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Knowledge Inertia in the Innovation of Coffee Production

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Abstract

Research Aims - This paper aims at discussing the existence of knowledge inertia and its influence to the product innovation, with particular analysis given to the coffee production during the pre-harvest and post-harvest periods.

Design/methodology/approach - The study uses quantitative methodology, and operates multiple and partial regression analysis between variables of the study to measure the impact of knowledge inertia to the innovation of coffee production. To put the findings in detail, the study separates the innovation of coffee product in two sequences, named [a] pre-harvest period and, [b] post-harvest period. Data and information were collected based on cross-sectional cohort data. Samples were 125 members of one coffee cooperative in West Sumatra, Indonesia.

Research Findings - It is found in the study that during the pre-harvest period, learning inertia and procedural inertia brought no significant influence to the innovation of coffee production whilst experience inertia significantly influences the innovation of coffee production during this period. In the post-harvest period, learning inertia significantly influences the innovation of coffee production. Meanwhile, procedural inertia and experience inertia have no significant influence to the innovation of coffee product during the post-harvest period of coffee production.

Theoretical Contribution/Originality - The originality and value of this study lie to its design and findings which focuses on the dimension of knowledge inertia in detail, in which a specific product with the sequence of its production was used as the focus.

Managerial Implication in the South East Asian context - Findings and discussion of this study contribute to the direction of how the management can be structured to respond to the challenge that is related to the willingness to acquire knowledge for innovation in a bigger degree depends on the willingness of people to acquire new knowledges. Therefore, the management field should be able to deliver a new method and a new insight about how to increase the willingness of people to learn and to get new experience and knowledge as the major basis for innovation.

Research limitation & implications - This study only discussed one particular context (a cooperative in West Sumatra, Indonesia), so it would be worth to expand the topics into a more broaden context which involves more samples, broader spatial coverage and more commodities. This will give us more understanding and generalization regarding the topic of this study.

Keywords - Knowledge inertia, innovation, pre- and post-harvest periods, cooperative.

Introduction

West Sumatra Province currently promotes and encourages coffee cultivation and production as one of its major commodities. This can be seen by the massive efforts to cultivate coffee plantation and the fact that the export volume of coffee is always increasing year by year. A blend of traditional and modern coffee production can be found in many places in West Sumatra, which are famous as the center of coffee production such as in the regions of Solok, Solok Selatan, Pasaman, Agam, Lima Puluh Kota, and Tanah Datar. According to the West Sumatran Office of Statistics,

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West Sumatra has 42,023 Hectares of coffee plantation in 2015 – and it is averagely producing more than 15,000 tons of coffee beans per year. During 2012-2016, West Sumatra contributed around 9,27% from the total of Indonesian national coffee production. (Secretariat General of Indonesian Ministry of Agriculture, 2016). The fact that coffee production as one of main commodities for West Sumatra demands continuous improvement in its production processes in order to produce high quality coffee as the major source of the competitive advantage. Producing high quality coffee product requires specific production processes, starting from the cultivation to the ready to consume product, in which each production phase should consider certain rules and procedures. Coffee, with its specific nature and demands from customers, requires continuous developments during its production phases. This can be done by undertaking innovation in order to generate the most effective and efficient ways during each of the production phase. It is why farmers and coffee producers need to possess specific knowledge in coffee production.

Dynamic business environment has created a shorter product and business life cycle. A company is pushed to keep innovate and to be more creative in order to maintain their business. As Prajogo and Ahmed (2006), explained, innovation is the main key in the competitive advantage of a company. A collaboration between innovation and the ability to think and to manage is a main key to that can distinguish a company with another and a factor that can improve performance of a company (Ndubisi, 2014).

It is admitted and agreed that knowledge is a strong and fundamental basis that is required by companies to undertake innovation (see studies of Nawab et al., 2015; Kalotra, 2014; Krstić & Petrović, 2012). Similarly, Akram et al. (2011) mentioned that the part of innovation process is related to how knowledge is acquired, adopted, and shared with the aim to create other various new knowledge which can improve products/services of companies. In other occasion and in a more recent study, Urbancova (2013) mentioned that knowledge together with innovation will create competitive advantage that can be used by companies to win the competition and to win new/potential customers.

Based on the study by Valdez-Juárez et al., (2016), small and medium scale companies use knowledge as the basis to create the organizational learning, which can, at the end, improve and enable innovation process done in the companies. Studies and research from Edvardsson and Durst, (2013); López-Nicolás and Meroño-Cerdán, (2011); as well as Madrid-Guijarro, et al., (2009) have clearly demonstrated that the existence of knowledge in SMEs can assist them to develop their employees professionally, to improve innovation processes, to increase the number of sales and to achieve customers' satisfaction – and those will further help them to achieve organizational success. Many evidences have proven that in every type of product, status of the company and in every region, knowledge has become the main condition that leads to the success of innovation and production process and can be used as the source of competitive advantage (see the studies of Nawab et al., 2015; Morgan & Berthon, 2008). In the context of developing countries, specifically, the

existence and absorption of knowledge by employees that leads to the improvement of productivity by the companies has brought an impact in terms of the creation of country competitiveness (Krstić & Stanišić, 2013). However, there is also facts that due to their nature, SMEs are not sufficiently widespread knowledge in their operation. This is mainly due to the lack of strategic planning, lack of financial resources, an objection to change culture of the company, longer term uncertainty regarding benefits, and immature technology – in which those are the typical circumstances that should be faced by SMEs (Edvardsson & Durst, 2013). SMEs are aware that they need knowledge in innovation, but unfortunately most of them cannot afford to do it due to their own circumstances. Therefore, the interface and causal relationship between knowledge and innovation would be an interesting topic to be discussed and further, to be developed.

