Technology Krungthep, Thailand, we are warmly excited to announce that we hold the 1st ICUTK International Conference 2018 and Call for Paper (IIC 2018) with the theme “Globalization and Current Business Trends in Industrial Revolution 4.0” and we have the first publication of proceeding book for International Conference. Most countries in the world are facing the industrial revolution 4.0 and are able to move in some aspects of interest such as Economics and Development, Business Trends and Trading, Management and Globalization for growing Economics, Accounting, Marketing, Information system, and information and technology development. It will be transferred for the industrial phenomenon in the digital era 4.0.



IIC 2018 is the first international conference and proceeding organized by International College of Rajamangala University of Technology Krungthep, Thailand. International College is a part of study programs which serves the English program for curriculum. The conference is designed as stimulus for teaching and research sharing in the area of international business for globalization. It welcomes papers explore multidisciplinary research and critical review of issued on applied trending business in industrial Revolution 4.0 for area of interest in globalization business.

I would like to express my sincere thanks to the participants of International Conference of ICUTK, the keynote speakers, Dr. Carlos Moslares as Dean of IQS School of Management, Universitat Ramon Llul, Barcelona, Spain and Prof. Dr. Chira Hongladarom as secretary general, foundation for International Human Resource Development Bangkok, Thailand who deliver the important and great knowledge for development especially the issue of industrial revolution 4.0, the editorial board who standby for peer review in international publication of proceeding, the editorial team for agenda, the committee who has the main role to celebrate the International Conference happen in Rajamangala University of Technology Krungthep, Thailand. Your efforts are greatly respected and appreciated.

As the president of Rajamangala University of Technology Krungthep, Thailand which hosts the 1st ICUTK International Conference 2018 and Call for Paper (IIC 2018), I sincerely do hope that your contribution will have some impacts for the industrial revolution 4.0 in your country or globalization era. We do hope that we have some amazing feedback and great value on the shared international conference. Thank you very much for the support.

Best regards,

Dr. Sukit Nitinai

President, Rajamangala University of Technology Krungthep
Bangkok, Thailand

Editorial



Dr. Prattana Srisuk
Editor-in-Chief

IIC 2018 Conference Coordinator

Greetings from ICUTK, Bangkok, Thailand!

On behalf of ICUTK International Conference 2018 (IIC 2018) committee, I am very pleased and grateful to all our colleagues, executive officers, professors, students from our university partners here in Thailand and abroad for their cooperation and their active participation in our “1st ICUTK International Conference 2018 and Call for Papers” with the theme: “Globalization and Current Business Trends in Revolutionary Industry 4.0” held on November 19 – 20, 2018 at International College Rajamangala University of Technology Krungthep, Bangkok, Thailand.

The main objective of this conference is to gather students, university affiliates and researchers from the different fields of businesses with diverse disciplines across the globe. Our keynote speakers and presenters are from various business backgrounds, exposures and achievements. We hope the conference provides a platform for fruitful discussions and learning experience among international participants.

This proceeding is a fruit of the successful researches and presentations made by participants during the international conference.

Again, on behalf of IIC 2018 committee, we say thank you to all who participated. Looking forward to seeing you all gain in the future conferences.

Keynote Speaker



**SCHOOL OF
MANAGEMENT**



Dr. Carlos Moslares

The new economy: challenges and opportunities

There is no doubt that the so-called fourth industrial revolution is changing our economic model and our lives. The steam engine allowed to change from a society based on agriculture (economy 1.0) to an industrial society (economy 2.0). Later the extension of education allowed to develop the social model based on the service sector (economy 3.0). Finally, the invention of computers, the internet, robotization, social networks, 3D, etc. have transformed our society into a digital society (economy 4.0).

In medicine, advances in biotechnology and biomedicine together with advances in nanotechnology allow advances in innovations that recently seemed to be science fiction. Advances in neuroscience that allow the human brain to connect to computers in such a way that they improve their capacity. For example, driving a toy car from brain orders is a reality.

In addition to technological change, another significant fact to consider is the demographic changes worldwide and the migratory flows. Forecasts suggest that in 2050 the growth of the world's population will partially stagnate. Until then, growth will be uneven across regions and these facts will undoubtedly also be decisive in future models of society. Finally, I would like to highlight a third area to consider. The growing income inequality is not so much between countries, but above all intra-countries. This new economic model (economy 4.0) that has begun to change our lives and more significant changes are expected in the coming years. It is estimated that 50% of the jobs in the industrial / manufacturing sector and in the service sector will disappear in the next 20 years.

The World Economic Forum (WEF, 2018) predicts that by 2025, 52% of productive tasks will be made by intelligent machines. The big question is whether these new technologies will allow creating enough jobs to replace those that are destroyed. It should be noted that the jobs to be created will be associated to a higher level of specialization and training, and therefore the risk of exclusion from the labor market and the stress of not being excluded will be greater in the coming years. The need for support in training, learning and retraining is anticipated on a permanent basis. Economists and universities are called to make research and to provide ideas and new proposals to face this new global environment.

