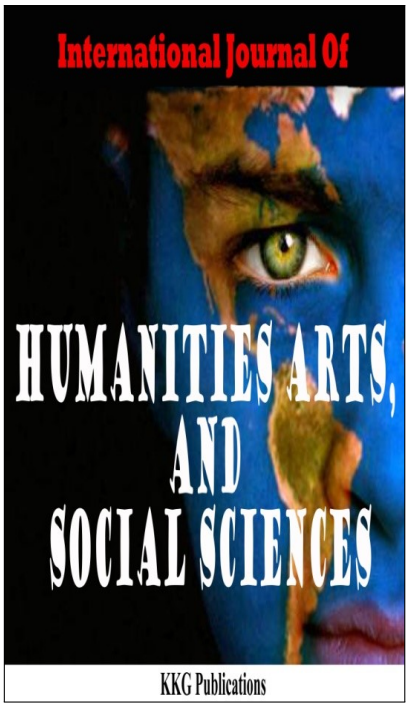

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The Speed of Technology Diffusion and its Role in SMEs' Growth

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THE SPEED OF TECHNOLOGY DIFFUSION AND ITS ROLE IN SMES' GROWTH

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Abstract. Diffusion of technology plays an important role in the development of Small Medium Enterprises (SMEs'), but diffusion process needs time. Analyzing the speed of diffusion is important to the growth of SMEs'. Time length for the adoption of technology that diffused was varied. Some technologies need a long time to be adopted; the others only take a short time. If technology diffusion could be sped up, can it be adopted immediately? Study of technology diffusion and its role in the growth of SMEs' was conducted among SMEs' of processed food, and it showed that many factors affected the speed of technology diffusion and encouraged the development of SMEs'. A survey was carried out among processed food SMEs' in Bogor. Focus Group Discussion (FGD) was also conducted to gain more information. The speed of diffusion was calculated with simple statistics using Likert scale. The study showed that factors such as capability (skilled users), technology availability and accessibility, and governmental support were the factors that determine the speed of technology diffusion, which also encouraged the growth of SMEs'.

1. INTRODUCTION

From several studies on technology adoption, it was shown that diffusion of technology is very important for people to adopt (Bento & Fontes, 2013; Robinson, 2009; Rogers, 2003). In fact, diffusion is as important as innovation; innovation can have an economic and social impact when it becomes widespread in the community and the economy. Though diffusion is not a trivial process, but not much attention has been paid to the diffusion process. In general, diffusion takes a long time. Actually innovation and diffusion are interrelated (Rogers, 2003). The study on technology diffusion process was conducted in Bogor-Indonesia to learn how it encourages the growth of SMEs'.

The study on "The Speed of Technology Diffusion and its Role in SMEs' Growth" is a continuation study on the technology diffusion process among SMEs' in Bogor. The first study was focused on tecnology diffusion and the acceleration of of taro processing technology a mongs in Bogor (Dyah, Apriliyadi, Saparita, Abbas & Fizzanty, 2016). Study on diffusion process and its role in SMEs' growth was conducted among SMEs' in food processing in Bogor, especially food products based on taro, as taro is Bogor's prime product and the icon of Bogor. These SMEs' have showns a tremendous development during the last 4 years. The condition shows that there is an acceleration in technology diffusion that was adopted by the SMEs'. The acceleration is shown in many varieties of products that had been developed and also in SMEs' developed by adopting the tecnology diffused. However, taro is a commodity that has long been recognized as the Bogor prime products but its development into many varieties of products began only 4 years ago i.e., 2013. Before, taro in Bogor was just sold fresh; some were processed into snacks like chips and sticks. The development of many varieties of food products based on taro was triggered by the development of taro flour. Innovation in food processing technology, i.e., taro flour has opened a wide range of possibilities in producing a variety of products based on taro, and encouraged the development of SMEs' based on taro flour or taro in general.

Objectives of Study

The objective of this paper is learning how taro processing technology diffused and how it can lead to the development of more food products based on taro and encourage the growth of SMEs'. The study explored taro processing technology in Bogor, and its diffusion from 1970s to 2015. Taro processing technology diffusion is becoming the focus of the study, based

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on the phenomena of rapid development of many varieties of taro products in recent years. The condition leaves the question on why and how these varieties of taro products develop considering that before more than 30 years, there was no significant development. The development of various taro products occurs rapidly in relatively short time. So, the question that arises is what causes the diffusion process technology progress rapidly? And how a diffusion process can be sped up? And can the speed of diffusion of a technology give leads to the growth of SMEs'?