An interesting question is then related to how the level and perception of knowledge acquired by members of cooperative can affect innovation in production processes? Using contextual framework of a cooperative in coffee production in Indonesia, the specific topic of knowledge inertia and its impact to innovation in production processes, this study aims to elaborate the above-mentioned question and reveal it in the findings and results of this paper.

LITERATURE REVIEW

We use the definition and our understanding regarding knowledge inertia as mentioned by Liao et al., (2008) and further, Wang and Yang (2013) who defined knowledge inertia as a routine problem solving mechanism by an individual who prefers to use intuition, continuous perception regarding problems and previous experiences as the basis to solve problems, without any efforts to add sources of knowledge as an additional source to solve particular problems. This means that an individual continuously gets used to solve problems or to deal with something that occurred many times with the same methods. As a result, he/she can summarize the similar thing, explain and share it with the logical reason to others, in order to reduce times to think and to avoid the risk of changes.

In the context of this study, this situation can clearly be seen starting from the initial coffee production phase or preparation of coffee cultivation until the final production phase. Since the majority of farmers can be categorized as traditional farmers, they tend to rely on their belief and perception regarding the traditional ways of production. Using traditional ways during coffee production decrease their intention to learn and to know new things, and as a result there is an increasing tendency among the farmers to refuse the application and absorption of new knowledges in coffee production.

Consequently, the farmers cannot control the quality and quantity of coffee they have produced. Many speculations arise from this situation, but unfortunately the farmers still cannot find the solution. Apart from this situation, the farmers also have to face a circumstance in which they cannot sell their coffee in a standardized price.

According to Cavut et al., (2014), every individual and organization will experience the high level of problem solution as a result of knowledge got from the past and its adjustment to the new situation. People will use their memories that are related to their past experience and past knowledge as a guidance to produce new plans to solve problems. Thus, people view that using the past knowledge to solve new problems will principally produce the same results and outcomes as the previous one. Liao et al., (2008) use the term "implementing a constant method to solve new problems" to simplify the explanation about this. It is believed that human cognition will keep their view and principles about something until they find other circumstances that can influence their understanding. The tendency of human being for using their past knowledge and experience in problem solving which were based on the reasons of time efficiency, limited resources and to avoid risks is further understood the main reason of the existence of knowledge inertia.

Therefore, there is a danger if knowledge inertia exists in a competitive environment because every business policy and act can be predicted by competitors (Liao et al, 2008). Further, it can also hinder the implementation of knowledge in management and can resist organisation to learn and to solve problems. It is viewed by Aqeela and Victor (2017) that the stagnant knowledge which is sourced from the previous/past experience will create the same solution for all problems and this is a dangerous circumstance for organisation to get developed. Besides, inertia will decrease the ability to learn and can reduce the creative thinking of individuals which will at the end, hinders the abilities to innovate and to solve problems (Shalikar, Lahoutpour & Abdul Rahman, 2011; Liao, et al., 2008). Thus, companies should find ways to strengthen the development of knowledge inside them and should put more attention into the development of organisation and innovation within individuals in the organisation.

According to Liao et al., (2008) knowledge inertia has three dimensions, which is [a] learning inertia, [b] experience inertia, and [c] procedural inertia. Learning inertia can be defined as an unwillingness of individuals to learn new ideas and approaches to solve problems which should be faced in the new situation, Liao et al., (2008). In learning inertia, individuals tend to learn and to captivate knowledge only from the same sources – which are their past knowledge, which is then used to solve the current problems. This implies that individual tend to think that they have had sufficient knowledge and experience to solve every problem that they face so that in their opinion, they do not need to add more knowledge and to learn something new (Shalikar, et al., 2011).

In relation with innovation, Xie et al., (2015) argued that learning inertia positively and significantly influences product innovation. This becomes our basis and foundation to formulate the first hypotheses of this study, which is:

H1: Learning inertia significantly influences innovation during the pre- and post-harvest production phases in the coffee production at the context of study.

The second dimension of knowledge inertia is experience inertia. It can be defined

as efforts to switch to the new structures of knowledge, experience and new sources of knowledge to handle situations which never exist. In experience inertia, it is viewed that experiences are one of the main learning resources (around 70%) and they come from reactions to the different situations and circumstances that should be faced daily (Liao et al., 2008). Experience inertia arises when individuals tend to use knowledge and experience that they owned to solve problems (Liao et al., 2008; Xie, et al., 2015). According to Casillas, et al., (2015), employees who have more knowledge getting from experience inertia will continuously search for new source of knowledge, try new technology and find a new innovative way which will improve innovation in the companies. Therefore, as Liao et al., (2008) and Xie et al., (2015), experience inertia will positively influence product innovation in a company. This overview is used as the basis to formulate the second hypotheses in this study, which is:

H2: Experience inertia significantly influences innovation during the pre- and post-harvest production phases in the coffee production at the context of study.