Keynote Speaker

Prof. Dr. Chira Hongladarom
Secretary-General
Foundation for International Human Resource Development
President
Chira Academy

It is a great honor for me to be invited by ICUTK, Bangkok to deliver the keynote speech at “1st ICUTK International Conference 2018 and Call for Papers” with the theme: “Globalization and Current Business Trends in Revolutionary Industry 4.0”.

Thai society is under the national development trend towards 4.0 era. Several sectors of the society are aware of, interested in and speeding the development.

Thailand 4.0 era is the age of leapfrog development focusing on the development to transform economic system to be innovation-driven or Value-Based Economy based on these principles.

1. The shift from consumer products to innovative products
2. The shift from industry-driven country to technology, creativity and innovation driven country
3. The shift from manufacturing to service sector

Thai society must get through the holistic transformation in 4 major areas as follows:

1. The shift from Traditional Farming to Smart Farming in which the farmers are richer and entrepreneurs
2. The shift from Traditional SMEs to Smart Enterprises and high potential startups
3. The shift from Traditional Services to High Value Services
4. The shift from unskilled workers to skilled workers

Strategy for Developing the Local Foundation for Small Business Enterprise in Indonesia: A Review of the Industrial Revolution 4.0

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Abstract

The purpose of this article is to study the ideas, essence, and nature of the SMEs Program in Indonesia in welcoming the Industrial 4.0 era. The methodology used includes literature analysis methods, systematization, classification of knowledge and systemic analysis methods, structural & functional analysis. The information base of this study includes materials from legal normative documents and the official government from various agencies. We carry out a systematized conceptual approach and classify the knowledge in the Industrial sector 4.0 from government ideas on SMEs to deal with the Industrial 4.0 era. We offer the concepts that support the strengthening of the foundation for the development of SMEs in Indonesia to face the Industrial 4.0 era. Our concept is presented as a new industrial model for SMEs. We conclude this model as a dynamic strategy for SMEs to face the Industrial 4.0 era. This concept is a zoning-based development model for Small and Medium Enterprise (SMEs) and can be ascertained to strengthen the supply chain value in accordance with the government programs. The SMEs database system that will be integrated with the e-commerce in Indonesia will make it easier for the prospective and the customers of SMIs to find their needs since they have been zoned. Finally, SMEs will no longer see the consequences of Industry 4.0 as frightening, but it will become a guide to develop their new globalized and standardized industries. This will realize the development program of the real sector that can withstand the economic downturn from the influence of the world economic system.

Keywords: Industry 4.0; Small and Medium Enterprise; Zoning Sytem; Economic Developmen

Introduction

Small and Medium Enterprise are beginning to feel the touch of a virtual world that unites human connectivity with machines and data through its operations. This change is a demand from industry 4.0 which opens the opportunities and challenges to develop or be eliminated from change. Industrial 4.0 age integrates an online systems towards the production lines in both Small and Medium Enterprise. All of SME production processes are carried out using the internet as the main support for its operations (Arifianto & Himawan, 2018). The Noveria (2018) report in *alinea.id* explains that the Indonesian government through Making Indonesia 4.0 provides a clear direction for national industry movements. Its implementation is claimed to be able to boost the real GDP growth by 1-2% per year, so that GDP growth per year will increase from the baseline from 5% to 6-7% in the 2018-2030 period. From these achievements, the manufacturing industry will contribute about 21-26% of GDP in 2030. *Making Indonesia* (2018) presented states that Indonesia will push 10 national priorities in the initiative of “Making Indonesia 4.0”.

One of these 10 priorities is empowering MSMEs, where nearly 70% of Indonesia’s workforce works for micro, small and medium enterprises (MSMEs). Therefore the Government of Indonesia agrees to support the MSME businesses by building e-commerce platforms for MSMEs, farmers and craftsmen; building technology centers in order to improve MSME access toward technology acquisition, and providing the mentoring support to encourage innovation. One of the efforts, that is encouraged continuously by the government on the digital economy trend towards SMEs, is to market their products countinuously through online trading with the e-Smart IKM program collaborating with Bukalapak market-place, Tokopedia, Shopee, BliBli, Blanja.com, and Ralali, and Gojek Indonesia (Kusuma, 2018). The problem is whether not the human resources in the SME industry can answer these challenges? Therefore, we set the objectives of this article to study the ideas, essence, and nature of SME Programs in Indonesia in facing the Industrial 4.0 age.