2. LITERATURE REVIEW

Diffusion

Rogers (2003) stated that diffusion is the process by which an innovation is communicated through certain channels over a period in the social system. As Bozeman (2000) stated in relation with technology or innovation, diffusion of innovation is a process by which a product (innovation/technology) or services and knowledge are used and applied from one source, such as R&D institutions to the user, or commercialization or market. An innovation was diffused then accepted by users (adoption) is a process that takes time. There are five stages that influence diffusion according to Rogers (2003): knowledge, persuasion, decision, implementation, and confirmation (Bernik, Azis, Kartini, & Harsanto, 2015; Robinson, 2009). From these definitions it can be defined that in diffusion process there 4 elements, which are innovation, time, social systems and communication networks (McMichael, 2011).

According to Rogers (2003), innovation is: "idea, practice or object that is perceived as new by an individual or other unit of adoption" and that innovation does not have to be new in a social system, but it has a novelty to those who adopt. However, elements of diffusion illustrated that the end of diffusion is "adopted" or "not adopted". Things that needs to be considered here is the adoption of a technology or innovation which benefits the society/users. Therefore, according to Rogers (2003), a successful adoption of an innovation when it:

1) provides benefits to the users
2) is in accordance with the value and experience of the users;
3) is not too complicated;
4) can be applied; and
5) has results that can be observed.

Diffusion of innovation is a process. Therefore, it takes time. In the sense of community or someone deciding to adopt a technology, it is through a process which is inseparable from innovation, deployment method (diffusion/dissemination), its benefit, according to the need, and easily obtained. Rogers and Shoemaker (1971) describe these stages as follows:

1. Awareness: People are aware that there is an innovation that can help their work.
2. Interest: People are aware of innovation that might help their work. Therefore, interest is growing and followed by asking about the innovation that has been disseminated.
3. Evaluation: Hereafter, people observe and evaluate the advantages that can be gained from disseminated innovation.
4. Trial: If the innovation is considered beneficial or can help in their work, then people begin to try the innovation before they use it.
5. Decision: When innovation has been tested and gives advantages or benefits, then the innovations will be adopted. Otherwise, if there is no advantage or no benefit could be gained, then the innovation will not be adopted.

After delivery of messages or innovation (diffusion/dissemination) started with communicating an innovation to the people and in time will change people's attitudes towards innovation (Rogers, 2003), and, therefore, adoption will take place. Therefor, communications is important: "innovation is communicated to the community in a certain period and the way of communicating is important as well" (Rogers & Shoemaker, 1971). Adoption can be done by individuals in a community, but it will not change the attitude of society towards an innovation, if not through the legitimacy of society as a system as stated by Harper (1989). However, strategies or methods of communication in diffusion of innovation is different over time are different in social systems (Robinson, 2009).

Rogers (2003) also stated that "the social system in a society imposes limits within which the diffusion of innovation takes place". The element of social systems in this case includes the social structure, norms/social values, and social interaction of individuals. The social structure according to Coleman, Katz and Menzel (1957); Kurniawati and MeilianaIntani (2016); McMichael (2011) is "a pattern of social relations in a society that allows communication structure built of the role and status of different members". But so far not many studies that focus on the social systems in diffusion theory, although it is recognized that the social systems affects the pattern of diffusion and adoption in the community.

Communication network in a community was developed by social interaction. Here, communication network was constructed by social interaction between members of the community through their social networks. From Coltrane, Archer and Aronson, (1986); Manirojana, (2016) studies provide information that "the process of new technology adoption tends to occur through existing social networks and that most people

adopt innovations only after their effectiveness has been demonstrated through the experience of friends and acquaintances".