The third dimension in knowledge inertia is procedural inertia. Procedural inertia is meant as normal and standard procedures stated by organisations or individuals in the hope that every activity can run smoothly and can reach its objective. However, not all procedures can fit with all situations and circumstances arose within an organisation or individual. As a consequence, difficulties often occurred when a procedure cannot handle a current and a new problem (Xie, et al., 2015). The use of a standard daily procedure to face new problems can be simply defined as procedural inertia. It was found by Xie et al., (2015) that the stronger the procedural inertia is, then the more likely for members of a company to look at the past to face the current problems. Shortly, knowledge inertia is viewed as having negative influence to product innovation. This finding of the study is further used to state the third hypotheses in this study, which is:

H3: Procedural inertia significantly influences innovation during the pre- and post-harvest production phases in the coffee production at the context of study

Based on the partial exposition regarding the relationship of learning inertia, experience inertia and procedural inertia to product innovation, we further state and formulate the simultaneous hypotheses for all variables of the study which is:

H4: Knowledge inertia significantly influences innovation of coffee production during pre- and post-harvest periods in the context of study

RESEARCH METHOD

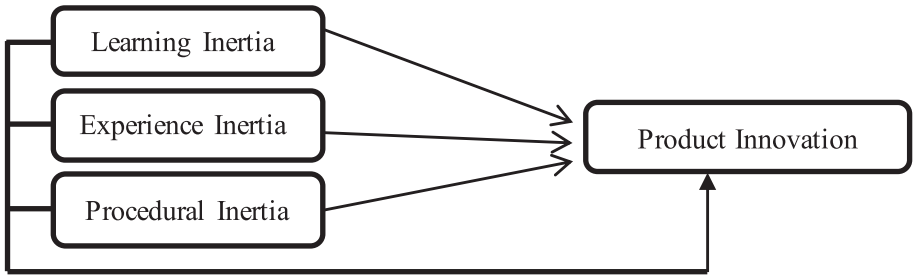
The study uses quantitative methodology with explanatory approach and operates regression analysis to measure the impact of knowledge inertia to the innovation of coffee production. To put findings of the study in detail, we separated the analysis of the sequence of coffee production in two phases, named [a] pre-harvest period and, [b] post-harvest period. Table 1 shows how we put sequences of the coffee production as the consideration in our research design.

Instead of one phase only, the study separates the sequence of coffee production into two phases (pre- and post-harvest periods) in order to specify the analysis and discussion. If we look at the sequence of activities during coffee production, it consists of many activities which are related one to each other. However, we should not consider all of activities in the same category because every activity has its own particular nature of work. Considering this, we put our attention to separate the activities of coffee production into two phases, which are based on the flow of work during the production.

Types of variable in this study are independent (learning inertia, experience inertia and procedural inertia) and dependent variable which is product innovation. We further specify each variable into its dimension and indicators in order to develop guidance for our questionnaire. This is undertaken by arranging one particular table to show the operational definition of variables, which is shown in the table 2.

Based on our hypotheses and identification of independent and dependent variables in this study, we further arrange the research framework of this study, as shown in Figure 1.

Data and information were collected in each of the pre- and post-harvest period of coffee production to the unit analysis of the research which is coffee farmers and entrepreneurs of a coffee cooperative in West Sumatra-Indonesia. The study uses



Source: Adopted from Liao et al. (2018), Xie et al., (2015) and Wang and Yang (2013)

Figure 1.
Research Framework

No	Design of the research	Sequences/Periods	
		Pre-Harvest	Post-Harvest
1	Method & Approach	Quantitative Causal Analysis	Quantitative Causal Analysis
2	Type of Investigation	Explanatory, between the following variables: pre-harvest = Product Innovation pre-harvest = Product Innovation pre-harvest = Product Innovation	Explanatory, between the following variables: post-harvest = Product Innovation post-harvest = Product Innovation post-harvest = Product Innovation
3	Data collection	Cross Sectional Cohort Data	Cross Sectional Cohort Data
4	Activities in the sequences	1. The selection of seeds 2. Seeds planting 3. Seeds and plants maintaining a. Fertilizing b. Pruning/trimming c. Handling of pests & diseases 4. Harvesting	1. Coffee sorting 2. Pulping 3. Fermenting 4. Washing 5. Drying 6. Hulling the coffee beans

Source: Authors' own conception

Table 1.
Summary of the Research Design

questionnaire as the research instrument. Samples are 125 members of the cooperative – out of total 300 members. Non-probability sampling method with purposive sampling technique is used to determine samples of the study.

Research instrument was tested by using: [a] validity test, and [b] reliability test (using Cronbach's Alpha). Classical assumption is tested by using [a] normality test by using Kolmogorov-Smirnov [K-S] test, [b] multicolinearity test by considering the Tolerance Value and Value Inflation Factor (VIF), and [c] heterocedasticity test by using Spearman's Rho coefficient and Scatterplot graphics. Meanwhile, hypotheses testing was undertaken by using [a] partial regression analysis (T-test) and, [b] multiple regression analysis (F-test).

RESULT AND DISCUSSION

Our first task for this study is to show and prove that our samples have filled up the sample criteria that has been previously set up. The sample is 125 respondents and their profiles are described in the cross-tabulation as in Tables 3 to 5.

Based on table 3, our sample is dominated by male respondents (68 people). Number of female respondents who are in the age of 36-45 years old (19 people) is found to dominate our sample based on gender and age. Considering of our samples' gender and their last education, we have found that our sample is dominated by male respondents who previously had senior high school education background as their last education.