Methodology

The methodology used in this study includes literature analysis, systematization, classification of knowledge and systemic analysis methods, structural & functional analysis. The information base of this study includes materials from legal normative documents government official from various agencies. We carry out a systematized conceptual approach and classify existing knowledge in the Industrial 4.0 sector based on the government’s idea of Small and Medium Enterprise in order to deal with Industry 4.0 trends.

Literature review of Moeuf, Pellerin, Lamouri, Tamayo-Giraldo, & Barbaray (2018) shows that Industrial 4.0 projects in SMEs are cost-driven

initiatives and there is still no evidence of the transformation of a real business model at this present time. This is proved by the results of their research showing that SMEs do not exploit all resources to implement Industry 4.0 and often limit themselves to Cloud Computing adoption and the Internet of Things. Likewise with SMEs in Indonesia, in accordance with the aim of making Indonesia 4.0 program which is still in the stage of building an e-commerce platform nationally, building bank technology and developing the business foundation of SMEs (Kearney, 2018).

Result and Discussion

Indonesia Road of New Industrialization

“RI Strategy Entering the 4th Industrial Revolution,” (2018) explains that the basic steps that have been initiated by Indonesia, namely improving the competence of human resources through link and match programs between industry and education. This effort is carried out in synergy between the Ministry of Industry and related ministries and institutions such as Bappenas, the Ministry of BUMN, the Ministry of Manpower, the Ministry of Education and Culture, and the Ministry of Research, Technology and Higher Education. Along with the government’s move, Massepe (2018) presented the need for the development of science areas in the region (Science Techno Park) which collaborate the triple helix (government, universities and industrial corporations) to develop the STP (Science Techno Park) in the region as the heart of industry 4.0. Thus the steps taken by the government are still at the level of a concept that is socialized to deal with and respond to the challenges and threats of changing trends in the industry. While Priyadi (2018) analysis of industrial travel in Indonesia stated that it still need an export-oriented industry not only to create a rapid growth but also to obtain foreign exchange to finance the machinery import and industrial equipment in the country to mass produce needs..

Strategic Developing and Advanced SMEs

Kusuma (2018) reports that national industries require connectivity and interaction through integrated technology, information and communication. These connectivity must be utilized in all manufacturing chains to achieve efficiency and improve the product quality. To achieve this, Indonesia must master the 5 main technologies supporting Industry 4.0 implementation. Namely, Internet of Things, Artificial Intelligence, Human-Machine Interface, robotics and sensor technology, and 3D Printing technology. Industry 4.0 can increase the value of Indonesian products. “Increased investment is the key to compete and win the competition in recent global competition.” In addition, Industry 4.0 implementation can attract foreign investment, improve the quality of human resources, develop innovation ecosystems, incentives for technology investment, and harmonization of rules and policies.

The Indonesian government has set 10 national priority steps in the effort to implement the Making Indonesia road map 4.0. IndoTelko (2018) writing this strategy is believed to be able to accelerate the development of the national manufacturing industry to be more globally competitive in the current digital era. More importantly, these ten initiatives; *first*, improving the flow of goods and material. This effort will strengthen local production in the upstream and medium sectors through capacity building and acceleration of technology adoption. *Second*, redesigning the industrial zones. From several industrial zones that have been built across the country, Indonesia will optimize the policies of the industrial zones by aligning the road maps of the industrial sectors that are the main focus in Making Indonesia 4.0. *Third*, accommodate sustainability standards. Indonesia sees the challenges of sustainability as an opportunity to build national industry capabilities, such as those based on clean technology, electricity, biochemistry and renewable energy. *Fourth*, empowering micro, small and medium enterprises (MSMEs). *Fifth*, build a national digital infrastructure. Indonesia will accelerate the development of digital infrastructure, including high-speed internet and enhance digital capabilities through cooperation between the government and the public and the private sector in the aim to be able to invest in digital technologies such as cloud, data centers, security management and broadband infrastructure. *Sixth*, attracting foreign investment. This can encourage technology transfer to local companies. *Seventh*, improving the quality of human resources (HR). *Eighth*, development of an innovation ecosystem. The government will develop a national innovation center blueprint, prepare a pilot for innovation centers and optimize the related regulations, including protection of intellectual property rights and fiscal incentives to accelerate cross-sector collaboration between private business actors or Ministry of State Owned Enterprises with universities. *Ninth*, incentives for technology investment. The government will redesign plans for technology adoption incentives, such as subsidies, corporate tax breaks, and exemptions from import tax duties for companies committed to implement industrial technology 4.0. In addition, Indonesia will launch state investment funds to support additional funding for investment activities and innovation in advanced technology. And the tenth is harmonization of rules and policies. Indonesia is committed to harmonizing rules and policies to support industrial competitiveness and ensure close coordination of policy makers between ministries and institutions related to local governments.