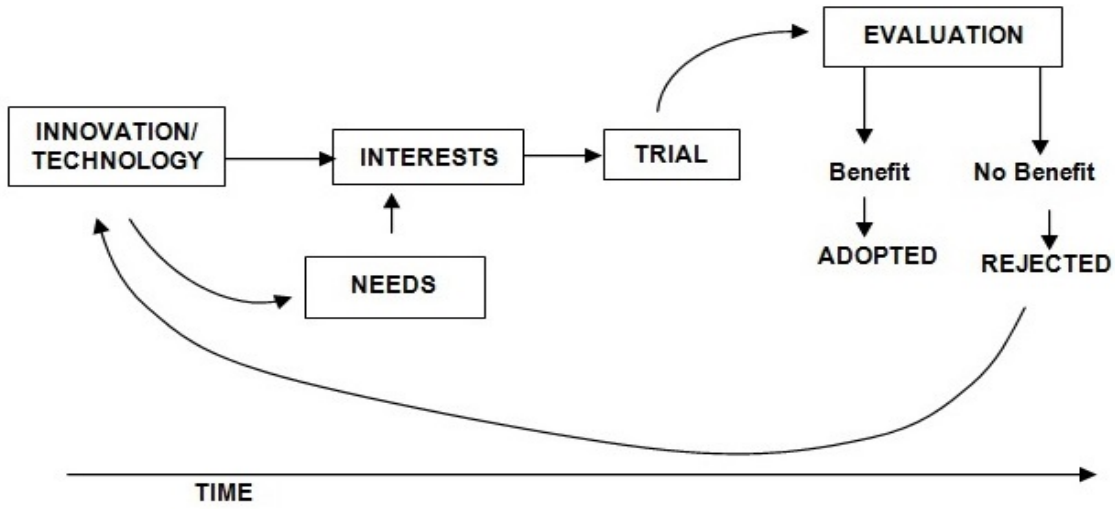
The concept of innovation/technology diffusion in many studies is referred to Rogers and Shoemaker (1971). However, Robinson (2009) invites us all to recognize the general concept of Rogers and Shoemaker (1971), which illustrates the flow of diffusion from developed countries (advanced technology) to developing countries, which is considered in need to stimulate the progress of the country. In regards to the concept, many diffusion-adoption processes did not take place as expected. In reality, various factors beyond technology, such as social factors, are ignored.

Considering the condition, social structure has a role in determining the pattern of diffusion illustrated by Jackson and Yariv (2010). As diffusion targets, community (people), which consist of individuals, have relationship with other individuals who have their own views and beliefs. This relation affects the social interaction and can affect the diffusion, where social structures influence their opinions and behavior. Other than that, these individuals also have different roles which have to be considered, e.g., leaders, elders, and community leaders who have influences on the community. Therefore, they can be a catalyst in the process of technology diffusion. In general, the interaction of individuals within a community will influence each other. This interaction becomes factors that affect the diffusion and adoption in a society. However, the capacity of each individual is different, for example someone who has extensive social relationships will adopt the new technology faster than others who have more limited social relationships. Studies in several places in Indonesia (Abbas, Dyah, & Saparita, 2016; Dyah, Saparita, Abbas, Mulyadi, & Hidajat, 2011; Heidina, 2010; Natawijaya & Benardin, 2007; Saparita, Dyah, Mulyadi, & Hidajat 2012) informed us that many technologies' diffusion process was influenced by specific patterns of social interaction in a community. Moreover, the term diffusion is sometimes used in an alternative sense to denote increasing incidence, i.e., something diffuses when more and more people do it (Strang & Soule, 1998), such as the case in Bogor indicated by SMEs' that emerge and produce varieties of foods based on taro or taro flour to be exact.

RESEARCH METHODS

Diffusion is followed by adoption, and adoption is positively related to people's satisfaction toward technology diffused. An adoption of a technology refers to well-performed diffusion (Comin & Hobija, 2010). Therefore, referring to the concept Figure 1, a questionnaire was developed to gain information on diffusion and adoption of taro processing technology in Bogor. The survey was conducted among taro farmers and taro-based food processing SMEs' in Bogor of Indonesia. For gaining more information on diffusion process, FGD with SMEs' and government officers as the supporting institution on SMEs' development was conducted.

FIGURE 1
Diffusion and Adoption Process



The study is a qualitative research, and according to Creswell (1998) and Moleong (2011), it is a study attempt in analyzing and revealing phenomena that exist, events, social activities, perceptions of individuals, and groups in a society in accordance with their local condition (its natural settings). In correspondence with the purpose of the research, various methods or multi-methods (Creswell, 1998) were applied and for describing all the data or the state of the subject/object of the research (a person, community agencies, and others), a descriptive analytical method was applied. Afterward, analysis of the data and information was done by comparing them with the fact at the time and then sought a solution for the existing problems (Nawawi & Martini, 1994; Widi, 2010).