Variables	Concept of Variable	Dimension	Indicators
Knowledge Inertia (X)	*Knowledge inertia* a routine problem solving mechanism by an individual who prefers to use intuition, continuous perception regarding problems and previous experiences as the basis to solve problems, without any efforts to add sources of knowledge as an additional source to solve particular problems.(Liao, 2002)	1. *Learning inertia* (X1)	• Similar knowledge resources • Learning to the new concept and processes • Afraid of the new concept and ideas
		2. *Experience inertia* (X2)	• Knowledge and experience in solving new problems • Experience in tasks and duties • Learning from experience • Improving work efficiency
		3. *Procedural inertia* (X3)	• Strategy of problem solving • Operational procedures. • Company rules • Problem solving
Product Innovation (Y)	Product innovation can be seen by the ability and acapability of a company to develop new product with the best quality which can soon penetrate the market (Zhang and Li, 2010)	1. *Product Development*	• The development of high quality product
		2. *Market Penetration*	• Intensity in introducing new product • The first to introduce a new product • The velocity to introduce new product • Market penetration of the new product

Table 2.
Operational Definition of Research Variables

		Crosstabulation of Gender and Ages					
		Age Range					Total
		≤25	26 - 35	36 - 45	46 - 55	≥56	
Gender	Male	15	18	14	10	11	68
	Female	6	13	19	12	7	57
		21	31	33	22	18	125

Table 3.
Sample Profiles based on Gender and Age

Source: Primary data processing

If we relate this finding to the context of study, we view it as a reasonable thing. Since the majority of coffee production phases are more related to physical activities, then the involvement of male in each activity will be more recognized. Although it is debatable, but we view that the male respondents are more reliable to do the physical activities. In terms of culture, male in West Sumatra is also always responsible for every physical related activity. Therefore, in this context of the study we can understand why the composition of our sample is dominated by male respondents.

Our sample profiles based on gender and their last education is shown in Table 4.

Meanwhile, based on the age and last education – our samples are dominated by people who are in the age of 36 – 45 years old and are having senior high school background as their last education (46 people). As we know, activities that were undertaken in the coffee production is relatively complex rather than other business activities, for example, trading. Even though the production processes are considerably simple, but knowledge in the production is still required during the process. Considering this, we can also understand the involvement and domination of male with a mid-level of education as our sample.

In detail, our sample profiles based on the age and their last education background is shown in Table 5.

If we break down table 5, we can see that numbers of our respondent have proven our analysis regarding the involvement of young male (age 36-45 years) with mid-level of education (senior high school) as the majority of the sample.

4.1. Research Instrument Test

Our next task to analyse the data was testing our research instrument. For this pur-

Crosstabulation between Gender and the Last Education

		Last education					
		Elementary School	Junior High School	Senior High School	Undergraduate	Others	Total
Gender	Male	5	12	43	5	3	68
	Female	5	16	35	1	0	57
		10	28	78	6	3	125

Source: Primary data processing

Table 4. Sample Profiles based on Gender and the Last Education

Age	Last education					Total
	Elementary School	Junior High School	Senior High School	Undergraduate	Others	
≤25 years	0	2	18	1	0	21
26 - 35 years	0	4	23	4	0	31
36 - 45 years	3	6	23	1	0	33
46 - 55 years	4	9	9	0	0	22
≥55 years	3	7	5	0	3	18
Total	10	28	78	6	3	125

Source: Primary data processing

Table 5. Sample profiles based on Age and the Last Education

pose, we undertook two tests, which is: [a] validity test, and [b] reliability test. Each of the test is described as follow.

4.1.1. Validity Test

We use validity test to measure the validity of our questionnaire. This was done by finding the value of corrected item-total correlation. As a rule, if the value of corrected item-total correlation is bigger than 0.3 then it means the question is valid. Results of validity analysis to all questions in the questionnaire shows the coefficients ranging from 0.487 to 0.772 (in pre-harvest period) and 0.473 to 0.783 (in post-harvest period). Following the interpretation of validity test to our research instrument we conclude that all questions in the questionnaire, either for pre-harvest or for post-harvest periods, all questions in the questionnaire that are related to the variables of learning inertia, experience inertia, procedural inertia and product innovation are valid.

We believe that there is the contribution of the sample profile to the validity of our questionnaire. As we exposed in Table 5, the majority of our sample is male with a mid-education level. We believe that people in mid-education level can at least understand what they should do when answering questions from the questionnaire, especially if the questions are directly related to activities that they have done. This is enough for us to summarize that our samples can understand every question that needs to be answered during the survey.

4.1.2. Reliability Test

Reliability test is used to measure whether the research instrument used in the research is reliable or not. A reliable question means that the question could be used to measure the same object in several times and it predictably would extract the same output. Reliability test to all items in the research instrument usually uses the value of Cronbach's alpha as the coefficient. A construct is reliable if its value is more than 0.60 (>0.60). From our analysis and finding, we can conclude that all questions in our research instrument are valid – as the smallest value is 0.616

4.2. Classical Assumption Test

In classical assumption test, we undertook three types of measurement, which are [a] normality test, [b] multicolinearity test and [c] heterocedasticity test. We undertook those tests before testing our hypotheses in order to get the correct summary/ conclusion regarding the analysis. Each of the classical assumption test in this study is described as the following.

4.2.1. Normality Test

Normality test is used to measure whether residual regression model has normal distribution or not. To search this, we first use the P-P Plot table – where the results are shown in figure 1.