Furthermore IndoTelko (2018) also explained in his report that Making Indonesia 4.0 also prioritized the development of small and medium enterprise. In order for national SMEs to utilize digital technology, the Ministry of Industry has made its facilities through e-Smart IKM. Up to now there are 1,730 SMI practitioners who have participated in the IKM e-Smart workshop. Until 2019, Minister of Industry set to involve 10 thousands of Indonesian IKM participants

to take place in the workshop. Minister of Industry confirmed, in the current digital era, the most important thing is to have to innovate. In this case, the Ministry of Industry is trying to build an innovation ecosystem through cross-sector collaboration, including involving the government, academics and industry players.

Industrial Policy

The tenth point of Indonesia's 4.0 making strategy is the effort to harmonize policies among related institutions. Previously in the 2017 national consultation on "Accelerating Quality National Economic Growth through Industrial Revitalization and Digital Economy Industry Development", Winarto (2017) has reported that Rahmat Gobel, former Minister of Trade, suggested to build a quality economy, the government must pay attention and harmonize the cost (export) and regulation (policy). But this is again carried up. In the writing of Hanjarwadi (2018) he explained that the Directorate General of Taxes through the Director of International Taxation at the Directorate General of Taxation, John Hutagaol, said that Indonesia along with 115 members of the country or jurisdiction who are members of the international Inclusive Framework on BEPS (Base Erosion and Profit Shifting) were working towards the realization digital economy era taxation norms in Industry 4.0 scheme.

Final Report on the Study of Improvement of Investment Policy in Indonesia, Tadashi (2007) specifically for SMEs, SIAP (The Japan-Indonesia Strategic Investment Action Plan) recommends policies Industrial competitiveness and SME development through the implementation of industrial policies, including encouraging supporting industries, that are making and implementing industrial policies based on the strategy of three industrial sectors; Specifically supporting the mold and die industry association that was built to create a number of skilled workforce for the mold and die industry. Then the initial determination of the Investment Law for consolidated investment policies, including; submit the draft Investment Law to Parliament as soon as possible and the implementation of consolidated investment policies by supervising the private sector's preference for tax incentives, BKPM facilities and the role of the National Team for the Investment and Promotion of Exports (PEPI). The description and statement explained that long before the Indonesian government had not had constraints on policy harmonization, especially for the SME Industry. Whereas in entering the industrial revolution 4.0, the policy problem turns out not only to occur in Indonesia but also to exist in other countries in the world.

We offer concepts that support the strengthening of the foundation of SME development in Indonesia to face the Industrial 4.0 era. We present this concept as a new industry model for SMEs. We conclude this model as a dynamic attachment strategy for SMEs to face the Industrial 4.0 era (Sarkum,

Pramuka, & Suroso, 2017). According to Sarkum, Pramuka, Suroso, Suliyanto, & Sutarmin (2017) attachment can provide insight to management in optimizing the company's ability to carry out its marketing function. This concept is a zonation-based small and medium industrial development model that can ensure supply chain value in accordance with the program government. While the SME database system will be integrated with e-commerce in Indonesia. This will make it easier for prospective and SME customers to find the needs to be fulfilled in the market zoning system.

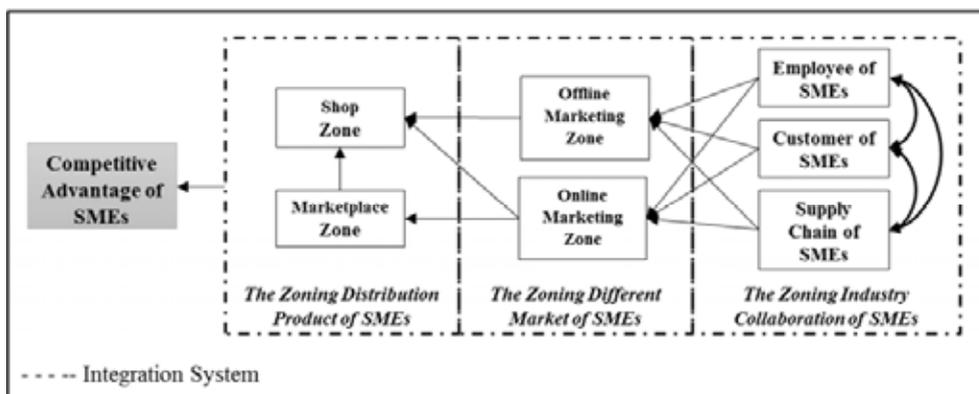


Figure 1. Industry Strategy 4.0 for SMEs

Conclusion

The concept of industrial strategy 4.0 for SMEs collaborates on the engagement of multi actors in the operational functions of marketing and production. The implementation of collaboration has resulted in SME strategies in two different market zones, namely offline and online. Furthermore, collaboration in two different markets was followed up to e-commerce which has been collaborated by the government as a marketplace for SMEs to market their products in the zones provided. Furthermore, the results of the implementation are connected to and can be distributed through SME stores as a continuation of the trade. This system will be a sustainability advantage for SMEs because the creation of shared values of the three actors is the basis for the dynamics of SMEs in managing marketing strategies in two different markets. The strategy concept of Industry 4.0 for SMEs will change the perspective of SMEs to the challenges in the industry 4.0 In the end, SMIs no longer see the consequences of the Industrial revolution as frightening but will be a clue to developing a new, globalized and standardized industry. This will realize the development program of the real sector that can withstand the economic downturn from the influence of the world economic system.