ANALYSIS

The Development of Food Processing Technology

Although taro (Colocacia esculenta L) is known as Bogor's prime commodity and becoming the icon of Bogor, but technologies for processing taro were not developed well until 2009. Before 2009, products based on taro processing included only taro chips, taro sticks, and steamed taro. After 39 years, an innovation breakthrough in taro processing technology occured in 2009, when researchers from a local university produced taro flour and promoted it to local SMEs', which was accepted by one SMEs' that originally produced a variety of yam flour but not taro flour. The reason is that processing taro flour is not easy due to the characteristics of taro itself. Taro is too sticky. Therefore, it is difficult to be processed as flour, and also it causes itching when consumed and, therefore, has to be treated before processing it. Due to these reasons, taro flour was not developed.

The result of the research was that taro flour alone can not be used in cake or cookies production. It has to be mixed with flour (wheat flour). With this fact, relation between the university and the SMEs' was continued by collaboration in order to find a formula to produce mixed flour (taro and wheat flours) that can be used to produce several foods based on taro flour. After having the right formula and continuing with formula to produce cake using mixed flour, the researcher offered it to food processing SMEs'. The offer was received with a positive response from two SMEs'; one produced taro cakes and the other produced taro crackers. The market (consumers) gave a positive response and the demand for their products was increased. This development attracted other SMEs' and they developed many varieties of products based on taro. From this point, their products, especially taro cake, became the prime products and icon of Bogor. The development of taro processing technology, indicated by varieties of food products based on taro, was triggered by the introduction of processing technology to produce taro flour in 2009. Table 1 shows the development of taro processing technology.

TABLE 1
Taro Processing Technology Development (Dyah et al., 2016)

Year	Processing Technology	Technology/Tools	Product
1970	Slicing and frying	Slicer (manual) and frying wok/ (manual)	Sticks & Chips
	Steaming	Steamer (manual)	Steamed Taro
2009	Slicing/drying	Slicer (mechanic), Solar dryer/oven (manual)	Dried Chips
	Grinding/Milling	Grinder/Diskmill (mechanic)	Flour
	Grate and drying	Grater (mechanic) and solar dryer and oven (manual)	Flour
2013	Mixing & Baking	Mixer & Oven	Cakes
	Mixing, steaming, slicing, drying and frying	Mixer (mechanic), steamer (manual), slicer (semi manual), solar dryer (manual), frying wok (manual)	Crackers
2015	Mixing & Baking	Mixer & Oven	Cakes, cookies, bread, dry profiteroles
	Mixing, steaming, slicing, drying and frying	Mixer (mechanic), steamer (manual), slicer (semi manual), solar dryer (manual), frying wok (manual)	Crackers, simping
	Mixing & stirring	Mixer/stirrer (mechanic)	Dodol (glutinous sweets)

In this case, the innovation actually was "processing taro into into flour", while the technology in terms of tools can be easily purchased in the market as it is the same tool for producing flour in general, i.e., diskmill or grinder. Also, the process of flour production is not a new technology but has developed in flour manufacture. The difference is the commodity used as flour. Although taro flour has already been produced in several countries such as USA, Phillipines, Columbia, and Brazil (Elisabeth, 2015; Ulum & Yunastriana, 2010) but in Indonesia, it is not popular. However, the process to produce taro flour is different from the process to produce flour in general due to taro characteristics. Therefore, a research was needed to develop processing technology for taro, and the local university accepted it as a challenge and managed to develop the processing technology for taro.

Taro has been long recognized as snacks such as chips, sticks, and steamed taro. Until 2009, taro was not considered as a commodity that can be processed into flour. A change occurred in taro processing technology (Table 1) after 39 years, which processes taro into flour. This condition can be reviewed in Indonesia's national development policy on agricultural development. Prior to 2009, especially in the 1970s to 1990s, focus of Indonesia's agricultural development of agriculture was to increase food production and productivity in order to achieve food self-sufficiency. At that time, rice was the analogy for food. Therefore, the focus of development was on cultivation technology (on-farm), especially rice. This policy was forgetting that community in some areas in Indonesia consumes other than rice as their staple food, such as cassava, corn, taro, and sago. In 1996-1997 when the world-facing economic and monetary crisis had affected national economic growth, this changed the focus of national development. Changes occurred in the focus of agricultural development, which is directed at food diversification, by encouraging the development of food variety other than rice and wheat flour and by optimizing local commodities. This policy also considers high dependency of Indonesia on wheat flour, which is an imported product to produce various types of food. Awareness of the need to find alternatives of food other than rice and wheat flour base began to rise (Directorate of Food Crops, 2014). Taro, in this case, is one of the food commodities that have been neglected. Some communities in Indonesia consume taro as the main food, but the technology used in the processing just simply steamed, boiled, grilled, and fried. Recognizing the role of taro as an alternative food encourages the development of better taro processing technology that opens opportunities to process taro into a variety of foods (Koswara, 2013).