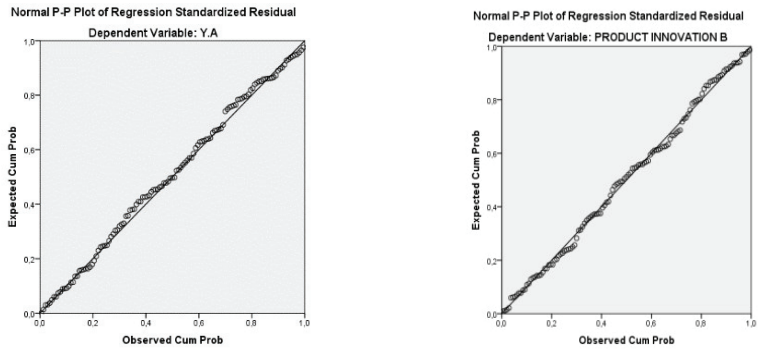
Our normality test using the P-P Plot table to both of the research sequences as in figure 1 shows that the data is spreaded around the diagonal line and spreads along its histogram graphics. This means that our data in both sequences has a normal distribution pattern. We then use Kolmogorov-Smirnov (K-S) test to prove this – and the results for both sequences show the following.

From Table 6 we can see and conclude that our data in both sequences has distributed normally because the values (for pre and post-harvest periods) for Asymp. Sig (2-tailed) are bigger that 0.05. In detail, the values are: [a] 0.946 for pre-harvest period and [b] 0.981 for post-harvest period.

4.2.2. Multicolinearity Test

Multicolinearity test is aimed to measure whether there is a correlation between independent variables in the regression model. A regression model should not have any correlation between its independent variables – and the model is free from multicolinearity if the value of its Variance Inflation Factor / VIF is less than 10 with the tolerance of more than 0.1 (Ghozali, 2009). According to the result of multicolinearity test of our study, the independent variables (learning inertia, experience inertia and procedural inertia) in both pre- and post-harvest periods have no correlation one to each other. A complete and detail result of this multicolinearity test is shown in table 7.

Pre Harvest Period | Post-Harvest Period



Source: Primary data processing

Figure 2. Results of Normality Test during Pre and Post-Harvest Periods using the P-P Plot

Pre-Harvest Period		Unstandardized Residual	Post-Harvest Period		Unstandardized Residual
N		125	N		125
Normal Parameters[a,b]	Mean	0.000000	Normal Parameters[a,b]	Mean	0.000000
	Std. Deviation	2,55709584		Std. Deviation	2,42173103
	Absolute	0.047		Absolute	0.042
	Positive	0.026		Positive	0.042
	Negative	-0.047		Negative	-0.040
	Kolmogorov-Smirnov Z	0.525		Kolmogorov-Smirnov Z	0.468
	Asymp. Sig. (2-tailed)	0.946		Asymp. Sig. (2-tailed)	0.981

Source: Primary data processing

Table 6. Kolmogorov-Smirnov Test during the Pre- and Post-Harvest Periods

4.2.3. Heterocedasticity Test

Heterocedasticity test is used to detect whether there is a bias in the assumption of heterocedasticity or not. Bias here means the inequality of variant and residual to all observation of the regression model. A regression model should have no sign of heterocedasticity. To prove that our regression model has no sign of heterocedasticity, we used [a] scatterplots and [b] Glejser test. Scatterplots and Glejser tests of our regression model for both pre- and post-harvest periods are shown in Figure 2 and Table 9.

Figure 2 shows that the dots in scatterplots for both sequences spread with an inconsistent pattern and they are mainly located below zero in Y-axis. We can summarize that there is no heterocedasticity in the regression model for both sequences and they can be used to predict product innovation based on the independent variables (learning inertia, experience inertia, and procedural inertia). The next step to test the heterocedasticity of our regression model is by using the Glejser test, in which the results can be seen in Table 8.

Table 8 suggests that based on the Glejser test, there is no heterocedasticity found in both sequences of the study – as the values of Sig. for all independent variables for both sequences are bigger than 0.05.

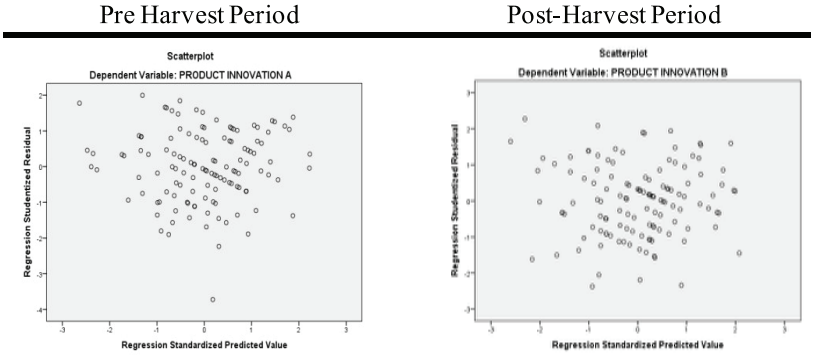


Figure 3.
Results of Heterocedasticity Test using Scatterplots

Table 7.
Results of Multicolinearity Tests for Pre- and Post-Harvest Periods

Sequences	Variables	Colinearity Statistics	
		Tolerance	VIF
Pre-Harvest Period	Learning Inertia	0.943	1.061
	Experience Inertia	0.974	1.027
	Procedural Inertia	0.937	1.067
Pre-Harvest Period	Learning Inertia	0.994	1.006
	Experience Inertia	0.782	1.279
	Procedural Inertia	0.778	1.286

Source: Primary data processing

Table 8.
Results of Glejser Test to the Regression Model in Pre- and Post-Harvest Periods

Model	Pre-Harvest Period		Post-Harvest Period	
	t	Sig.	t	Sig.
(Constant)	1.482	0.141	1.781	0.077
Learning Inertia	-0.324	0.746	-0.632	0.529
Experience Inertia	-0.255	0.799	-0.632	0.912
Procedural Inertia	-0.105	0.917	-0.286	0.775

Source: Primary data processing

HYPOTHESES TESTING

Hypotheses testing is our last task during the data analysis. To do this, we undertook three tests, which are [a] partial regression analysis/T-Test, and [b] multiple regression analysis/F-Test. Both tests are described below.