References

- Arifianto, E. Y., & Himawan, R. (2018). Strategi Pengembangan Industri Kreatif Kerajinan Topeng Era Industri 4.0. In *Seminar Nasional IENACO* (pp. 567–574). Retrieved from https://publikasiilmiah.ums.ac.id/xmlui/bitstream/handle/11617/9827/IENACO_078.pdf?sequence=1&isAllowed=y
- Hanjarwadi, W. (2018). Strategi Calon Raksasa Ekonomi. *Majalah Pajak*. Retrieved from <https://majalahpajak.net/strategi-calon-raksasa-ekonomi/>
- IndoTelko. (2018). Ini 10 langkah Indonesia hadapi Industri 4.0. Retrieved from <https://www.indotelko.com/kanal?c=id&it=10-langkah-indonesia-industri-4-0>
- Kearney, A. T. (2018). *Indonesia's Fourth Industrial Revolution Making Indonesia 4.0*. Retrieved from www.kemenperin.go.id/download/18449
- Kusuma, D. (2018). e-Smart IKM , Implementasi Industri Kecil. Retrieved from <https://industri.kontan.co.id/news/e-smart-ikm-implementasi-industri-kecil-era-industri-40>
- Making Indonesia*. (2018). Retrieved from <http://www.kemenperin.go.id/iis2018>
- Massepe, A. N. B. (2018). *Making Indonesia 4.0 Babak Baru Industri Kita*. Retrieved from <https://www.researchgate.net/publication/325683480>
- Moeuf, A., Pellerin, R., Lamouri, S., Tamayo-Giraldo, S., & Barbaray, R. (2018). The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research*, 56(3), 1118–1136. <https://doi.org/10.1080/00207543.2017.1372647>
- Noveria, C. A. P. (2018). Akhirnya , Indonesia miliki peta jalan industri 4.0. Retrieved from <https://www.alinea.id/bisnis/akhirnya-indonesia-miliki-peta-jalan-industri-4-0-b1Uxs9TE>
- Priyadi, L. (2018). Dutch disease and the end of export-led Industrialization strategy. *The Jakarta Post*. Retrieved from <http://www.tenggara.id/insights/Dutch-disease-and-the-end-of-exportled-Industrialization-strategy>
- RI Strategy Entering the 4th Industrial Revolution. (2018). *The 29th International Manufacturing, Machinery, Equipment, Materials and Services Exhibition*. Retrieved from <https://manufacturingindonesia.com/>
- Sarkum, S., Pramuka, B. A., & Suroso, A. (2017). Dynamic Marketing through Engagement: Answering the Role of Marketing Functions. *International of Marketing, Communication and New Media*, 5(9), 5–23.
- Sarkum, S., Pramuka, B. A., Suroso, A., Suliyanto, & Sutarmin. (2017). Supply Chain Involvement In An Engagement : Verification Of Marketing And Operational Collaboration. *International Journal of Economic Perspectives*, 11(3). Retrieved from http://www.econ-society.org/ijep_contents_11.3.php#

- Tadashi, I. (2007). *Studi Tentang Perbaikan Kebijakan Investasi di Republik Indonesia*. Retrieved from http://open_jicareport.jica.go.jp/pdf/11844230_01.pdf
- Winarto, Y. (2017). Harmonisasi kebijakan sudah sangat mendesak. Retrieved from <https://nasional.kontan.co.id/news/harmonisasi-kebijakan-sudah-sangat-mendesak>

Strategies to Overcome the Selling Price Fluctuations of Palm Oil Fresh Fruit Bunches (FFB): The Farmers Efforts in Welcoming Industry 4.0