In 2013, there were high demands on taro-based products which encourage other SMEs' to produce various products based on taro flour, fresh taro, and taro chips. The production of taro flour in 2009 is not instantly followed by SMEs' producing food based on taro flour. It needs 4 years (4 years' gap) to encourage SMEs' in producing food based on taro flour. This gap is due to the difficulty producing food using 100% taro flour. In this case, taro flour cannot yet be used as a substitute for wheat flour. Information from entrepreneurs and researchers on food technology and the results of product (i.e., cake) using 100% taro flour were not as good as using wheat flour. For producing good food products, taro flour has to be mixed with wheat flour. Research to find the optimum formula or composition to obtain optimum results has been done, and having obtained the appropriate formula, diffusion is done through the cooperation of SMEs' producing taro flour with food processing SMEs' in 2013 (Dyah et al., 2016).

High demands of the products have encouraged other SMEs' to produce various products based on taro flour, fresh taro, and taro chips, and this development only takes 2 years as shown in Table 1. From Table 1, we can derive the level of technology in each period indicated by the years. In Table 2, year 1930 here is just a start-up to evaluate the progress of taro processing technology up to year 2015. Table 2 gives information on the level of taro processing technology, which is valued by the amount of processing technologies (tools) developed and used as shown in Table 1.

TABLE 2
Level of Taro Processing Technology

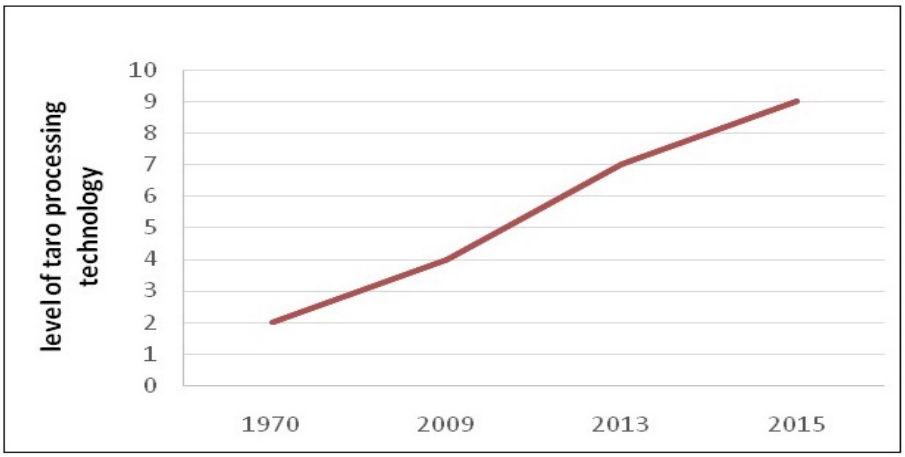
Period	Year	Level of Processing Technology
1	1930	0
2	1970	2
3	2009	4
4	2013	7
5	2015	9

In determining the level of processing technology as shown in Table 2, it was done by calculating the amount of processing technologies used in each year. The level of technology was then used to calculate how fast the diffusion of these technologies is among the SMEs', or diffusion speed can be calculated. Calculating technology diffusion speed will give us understanding on the development of SMEs' using the technology. The calculation of technology diffusion speed here is using an equation adapted from physics as follows (Bitesize, 2014):

$V = \frac{S}{T}$

where V is speed, S is distance, and T is time. Distance (S) here is taken by calculating the level of processing technology used by the SMEs' in producing several products based on taro from 1930 up to 2015. Figure 2, is the result from calculation of taro processing technology diffusion which illustrates the speed of diffusion process. Figure 2, also shows that the diffusion speeded started from 2009, where in that time, there was an innovation on taro processing, i.e., taro flour processing. The availability of taro flour then has triggered the development of a variety of products based on taro.