4.3.1. T-Test

T-Test is a test to measure the influence of one independent variable to the dependent variable. If the significant value is more than ≥0.05, then it means that there is no influence of independent variable to dependent variable. (Ugoni and Walker, 1995; Sugiyono, 2010). Meanwhile, if the significant value is ≤ 0.05 then it means there is an influence of independent variable to dependent variable. Results of T-test in our study are shown in the Table 9 and Table 10.

Table 9 shows us that in the variable of learning inertia, the value of T (-0.803) is smaller than the value of t-table (1.980) whilst the significant value (0.423) is bigger than 0.05. This means *the learning inertia* has no influence to the innovation of coffee production during the pre-harvest period. Finding related to the learning inertia in this study is reasonable because we view that coffee cultivation phase in the context of our study is a hereditary type of activities and business. It is why people who undertake coffee cultivation tend to rely on their hereditary knowledge rather than try to learn a new thing. They believe that their contextual, geographical and spatial knowledge which are related to coffee cultivation are the best knowledge that they have. Consequently, their awareness of learning a new thing for coffee production decreases and this has positively and significantly resulted to the creation of their learning inertia.

The variable of experience inertia has the T value of 7.337 which is bigger than the value of t-table (1.980) with the significant value (0.000) is smaller than 0.05. This further means that the *experience inertia* influences the innovation of coffee production during the pre-harvest period in the context of our study. As we previously

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Standard Error	Beta		
(Constant)	14.447	3.223		4.482	0.000
Learning Inertia	-0.068	0.085	-0.062	-0.803	0.423
Experience Inertia	0.550	0.075	-0.062	7.337	0.000
Procedural Inertia	-0.006	0.114	-0.062	-0.048	0.962

Table 9.
T-Test for the Hypotheses in the Pre-Harvest Period

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Standard Error	Beta		
(Constant)	18.338	2.926		6.267	0.000
Learning Inertia	0.530	0.077	0.528	6.899	0.000
Experience Inertia	-0.130	0.074	-0.152	-1.764	0.080
Procedural Inertia	0.047	0.130	0.031	0.362	0.718

Source: Primary data processing

Table 10.
T-Test for the Hypotheses in the Post-Harvest Period

mentioned, the majority of coffee cultivation phases in the context of our study are based on the experience – since the activities and the business are the hereditary processes. In this regard, we can understand why the willingness of our sample to rely on their experience in coffee production is one of the most influential things in the innovation of coffee production during this phase.

In the variable of procedural inertia, the T value (-0.048) is smaller rather than the value of t-table (1.980) whilst the significant value (0.962) is bigger than 0.05. We conclude that the *procedural inertia* has no influence to the innovation of coffee production during the pre-harvest period in the context of our study. In this case, we view that the willingness of our sample to follow some new procedures during the coffee cultivation will not influence innovation in coffee production processes. Our samples view that whether they follow new procedures in coffee cultivation or not, it will not bring significant impact to their efforts in cultivation. This is why the majority of our sample tend to follow old procedures in coffee cultivation rather than following new ones. They believe that the old procedures have been successfully proven and brought positive results in their efforts during cultivation process. Therefore, why should they have to consider, choose and follow a new procedure?

Meanwhile, the T-test for Post-Harvest period shows the values as shown in Table 10. This table summarizes that in the variable of learning inertia, the value of T (6.899) is bigger than the value of t-table (1.980) whilst the significant value (0.000) is smaller than 0.05. This means *the learning inertia* influences the innovation of coffee production during the post-harvest period. The variable of experience inertia has the T value of -1,764 which is smaller than the value of t-table (1.980) with the significant value (0.080) is bigger than 0.05. This further shows that the *experience inertia* has no influence to the innovation of coffee production during the post-harvest period in the context of our study. In the variable of procedural inertia, the T value (0,362) is smaller rather than the value of t-table (1.980) whilst the significance value (0.718) is bigger than 0.05. We conclude that the *procedural inertia* has no influence to the innovation of coffee production during the post-harvest period in the context of our study

4.3.2. F-Test

F-test is usually recognized as the multiple regression test – and it is aimed to measure the simultaneous relationship between independent variables of the research to

Table 11.
F-Test of the Regression Model for Pre-Harvest Period

	Model	Sum. of Squares	Df	Mean Square	F	Sig.
1	Regression	381.788	3	127.263	18.992	0.000[b]
	Residual	810.804	121	6.701		
	Total	1192.592	124			

Table 12.
F-Test of the Regression Model for Post-Harvest Period

	Model	Sum. of Squares	Df	Mean Square	F	Sig.
1	Regression	306.495	3	102.165	16.999	0.000[b]
	Residual	727.233	121	6.010		
	Total	1033.728	124			

a. Dependent Variable: Product Innovation Post-Harvest
b. Predictors: (Constant), Procedural, Experience, Learning Inertia Post-Harvest

the dependent variable. For this test, we used the ANOVA (Analysis of Variance) table by considering the significant value of < 0.05 or < 5% (Hair et al., 20016; Sawyer, 2009). F-test of our regression model for both sequences are shown in Tables 11 and 12.