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Abstract

The purpose of this research is to build a system that can solve the problems faced by the palm oil farmers. The phenomenon is that the farmers did not get a concrete information about the market price of palm oil Fresh Fruit Bunches (FFB) when harvesting. This condition occurs due to the absence of a digital system that can be accessed by farmers in order to obtain information about the selling price of palm oil FFB. Information can only be obtained through cellular communication with trading entrepreneurs. While the pricing of small-scale entrepreneurs at times occurs, the price fluctuates. This is because the information received by the small entrepreneurs from the palm oil FFB processing industry also uses the same method. On the other hand, the farmers and supply chains are susceptible to losses due to the price fluctuations and the decrease in the quality of TBS because they experience shrinkage, thereby reducing the yield. The sample of the study was farmers and entrepreneurs in the palm oil supply chain industry in Labuhanbatu District, North Sumatra Province, Indonesia. The data collection uses the research field by investigating and interviewing supply chain farmers and entrepreneurs. While the analysis was done by using a descriptive method. Then the system design uses the waterfall method which is tested by the Black Box and White Box Testing methods. The system built is an Android-based information system that involves two actors (administrator and user) to interact directly through the application embedded in a smartphone. This research is expected to contribute in helping the realization of Indonesian government program to face the 4.0 industrial eras, one of which focuses on empowering SMEs through strengthening the supply chains. This

information system can also be a benchmark for the farmers in managing the harvest time to accommodate the unstable price fluctuations.

Keywords: Palm Oil; Market Price; Information System; Android; Industries 4.0

Introduction

Industrial term 4.0 still have a diverse understanding. The German Chancellor, Merkel (2014) argues that Industry 4.0 is a comprehensive transformation of all aspects of production in industry through a combination of digital technology and the internet with conventional industries. Schlechtendahl, Keinert, Kretschmer, Lechler, & Verl (2014) emphasize more on the speed element of information availability, which is an industrial environment where all entities are always connected and able to share information between one another. A more technical definition was conveyed by Kagermann, Wahlster, & Helbig (2013) that Industry 4.0 is an integration of *Cyber-Physical System (CPS)* and *The Internet of Things and Services (IoT and IoS)* into industrial processes including manufacturing and logistics and other processes. This merger can be realized through the integration between physical and computational processes (*embedded computers* and network technology) in a *closed loop* Lee (2008).

Industry 4.0 has been pushing the technological innovations that impact the disruption or a fundamental change on people's lives. Changes in the era of disruption by Kasali (2017) is essentially not only on changes to a car or strategy but also on the fundamental aspects of the business. The domain of disruption era extends from the start of the cost structure, culture to the industrial ideology. The implication is that business management is no longer centered on individual ownership, but is a division of roles or collaboration or mutual cooperation. In the world of higher education, we can see this phenomenon of disruption from the development of collaborative researches between researchers from various disciplines and universities. Research is no longer associated with problem-solving, but is encouraged to find potential problems and potential economic value that can help people to anticipate various socioeconomic and political problems in the future.

In 2015, the President of the Republic of Indonesia launched the Revitalization of Agriculture, Fisheries, and Forestry (RAFF) program. The program aims to empower capabilities and improve agricultural performance in national development. The revitalization is also intended to change the paradigm of the community in seeing that agriculture is not only limited to farming but has multiple uses, namely as a source of life and nature conservation. Therefore, the agricultural business must be integrated with the development of its industry, both upstream and downstream industries. Most of the revitalization program is closely related to the development of the marketing subsystem of agricultural

products which includes promotion, sales and ending with distribution (Me, B, & Wahyono, 2008).

Marketing is one of the determinants of the success of agricultural business. Commodity prices in the market are one type of information that can be very useful, considering a large number of Indonesian people who are very dependent on their lives with the market. According to Toya (2014) basically, the most needed by both parties (buyers and sellers) is the existence of media or container that can collect and disseminate information of all parties about various matters concerning the object (Sinaga, Munir, & Daulay, 2017).

In the era of information development that is supported by technological advances such as today, various facilities are provided by technology. People from cities to remote areas can access the information they want from anywhere and anytime. Currently, mobile devices are platforms that are widely used by the public, especially *the Android platform*. According to Gargenta (2011), devices that support this *platform* are relatively cheaper on the market compared to other smart device *platforms*. In addition, this *open-source platform* can do *multitasking* and *rooting*. With these advantages, the Android platform is a good platform for developing information systems. Seeing that currently more and more smartphone users, this information system is applied to *the android platform* so that it can be easily used.

Labuhanbatu Regency is one of the centers of oil palm plantations in North Sumatra, Indonesia. The Most of Labuhanbatu land in the district is used for mustard oil people plantation covering an area of 130, 264 hectare (51%) (Badan Pusat Statistik Kabupaten Labuhanbatu, 2010). “Data Luas Areal, Produksi dan Produktivitas Perkebunan Rakyat” (2017) showed that the total production of Fresh Fruit Bunches (FFB) in 2017 reached 540,856.59 tons . This shows that the main sector of the Labuhanbatu community’s income comes from oil palm plantations. The oil palm farmers are very dependent on their crops. So the higher the selling price of FFB, it will be more profitable for farmers.