FIGURE 2
Speed of Taro Processing Technology Diffusion



Some innovations represent a significant breakthrough with respect to existing technologies (Comin & Hobija, 2010) as indicated in Table 1. In this case is innovation on processing taro into flour in 2009, which can be pointed as the beginning of a new technology used to produce new products, such as cakes, cookies, bread, and so on. Table 1 also shows that time required for a technology to diffuse and then be adopted is different regarding the kind of technology that has been developed. According to Comin and Hobija (2010): "The size of the adoption costs affects the length of time between the invention and the eventual adoption of a production method, i.e., its adoption lag". From this case, it can be derived that a technology will be adopted if (Dyah et al., 2016):

1. It has ability of optimizing the existing resources;
2. It is simple, not complicated (or easy to use);
3. It is available (or easy to obtain).

The difference in time of technology development, as seen in Table 1 and Figure 2, shows there is a development lag, which is indicated by the length of time needed to diffuse. Taro processing technology in the first period needed 39 years to diffuse (1970-2009), and in the second period, it needed 4 years (2009-2013), and in the third period, it needed only 2 years (2013 to 2015). The rapid growths (2009-2015) of SMEs' that produce a variety of products on taro base indicate that there is an acceleration of taro processing technology diffusion. Calculating the acceleration of technology diffusion will indicate the growth of SMEs', as after diffusion is adoption, where technology that diffused is being used by the SMEs'. For calculating the acceleration of technology diffusion in this case, the following equation (Nave, 2016) is used:

$\alpha = \frac{\Delta v}{\Delta t}$

- Where α is acceleration, Δv is changes of speed and Δt is time taken.
- Δv is calculated by changes occurring in speed, for example based on Table 2: in period 1 to 2, Δv is calculated by subtracting the level of technology which is 2-0 = 2, and Δt is calculated by subtracting the time taken which is 1970-1930 = 40. So, the acceleration is 2/40 = 0.05.

FIGURE 3
The Acceleration of Taro Processing Technology Diffusion

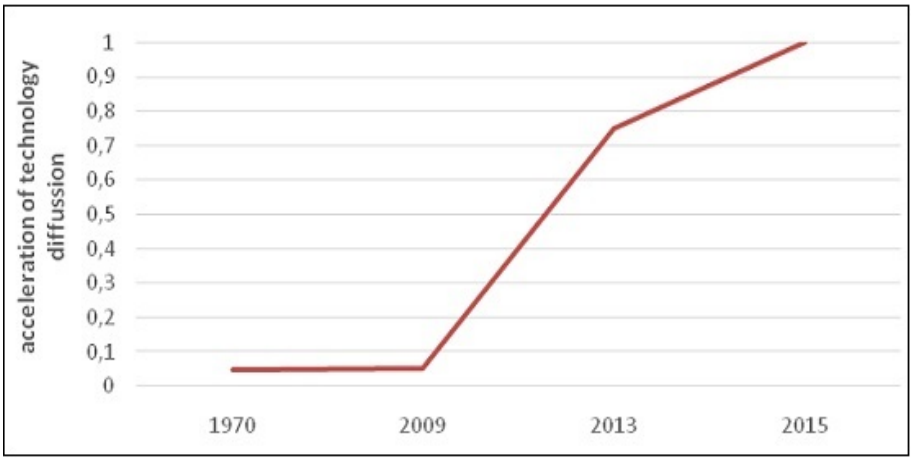
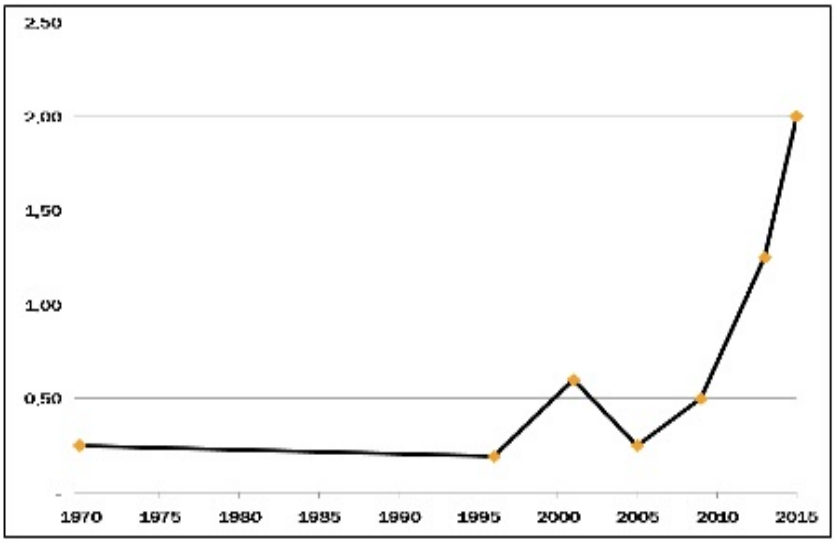