The ANOVA Test for pre-harvest period as shown in table 11 shows that the value of F (18.992) is bigger that the value of F table (2.68) whilst its significant value (0.000) is smaller than 0.05. The study found that knowledge inertia has significantly influenced the innovation of coffee production during the pre-harvest period in the context of our study.

Meanwhile, the ANOVA test for the regression model in the post-harvest period is shown in Table 12. The table shows that the value of F (16.999) is bigger that the value of F table (2.68) whilst its significant value (0.000) is smaller than 0.05. The study found that knowledge inertia significantly influences the innovation of coffee production during the post-harvest period in the context of our study.

DISCUSSION

The major findings of our study show that knowledge inertia is closely associated with the willingness of people to accept new ideas, implement them, and to face the consequences from the implementation of that new ideas. This willingness is further articulated in their willingness to learn, to get benefits from a new experience, and to follow procedural related matters in the business operation. This willingness in a bigger to a lesser degree is also influenced by the profiles of people. Even though we did not test this in our study study, but we view gender, age and education level will significantly contribute to the willingness of individuals to learn something new.

Learning Inertia and Product Innovation in Pre-Harvest Period

One main finding of the study implies that learning inertia has brought no significant influence to product innovation during the pre-harvest period of coffee production. We summarized that our respondents have lack of initiatives and are unwilling to learn something new related to the activities during the pre-harvest period: [a] the selection of seeds, [b] seeds planting, [c] maintaining seeds and plants, [d] fertilizing, [e] pruning/trimming, [f] handling of pests & diseases and [g] harvesting. There is another possibility of why our finding shows that learning inertia has brought no significant influence to product innovation during the pre-harvest period of coffee production. We consider that our respondents are doubt, confuse, and even unsure from whom they can effectively learn about the standardized process of coffee cultivation during the pre-harvest period. Our respondents seem to believe that whatever the ways they planted and cultivated the coffee – it will result the same. This belief has brought perception in our respondent mind that they do not have to learn a new thing in planting and cultivating the coffee. As the result, the innovation process during this period cannot be maximized and there are many speculations and distractions arose from others. Our finding is relevant with the study from Sha-

likar et al., (2011) who argued that once individuals think and feel they can solve problems with their current knowledge, then there is a little tendency and need that they are willing to try, to find and to learn something new.

We also view that the profile of our samples/respondents more or less contributes to this situation. The most of our samples is only having senior high school education background and in the age of 36-45 years. This background is considered as having influence and contribute to the limited ability to learn new things by our samples – and the age profile which ranges from 36-45 can be said as an uncomfortable/unpleasant age range to learn new things. People whose age are 36-45 tend to prefer on stable situation – rather than a challenging one. This has made their willingness to learn tend to be lower than people whose age are, for example, below 30. As the result of this profile, the innovativeness of our sample is arguably lower and that has brought impact to their willingness to learn.

Experience Inertia and Product Innovation in Pre-Harvest Period

Related to experience inertia, finding of our study implies that it will significantly influence innovation in the production process of coffee production during the pre-harvest period. Respondents of the study believe that experience is one of the influential factors when they cultivated the coffee plantation. In this situation, respondents will consider external parties who can supply new experiences to cultivate the coffee plantation during the pre-harvest period. Every new experience will be considered as having significant contribution to their ability to innovate during this period. This finding is similar with the opinion from Liao et al., (2008) who previously argued that experience inertia will bring significant influence to the product innovation.

Again, if we relate this finding to the sample profile of this study – we further considered the education level of our respondents. We viewed that the lower the level of education of individuals, then the higher the reliance that they have to their previous experience in undertaking one activity. We can understand why this situation happens in our study, since the majority of our sample are considered as having low education background (senior high school education).

Procedural Inertia and Product Innovation in Pre-Harvest Period

Procedural inertia is mainly related to mind-set of individuals when they need to solve problems in the future. The finding of our study shows that procedural inertia within members of the cooperative has insignificantly influenced the innovation of coffee production during the pre-harvest period. This implies that samples of our study have a strong and firm mind-set that they will refer to their past experience when they need to face current and future problems. The strong and firm mind-set which are based from the past experience have made individuals tend to persist and stick with their past even though there are alternatives to solve problems that are sourced from new knowledge. Strong and firm mind-set will also impact to individuals. They will maintain every procedural thing from their past – and this will

hinder innovation.

Our study is relevant with the study from Xie et al., (2015) who mentioned that the stronger procedural inertia of individuals, then there is a tendency that they will look to the past in order to face the current and possible future problems. In the context of our study, this situation was confirmed by a member of the cooperative who said that one major problem that they need to face is related to the unwillingness of other members to implement new knowledge and education to cultivate the coffee. They rely on an old procedural thing when they cultivated the coffee since they belief (and it is in their mind-set) that it is the best one. When we observe how members of the cooperative undertake cultivation activities, there was a proof that they did that carelessly – without paying any attention to a newer and better cultivating procedure.