This study aims to build a system that can solve the problems of oil palm farmers. The phenomenon that occurred that the farmers did not get information about the market price of Fresh Fruit Bunches (FFB) in a concrete manner when harvesting. This condition occurs due to the absence of a digital system that can be accessed by farmers to obtain information on the selling price of palm oil FFB. Information can only be obtained through cellular communication with loading ramps entrepreneurs, while the pricing of small-scale entrepreneurs at times fluctuations prices. This is because the information received by small entrepreneurs from the palm oil FFB processing industry also uses the same method. On the other hand, farmers and supply chains are susceptible to losses due to price fluctuations and decreases in the quality of FFB because they experience shrinkage, thereby reducing yield.

Method

The population respondents in this study were farmers and entrepreneurs as the supplier of the palm oil industry in Labuhan District, North Sumatra-Indonesia Province. Data Collection used *field research* by observing and interviewing farmers and entrepreneurs supply chain. While the analysis was done using a descriptive method. The system's design is using waterfall method. The system built is an Android-based information system that involves two actors (administrators and users) to interact directly through the application embedded in a smartphone. The sample used was farmers and traders of fresh fruit bunches of 30 people. At this stage, interviews and observations were carried out. The appropriation of quantity of samples is composed of: (1) palm oil farmers 20 people, (2) collector traders or small agents 5 people, (3) large traders or large agents as many 5 people, (4) palm oil processing factories 5 people.

The method used in application development refers to the concept *Software Development Life Cycle* (SDLC) by applying the Waterfall model: *First*, the Requirement Analysis stage is done to identify the functional and the non-functional needs in the program; *Second*, in the design stage, the requirements obtained from the previous stage are then translated into a system design that becomes the basis for application development; *Third*, the development stage in the manufacture of Oil Price Information System Applications in accordance with the right design which has been produced previously; Next in the *Fourth* stage, Tests carried out using the method of Black Box and White Box Testing; And the last stage is the maintenance of the system that is designed by periodic inspection of the data in the application.

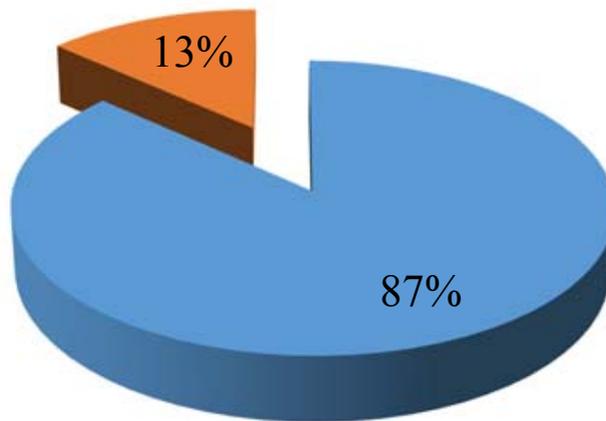
Findings and Discussion

The test results with the BlackBox method on the Admin and User show the suitability between the analysis of the system requirements and the results of the system creation. As for the white box method using the base path method, it is obtained a complex logic estimation so that the execution flow of the program can be defined.

Determining the feasibility of a system which has been built is done by giving questionnaires to farmers and entrepreneur's ramps. Questionnaires distributed (Table.1) consist of two types, namely *check list functionality* and application *usability check list*.

Table 1. Questionnaire results in functional check list Farmers and FFB Traders

No.	Question	Yes	No
1	Is this application running properly and functioning properly on your <i>smartphone</i> ?	10	0
2	Has the <i>Registration</i> function been running properly?	7	3
3	Is the <i>Log in</i> function running properly?	10	0
4	Has the <i>Price Info</i> function been running properly?	8	2
5	Has the <i>Change Password</i> function been running properly?	8	2
6	Has the <i>Logout</i> function been running properly?	9	1
Total		52	8



■ Yes
 ■ No

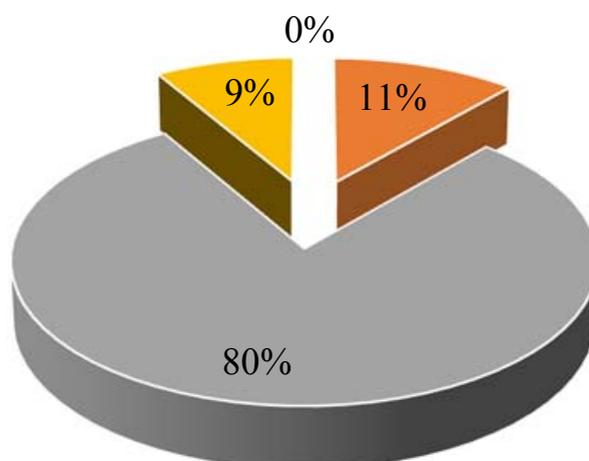
Figure 1. Questionnaire Results in Check List Functionality Farmers and FFB Entrepreneurs

In Figure 1. Explains that the results of the questionnaire on the *functional application checklist* for 10 farmer and businessmen respondents, 87% stated that the function of this application was running properly. While 13% of respondents said no. Furthermore, the results of the *usability checklist* questionnaire (Table 2) stated that the application (Figure 2) obtained 0% of the respondents of the farmers and the businessmen said that they did not agree, 11% of respondents stated that they did not agree, 80% of the respondents agreed, and 9% of the respondents agreed strongly.