Figure 3, shows the acceleration of taro processing technology diffusion which is started from 2009 to 2013, then a little slowing down from 2013 to 2015, but the trend still shows an escalation. For 39 years, no product based on taro was developed until 2009 till a SME was able to produce "taro flour" which was also equipped with the recipe for making cake using taro flour. Then many SMEs' tried to develop many products using taro flour or taro flour mix (Figure 4). From 2013 to 2015, many more SMEs' produced bakery-based products using fresh taro and taro flour (taro flour mix) or taro chips (ground into flour), such as cakes, cookies, and bread.

FIGURE 4
Taro Flour Mix (left) and Recipe for Making Taro Cake Attached at the Back Sheet (right)

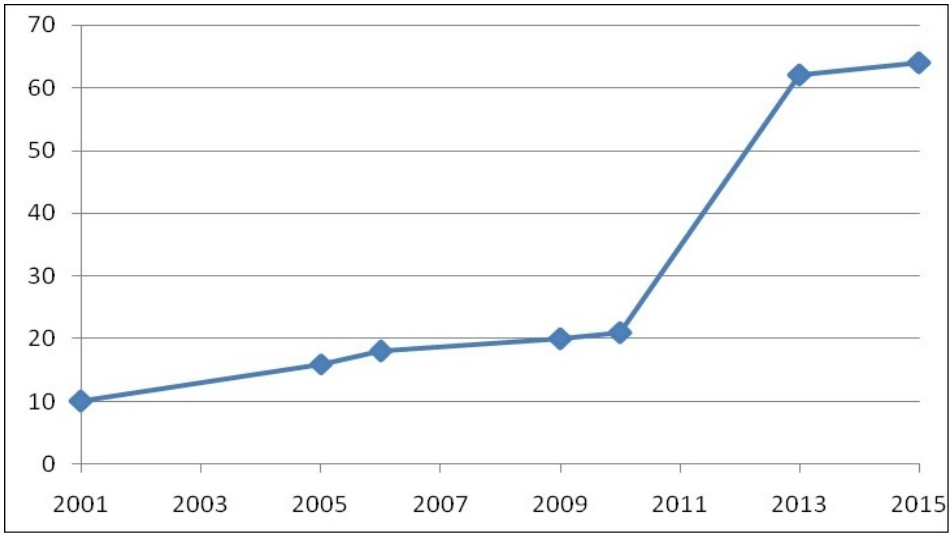
This acceleration of taro processing technology diffusion also had an impact on the development of SMEs' that produced products using taro as their material (Figure 4). Referring to Table 1, the growth of SMEs' that processed taro was triggered by the development of taro flour in 2009 (Figure 5). Innovation of taro flour has opened an opportunity for many products that can be produced using taro flour. Once the skills for processing taro were mastered, then many SMEs' started creating many varieties of products based on taro (fresh taro, taro chips, taro flour), especially occurring 2 years after some SMEs' producing products using taro flour succeeded to attract consumers and became products that most people look for when they visit Bogor, which is shown in Figure 5.

FIGURE 5
The Growth of SMEs' that Process Taro



The development of also have open an employment which indicated by the increase of people (labors) involved in these (Figure 6). Figure 6, also illustrate that the increase of labor involved in processing taro started after 2009, as the starting point of tremendous growth of processing taro in Bogor. However in 2015 the graphic shows tend to be more steady (constant). This condition indicates that in a time a new innovation always needed to trigger more development or growth.

FIGURE 6
The Development of Employees in SMEs' Processing Taro



CONCLUSION

The diffusion of food processing technology, in this case taro processing technology, has encouraged the development of SMEs' which adopt the technology and adapt or modify it to produce other varieties of snacks or foods based on taro. Although some products, such as cake, still need wheat-flour to be mixed into taro flour to produce good quality products, but it is still a change in taro processing technology. The demand for the products becomes an inspiration for other SMEs' to produce a variety of products that are accepted by people (consumers). Learning from this case, accelerating the diffusion of a technology has supported SMEs' development (Figure 5) and opened

employment opportunity (Figure 6) and, in turn, will support regional development. What factors affect the acceleration of technology diffusion? By understanding the factors, we can then apply it or develop a strategy to accelerate technology diffusion as a contribution to employment opportunity through the development of SMEs' which will support the regional development.