Learning Inertia and Product Innovation in Post-Harvest Period

During the post-harvest period, our study shows that learning inertia positively and significantly influences innovation in the production of coffee product. This means that the willingness and ability to learn from various resources during the post-harvest period of coffee production will influence the innovation process undertaken by our samples. This finding is relevant with the nature of works and tasks of our samples and the cooperative. The respondents believe that their main interest is only in the coffee cultivation – and the responsibility during the post-harvest period should be in the cooperative. They also believe that the high complexity during the post-harvest coffee processing cannot attract their interest to do so. This is the reason why our samples are unwilling to learn further and just rely on the cooperative to undertake the process.

Experience Inertia and Product Innovation in Post-Harvest Period

Looking at the experience inertia during the post-harvest period, we found that it does not influence the innovation of coffee production during this sequence. Our further analysis brings result that respondents of the study actually do not have any experiences in the coffee processing during the post-harvest period. We found that our respondents have minimum experience to process their coffee plantation after the harvesting time. Further information from the management of the cooperative says that the most of their members are just aware of how to cultivate the coffee and once the harvesting time comes, they just simply sale the coffee without any intention to process it further. Members of the cooperative prefer and intend to get money sooner after the harvesting time – rather than to keep the coffee first and to process it further. We believe that these situation and circumstance are typical for farmers in Indonesia. As there is is a limited chance to generate more money and to get other incomes, they prefer to get money from their commodity soon and unaware that some added processing stages would increase the value of their commodity. In the case of our respondents, processing of the coffee plantation was voluntarily given to the cooperative.

The F-test Results during Pre- and Post-Harvest Period

As it has been previously mentioned, F-test is used to measure the simultaneous influence of the dimensions of knowledge inertia to the product innovation. Our findings showed that knowledge inertia with all of its dimensions (learning, experience and procedural) significantly influences innovation of coffee production in both sequences of our study (pre and post-harvest periods). This further means that the increased knowledge inertia of individuals will determine the level of innovation during each period of coffee production. As the nature of knowledge inertia, we view that the higher tendency of knowledge inertia that individuals have, then there is a tendency that they will have lower possibility to innovate or to become innovative.

MANAGERIAL IMPLICATIONS IN THE SOUTH EAST ASIAN CONTEXT

We always believe that knowledge–learning–innovation is a set of activities and capacities that would be needed by a company (and a cooperative as well) to maintain and to increase its competitive advantage. Therefore, a special focus in this area would be highly required by the cooperative and its members for the sake of its sustainable competitive advantage.

The study implies that the management of cooperatives in the South-East Asian region should take careful attention in regards of the innovation process from their members. Management of the cooperatives always need to be aware and encourage their members to acquire appropriate knowledge in production by improving the willingness of members to get newer knowledge, store it and share it to other members/colleagues. Management of cooperatives should also put their attention to the learning scheme and pattern that can be conducted and applied to its members. The advantages that are sourced from a similar cultural background of the South-East Asian people also needs to be considered by the management of the cooperative and should be used as one of the strengths for the application of innovation processes which is based on the knowledge and collective learning.

THEORETICAL IMPLICATIONS

It is clear from the study that we view and argue that knowledge – learning – innovation is a set of activities and capacities that would be required by members of cooperatives. We view that knowledge-learning-innovation processes as factors that have an interdependency relationship and may influence one to another. The willingness and ability to acquire, to store and to maintain, as well as to share knowledge will determine the level of learning and the learning process that will be experienced by a member of an organization. These level of learning and learning process will further determine the flow of innovation processes in the organization which can in turn determine the ability of that organization to maintain and increase their competitive advantage. This is the main theoretical implication from this study that can be used as a further research agenda, related to this topic and context. Specifically, future research related to this topic can be directed and addressed to the

investigation on the mediating effect of level of learning and learning processes in the relationship between knowledge acquisition and innovation processes.

This study, however, has its own limitation. Since it was undertaken as a single study context, then it would be difficult to generalize the result to more broader contextual phenomenon. Therefore, more advanced studies which incorporate more broaden contexts in terms of more samples, broader spatial coverage and more commodities would be a significant contribution to enrich our understanding related to this topic.

CONCLUSION

The study highlighted that during the pre-harvest period, learning inertia and procedural inertia have brought insignificant influence to the innovation of coffee production, whilst experience inertia significantly influences the innovation of coffee production during this period. In the post-harvest period, it is only learning inertia which significantly influences the innovation of coffee production. In the post-harvest period, it is only learning inertia which significantly influences the innovation of coffee production.

In regards of management as the field of study, findings and discussion of this study can contribute to the direction of how this field of study can be structured to respond to the challenge that is related to the willingness to acquire knowledge. Innovation in a bigger degree depends on the willingness of people to acquire new knowledges. This willingness will ease people to learn new things, implement them and follow procedures during the implementation process so that they can experience that new things. This means and implies that the management field should be able to deliver a new method and a new insight about how to increase the willingness of people to learn and to get new experience and knowledge as the major basis for innovation. Providing an easy to understand learning modules with the exposition of experiential approach could be the way that can be chosen by the management field to face this challenge. Meanwhile, the on-the-field based learning classes with flexible-experienced tutors can also be chosen and developed as the way to deliver the learning modules.

On the other hand, the study also implies that local coffee farmers-entrepreneurs should improve their capacity to absorb and necessary knowledge during the periods of coffee production in order to improve competitive advantage, maintaining themselves in the business, improving their business scale and to formulate immediate decision to solve problems during the production phases. Improving capacity to absorb knowledges will be the main basis for innovation that is required to create the competitive advantage.

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