Table 2. Questionnaire results in Check List Usability of Farmers and FFB Traders

No.	Question	DA	LA	A	SA
1	Overall, I am satisfied with the ease of using this application	0	0	9	1
2	The use of this application is very simple	0	0	8	2
3	I get info quickly on this application	0	0	7	3
4	I get accurate info with this application	0	2	8	0
5	This application is fun	0	3	7	0
6	This application has a function that meets according to my expectations	0	1	9	0
Total		0	8	56	6

- DA = Disagree
- LA = Less Agree
- A = Agree
- SA = Strongly Agree

**Figure 2. Questionnaire Results in Check List of Usability of Farmers and FFB Entrepreneurs**

The results of the questionnaire *check list functionality and usability checklist* application that is given to farmers and businessmen, the results show that the application that has been built is able to solve the problems of farmers and entrepreneurs in dealing with price fluctuations of palm oil FFB.

Conclusions

The application of the palm oil price information system from the results of this study can be used as a guideline for farmers and entrepreneurs in obtaining information about the price of palm oil fresh fruit bunches (FFB). The availability of fast information from this Android-based system can be a solution to overcome fluctuations in FFB prices and can provide benefits for palm oil farmers after harvesting.

Finally, we recommend that the results of this research are expected to contribute to helping to realize the Indonesian government program in the face of the 4.0 industrial era, one of which focuses on empowering SMEs through strengthening supply chains. Based on this research, we declare that this information system can also be a benchmark for farmers in managing harvest time to accommodate unstable price fluctuations. We also recommend for research on the development of this system can further be combined with added features, like price comparisons between the palm oil fruit collector (ramps) and the others.

In addition, it can also apply Geographical Information System (GIS) on applications so that it can help farmers to find out the location of palm oil fruit collectors (ramps).

References

- Badan Pusat Statistik Kabupaten Labuhanbatu. (2010). Retrieved from http://datin.menlh.go.id/assets/berkas/DDA-Kabupaten_kota/07Labuhan-Batu-dalam-Angka-2010.pdf
- Data Luas Areal, Produksi dan Produktivitas Perkebunan Rakyat. (2017). Retrieved September 17, 2018, from http://disbun.sumutprov.go.id/statistik_2017/web/index.php?r=site%2Flaporan-komoditi&tahun=2017&kabupaten=14&komoditas=2
- Gargenta, M. (2011). *Building Applications for the Android Market* (First Edit). O'Reilly Media, Inc.
- Kagermann, H., Wahlster, W., & Helbig, J. (2013). *Securing the future of German manufacturing industry: Recommendations for implementing the strategic initiative INDUSTRIE 4.0. Final Report of the Industrie 4.0 Working Group*. <https://doi.org/10.13140/RG.2.2.14480.20485>
- Kasali, R. (2017). *Disruption*. Gramedia Pustaka Utama.
- Lee, E. A. (2008). Cyber Physical Systems: Design Challenges. In *2008 11th IEEE International Symposium on Object and Component-Oriented Real-Time Distributed Computing (ISORC)* (pp. 363–369). <https://doi.org/10.1109/ISORC.2008.25>
- Me, S. W., B, P. N., & Wahyono, T. (2008). Pengembangan Sistem Informasi Pemasaran Hasil Pertanian Jawa Tengah Online Berbasis Web. *Jurnal Komputer Dan Informatika*, 02(01), 22–32.
- Merkel, A. (2014). Speech by Federal Chancellor Angela Merkel to the OECD Conference. Retrieved from <https://www.bundesregierung.de/breg-en/chancellor/speech-by-federal-chancellor-angela-merkel-to-the-oecd-conference-477432>
- Schlechtendahl, J., Keinert, M., Kretschmer, F., Lechler, A., & Verl, A. (2014). Making existing production systems Industry 4.0-ready: Holistic approach to the integration of existing production systems in Industry 4.0 environments. *Production Engineering*, 9(1), 143–148. <https://doi.org/10.1007/s11740-014-0586-3>
- Sinaga, F., Munir, A. P., & Daulay, S. B. (2017). Pengembangan Sistem Informasi Dengan Android Untuk Harga Komoditas Pertanian. *J.Rekayasa Pangan Dan Pertanian*, 5(3), 554–557.
- Toya, (2014) Pasar Tradisional Versus Pasar Modern. *diskominfo.karangasembab.go.id*

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