Table 1 illustrates the acceleration of diffusion that occurred from 2009 up till 2015. Here, innovation in taro processing technology becomes the factor that encouraging the development of other taro processing technologies, which is the use of taro flour in producing new products, in this case cakes and crackers, besides traditional products such as chips and sticks. However, there is still a different time taken in the diffusion process, from taro flour to the use of taro flour for other products, i.e., 4 years. Factors that affect this condition can be defined as follows:

1. Taro flour price is relatively high (approx.IDR30.000/kg compared to wheat-flour IDR8.000/kg).
2. For making cake, still has to be mixed with wheat flour, in order to get a good product.
3. Getting the optimum formula of taro mix flour needs time in order to produce good product that can compete with similar products based on wheat flour that are already known to the people.

However, after a product of taro mixed flour introduced equipped with recipe to produce cake from the flour (Figure 4), many SMEs' are producing similar products and other products based on taro flour. Samples of taro-based products are shown in Figure 7.

FIGURE 7
Varieties of Taro Products

Taro Layer Cake | Taro Chocolate | Taro Fried Bread | Taro Doughnut

The acceleration of taro processing technology is supported by SMEs' producing taro flour. In addition, the producer of taro flour also provides the recipe for producing taro cake attached in the back sheet of taro flour packing i.e., Figure 4. The accessibility to purchase taro flour also encourages many SMEs' to follow, but also makes modification to get their own product specification. This condition supporting the acceleration of taro processing technology indicates the time needed for SMEs' to adopt the technology which only took 2 years. One of the elements or, as Tidd and Bessant (2014) said, the characteristics that are influential to accelerating or retarding adoption is environment and infrastructure. In this case, the access to taro flour and the use of taro flour (such as recipe for producing cake made of taro flour) are also the supporting facilities that are provided by the local government. So, the SMEs' could explore more on using taro flour or taro yams in producing a variety of products.

The study shows that accelerating the diffusion of technology will support the development of SMEs'. When a technology is adopted, it indicates that diffusion goes very well. The decision to adopt a technology besides the needs also relates to how the technology offers (persuasion) and gives benefit and can help people in their work (confirmation). It is also affected by the performance of the technology itself, the way of the diffusion (method of diffusion), and also support from the condition of the people, where technology is diffused (includes social system). In this case, diffusion goes very well or even fast if supported by government policy. In this case, it is by raising taro as a commodity that should be developed, and by determining taro as a Bogor Icon. This has accelerated the diffusion process and the growth of SMEs' on taro base. Supported by the policy, these SMEs' further develop varieties of products using taro as the main material. Also, support comes from local workshops that provide technologies needed by these SMEs'. Those factors drive the acceleration of technology diffusion. In more details, factors that determine the speed of technology diffusion in this case are as follows (Dyah et al., 2016):

1. Technology availability and accessibility; in this case is taro flour processing technology.
2. Information on innovation availability and accessibility, such as information on how to produce taro layer cake as attached in taro flour packing sheet.
3. Material availability, such as taro flour or taro flour mix.
4. Government policy support, i.e. policy on food diversification development, and also in marketing by promoting

the products as local icon.

5. Research and development support, for example research results by university disseminated to SMEs' through partnership.
6. People's acceptance of the products offered has an effect on the change of the trend in people's consumption.

These factors affect the speed of technology diffusion. In addition to these factors related to SMEs' growth, other factors that have a role in the growth of SMEs are as follows:

1. The accessibility in obtaining various licenses to support SMEs'/business.
2. Diffusion takes place when the technology has been mastered and people are able to use the technology.
3. The opportunities for product development is wide open and encourage people (SMEs') to be more creative.

The condition is indicated in 2015 and those factors are factors that can be provided to push the speed of technology diffusion to support and promote SMEs' development. Accelerating the diffusion of technology then also accelerates the growth of the SMEs which has also opened employment opportunities as shown in Figures 5, and 6. However, after acceleration, it will become steady or stagnant. And if this condition occurs, an innovation is needed to trigger its development. Although Figure 5, illustrates that the development still continues, but Figure 6, points out that at a time, there will be no more development indicated by the employment that absorbs and tends to have slow development, it can be the sign that another innovation is needed to continuously maintain the SMEs' development.

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– This article does not have any appendix. –